Impact of International Trade on Economic Growth: The Granger Causality Test Approach

Sule Magaji and Mansur Mohammed Abubakar

Department of Economics, University of Abuja. E-mail: sule.magaji@uniabuja.edu.ng; mujicomprom@gmail.com

Abstract: The study analyzes the impact of international trade on economic growth in Nigeria. Using Granger Causality test it indicates that trade balance does not Granger cause real gross domestic product at 5% level of significance. It also indicates that the degree of trade openness does not Granger cause real gross domestic product at 5% level of significance. The regression result shows that trade is not statistically significant to economic growth. Also, the result shows that trade openness is not statistically significant to economic growth. It is recommended that there is need for effective foreign exchange management capable of ensuring optimal productivity in the critical sectors of the economy. This can be achieved by diversification of the economy away from oil with a view to expanding export of non-oil goods and services to strengthen naira exchange rate under the managed float regime.

Keywords: International Trade, Economic growth, Trade openness, Granger Causality test, Foreign exchange, Economic diversification

JEL Classification: P33

1. Introduction

International trade enables a country or nation to broaden its market for goods and services that would otherwise be unavailable to its inhabitants. Foreign trade implies that total productivity includes domestic production, consumption, and international exchange of commodities and services (UNCTAD, 2018). Foreign trade, as a key driver of economic progress, must result in a constant rise in human status through broadening people's standards and preferences because no country has ever progressed without trade. Therefore, foreign trade is critical in reorganizing the economic and social characteristics of countries all over the world, particularly in

developing countries (Muhammad and Benedict, 2018). Economists have long been fascinated by the factors that cause countries to expand at various rates and achieve varying levels of wealth. Trade is one of these factors (Mongoe and Mungale, 2015).

Nigeria is essentially an open economy, with international trade accounting for a sizable share of total output. Nigeria's economic progress is heavily reliant on the possibilities of her export commerce with other countries. Trade generates foreign exchange revenues as well as market stimulus, resulting in faster economic growth (Adenugba and Dipo, 2013). Nigeria has had this experience since the 1960s, despite the fact that the composition of trade has changed over time. Decision-makers, policymakers, and economists have all been interested in foreign trade. It allows countries to sell commodities produced locally to other countries around the world and a source of foreign exchange (Andabai and Maryann, 2018; Yakeen and Magaji, 2016).

Economists think that allowing international trade to flourish accelerates development (Shivneil and Priteshni, 2017). It's possible that the faster growth is a transition effect rather than a change in steady state growth rate. Clearly, the change takes several decades or more, thus it is more accurate to think of trade openness driving growth rather than only causing a one-time real income adjustment (Elias, Agu and Eze, 2018). Following the notion that sustained commerce is the principal engine of economic growth, the relationship between trade and growth is envisioned through an export-led growth strategy (Shivneil and Priteshni, 2017).

1.2. Statement of Problem

The macroeconomic policy changes arising from trade, which turned the country into an import-dependent economy, may be the major reasons why the benefits of international trade cannot be found to have a positive influence on economic growth (Afaha and Oluwatobi, 2012). Furthermore, foreign trade has not contributed significantly to economic growth because some of the goods imported into the country harm local industries by making their products appear inferior and thus causing neglect, resulting in a decrease in the rate of growth of such industries' output, which then affects the overall economy (Magaji and Saleh, 2010).

Given the benefits of international trade on economic growth, foreign trade has been viewed as a limitation to growth, particularly in emerging countries. This is because countries tend to rely too heavily on the foreign market, making them more vulnerable to market instability. As a result of the significant volatility associated

with commodity exports, Nigeria's terms of trade, international trade balance, and economic development are all at risk (Magaji, Muhammed and Abubakar, 2015). The basic problem of interest for this research is that why the economies of a developing country like Nigeria not growing as a result of international trade?

1.3. Research Questions

The research is expected to provide answers to the following questions:

What is the impact of degree of trade openness on economic growth in Nigeria? To what extent does trade balance impact on the economic growth process in Nigeria? And does exchange rate affect economic growth significantly?

1.4. Objectives of the Study

The broad objective is to analyze impact of international trade on economic growth in Nigeria. The specific objectives are:

To investigate the impact of Nigeria's trade openness on the country's economic growth, to examine the extent to which trade balance has impact on economic growth and to find out how exchange rate affect economic growth.

1.5. Statement of Hypotheses

H_{01}: The degree of trade openness has no significant impact on economic growth

H_{02}: Trade balance has no significant impact on economic growth

H_{03}: Exchange rate has no significant effect on economic growth

2. Literature Review and Theoretical Framework

2.1. Conceptual Review

2.1.1. International Trade

International trade is defined as the exchange of goods and services between citizens of one country and citizens of other countries. As a result, it is a mechanism that connects the world's nations through service flows, commodities trade, and factor movements (Alfred, 2018). International trade is also an alternate development strategy for improving human living situations without jeopardizing society's merit (Shivneil and Priteshni, 2017). According to this analysis, overseas trade provides a viable platform for growing domestic enterprises' market base and increasing

domestic capacity utilization, both of which are important for supporting economic growth.

2.1.2. Economic Growth

Economic growth can be described in two ways, according to Mongoe and Mungale (2015). To begin with, economic growth is defined as long-term, consistent annual gains in an economy's real national income. To put it another way, economic growth is defined as an increase in the trend of net national product at constant prices. Some economists have criticized this description as insufficient and unsatisfactory (Sanusi, 2015; Omoju and Adesanya, 2017). They suggest that while total national income may be rising, people's living standards may be declining.

Economic growth entails the extension of a country's productive base both domestically and internationally, in addition to an increase in domestic aggregates (Magaji, 2000). Efforts to increase aggregate productivity must consider the elements of international competitiveness as well as the possible benefits of successful external positioning.

2.1.3. Trade Openness

International trade openness is a channel through which FDI, capital inputs, goods and services flow to host countries or regions (Blanchard, 2009). These are sources of economic growth to developing countries. Trade can directly increase per capita income when countries specialize in producing goods in which they have a comparative advantage but it also can indirectly encourage development via other channels such as technology transfer, product diversity, increasing scale economies, efficient allocation and distribution of resources within the economy and interaction with trading partners. However, it should be mentioned that in cases where trading partners are asymmetric countries, with significantly different technologies and endowments, economic integration, even if it increases the worldwide growth rates, may unfavorably affect individual countries.

It is evident that the concept is important in terms of appreciating the level of exposure of the economy, in term of the volume of imports and exports, in relation to the magnitude of aggregate productivity in the economy. Import dependence or export dependence portends significant consequence for the economy if it constitutes a sizable proportion of aggregate productivity. The concept of trade openness is therefore important in a bid to interrogate the interaction between foreign trade and economic growth in an economy.

2.1.4. Balance of Trade

The balance of trade (BOT), also known as the trade balance, refers to the difference between the monetary value of a country's imports and exports over a certain time period (Edoumiekumo and Opukri, 2013). A positive trade balance indicates a trade surplus while a negative trade balance indicates a trade deficit. The BOT is an important component in determining a country's current account.

The balance of trade forms part of the current account, which includes other transactions such as income from the net international investment position as well as international aid. If the current account is in surplus, the country's net international asset position increases correspondingly. Equally, a deficit decreases the net international asset position (Egbulonu and Ezeocha, 2018). The concept of trade balance reflects the relative strength of an economy in terms of international trade position. It measures the deficit, surplus of balance attributable to the interaction between a country's exports and imports. The concept is therefore important in measuring the net effects of a country's foreign trade on the aggregate productivity of an economy.

2.1.5. Foreign Exchange

2.2. Empirical Review

The relationship between international trade and economic growth has been the subject of numerous empirical studies. Elias, Agu, and Eze (2018) focus on the influence of export trade on the Nigerian economy and the impact of import trade on the Nigerian economy. The main components of foreign trade were estimated using a multiple regression analysis technique. Using Central Bank of Nigeria (CBN) data, which covered the years 1980 to 2012, the study reveals that export commerce had a substantial impact on Nigeria's economic growth. The study recommends that the government make conscious efforts to fine-tune the major macroeconomic factors in order to establish an enabling environment for stimulating foreign trade and encouraging growth in the Nigerian economy, among other things.

Egbulonu aand Ezeocha (2018) investigate the relationship between trade openness and economic growth. The study used the ARDL technique and covered the years 1990 to 2015. Economic Growth, Trade Openness, Foreign Direct Investment, and Gross Capital Formation all have a long-run link, according to the ARDL findings. In the short run, Trade Openness and Gross Capital Formation

have positive and negative effects on GDP growth rates, respectively. In order to enhance economic growth in Nigeria, the study proposed that trade openness be regulated by the government and FDI be encouraged.

The impact of foreign trade on Nigerian economic growth was studied by Dumani, Nelson, and Siaisiai (2018). The study investiagtes how oil imports, non-oil imports, oil exports, and non-oil exports affected Nigeria's economic growth from 1981 to 2016. The data was first examined for unit roots using the Augmented Dickey Fuller test, which revealed integration at the first difference I level (1). The data was analyzed using a multiple regression model and the ordinary least square estimation technique. The finding reveals that oil imports had a positive but insignificant impact on Nigeria's real gross domestic product, non-oil imports and non-oil exports had a positive and significant impact on Nigeria's economic growth, and oil exports had an insignificant impact on the country's real gross domestic product. This backed up the link between foreign trade and economic growth. As a result, the study recommends that economic managers take steps to diversify the economy away from oil in order to boost the economy's development potential.

Hasnain (2018) investigates the impact of foreign trade on Bangladesh's economic growth. The study's goal was to find out the kind of relationship that exists between foreign trade and economic growth. The secondary data acquired for the purpose of the study was analyzed using Pearson Correlation and a Multiple Regression Model. The finding shows that international trade is closely connected with economic growth.

Agbo, Agu,and Eze (2018) investigates the influence of international trade on Nigerian economic growth with the only purpose of determining the impact of export trade and the impact of import trade on the Nigerian economy. Using multiple regression analysis, the study reveals that export trade has a substantial impact on economic growth. The study also shows that import trade had no substantial impact on economic growth. They recommend that the government should make conscious efforts to fine-tune various macroeconomic variables in order to provide an enabling environment for stimulating foreign trade by engaging in more export trade and, in effect, curtailing import trade, to cushion this negative effect on the economy.

Afolabi, Danladi and Azeez (2017) work on the primary determinants driving economic growth through international trade. To determine the stationarity properties of the variables, they use the Augmented Dickey-Fuller (ADF) test in conjunction with the Phillip-Perron (PP) test of Unit Root Tests and employ the Ordinary Least

Square (OLS) technique. GDP was utilized as a proxy for economic growth, with the exchange rate, government spending, interest rate, foreign direct investment, import, and export serving as independent variables. Finding shows that Government spending, interest rates, import and export are all positively significant, while the exchange rate and foreign direct investment are both adversely inconsequential in the Nigerian economy's growth process. They recommend that the Nigerian government should place a greater priority on agriculture specialization in order to diversify the country's production and export base and reap the full benefits of trade, including economic growth.

Using quarterly time-series data from 1981Q1 to 2010Q4, Arodoye and Iyoha (2014) investigate the relationship between foreign trade and economic growth in Nigeria. A vector autoregressive model is used to account for feedbacks completely. The findings suggest that foreign trade and economic growth have a long-term consistent link. The results of the variance decomposition demonstrate that the main causes of variation in Nigeria's economic growth are internal shocks and foreign trade innovations. As a result, they recommends that trade expansion policies be implemented as a means of increasing Nigeria's economic growth.

Employing a multiple linear regression model, Adenugba and Dipo (2013) analyze the performance of non-oil exports in Nigeria's economic growth from 1981 to 2010. The findings shows that non-oil exports have underperformed expectations, casting doubt on the usefulness of the export promotion initiatives in place. They note that the economy is still a long way from diversifying away from crude oil exports, and that the crude oil sub-sector remains the economy's single most significant industry.

Edoumiekumo and Opukri (2013) investigate the contributions of international trade to Nigerian economic growth as assessed by real gross domestic product (RGDP). They employ Augmented Dickey-Fuller (ADF) test, Ordinary Least Square (OLS) statistical technique, Johansen co-integration test, and Granger Causality test to examine time-series data collected during a 27-year period. The finding reveals that international commerce and economic growth have a beneficial link. There is also co-integration between the variables. The Granger Causality test reveals a one-way relationship, with RGDP Granger causing export and import Granger causing RGDP and export. This relationship may change with current data.

From 1980 to 2009, Chima (2013) looks at the impact of international commerce on Nigeria's economic growth. Using multivariate linear regression model Volume

of export, volume of import, net export, and trade openness were the variables of interest. He regress using secondary data and the Ordinary Least Squares (OLS) approach. The finding reveals that while net exports and import volume have a positive association with GDP, trade openness has a negative link with growth. However, causal relationship was not established.

Ezike et al (2012) investigate the macroeconomic impact of international trade on economic growth in Nigeria. Using the Ordinary Least Squares (OLS) regression technique and applying a combination of bivariate and multivariate models and the data covering the period 1970-2008 observed that the two predictors used in the study for trade, namely exports and foreign direct investment had a positive and significant impact on Nigeria's growth during the period.

Omoju and Adesanya (2012) use Nigeria as a case study to analyze international trade and economic growth in underdeveloped countries. They use secondary data from 1980 to 2010 and found that foreign trade, foreign direct investment, government expenditure, and the exchange rate all had a significant and positive impact on economic growth in developing countries when using the Ordinary Least Square (OLS) regression method on the specified multiple linear regression model. During the same period, Afaha and Oluwatobi (2012) investigate the impact of trade on Nigeria's economic growth Using Linear multiple regression technique in assessing various components of foreign trade. Secondary data were used for this study .The result shows that exports, exchange rate and per capital income are positively related while economic openness and imports are negatively related to output in Nigeria. They recommend that conscious efforts should be made by government to fine-tune the various macro-economic variables in order to provide an enabling environment to stimulate foreign trade.

Given the significance of international trade in the growth process, the lack of empirical consensus on the influence of international trade on economic growth and the causal relationship based on current data represents a vacuum that this study seeks to fill. To fill the gap in the literature, this study investigates the phenomena using current evidence, encompassing all important variables and updating the data used in estimating the regression model and employs Granger Causality test.

2.3. Theoretical Framework

The Heckscher-Ohlin theory has been adopted as a theoretical framework for this study. The theory is deemed appropriate as a theoretical framework owing to its

suitability in capturing contemporary trends in international trade. The theory relaxes some of the restrictive assumptions of the classical models (absolute advantage and comparative advantage) of international trade and captured the essential role of factor endowments in determining a country's comparative advantage and international trade position.

The Heckscher–Ohlin (HO) model of the patterns and determinants of international trade was developed by two Swedish economists, Eli Heckscher and Bertil Ohlin. Heckscher and Ohlin built their theory around two basic characteristics of countries and products. Countries differ from each other according to the factors of production they possess. Goods differ from each other according to the factors that are required in their production. Given these features of the world, Heckscher and Ohlin argued that a country will be able to produce at lower cost (and therefore have comparative advantage in) those products whose production requires relatively large amounts of the factors of production (also known as factor endowments; namely, labor, land, capital, natural resources) with which that country is relatively well endowed.

As economists studying the model, suggest that it is capable of providing important insights into such issues as the effect of international trade on wages and other factor prices, and the impact of economic growth on the pattern of international trade Chima (2013). It also provides an explanation for the political behaviour of various interest groups in an economy. The HO theory is of profound importance to this study as it provides a robust theoretical basis for linking international trade to economic growth in a country. The theory posits that that the factor endowments of a country can be leveraged as an instrument of economic growth through international trade.

3.   Methodology

3.1. Research Design

The research design for this study is Ex post facto design. The Ex post facto design involves examining how an independent variable, present prior to the study, affects a dependent variable. In ex post facto research, the researcher examines the data retrospectively to establish causes, relationships or associations, and their meanings. Ex post facto design can be used to test hypothesis about cause and effect or correlational relationships, where it is not practical or ethical to apply a true experimental or even a quasi-experimental design.

3.2. Model Specification

The model for this study is a multiple linear regression model adopted from the works of Elias, Agu, and Eze (2018), Dumani Nelson and Siaisiai (2018), as well as Arodoye and Iyoha (2014). In a bid to empirically investigate the impact of international trade on economic growth in Nigeria, the Variables included in the model are; Real Gross Domestic Product, Balance of trade, Degree of Openness, Exchange rates, as well as Foreign Direct Investments. The dependent variable is Gross Domestic Product, while other variables are explanatory variables.

The functional form of this model can be specified as follows:

$$RGDP_t = F(BT_t, TO_t, ER_t FDI_t) \qquad 3.1$$

The linear form of the model can be expressed as follows;

$$RGDP_t: \alpha_o + \beta_1 BT_t + \beta_2 TO_t - \beta_3 ER_t + \beta_4 FDI_t \qquad 3.2$$

In order to allow for the inexact relationship among the variables as in the case of most economic variables, stochastic error term 'μ_t' is added to the equation. Thus, we can express the econometric form of the model as:

$$RGDP_t: \alpha_o + \beta_1 BT_t + \beta_2 TO_t - \beta_3 ER_t + \beta_4 FDI_t + \mu_t \qquad 3.3$$

Where;

$RGDP_t$ = Real Gross Domestic Product;

BT = Balance of Trade

TO = the Degree of Openness measured as trade to GDP ratio (import + export)/ RGDP;

ER_t = Exchange Rates

FDI_t = Foreign Direct Investment

μ = the stochastic error term.

In order to properly estimate the parameters of the postulated model, we rescale the dependent variable by logging it, thus, transforming it into a log-linear model as follows:

$$LOG(RGDP_t): \alpha_o + \beta_1 LOG(BT_t) + \beta_2 (LOG)TO_t - \beta_3 LOG(ER_t) + \beta_4 LOG(FDI_t) + \mu_t$$
$$(3.4)$$

3.2.1. A' priori Expectations

By theoretical postulation, the coefficients of Balance of trade (BT), Degree of Openness (DO), and Foreign direct Investment (FDI) are expected to be positive while the coefficient of Exchange rates (EXR) is expected to be negative.

$$\alpha_o, \beta_1, \beta_2, \beta_4 > 0 \text{ and } \beta_3 < 0$$

3.3. Nature and Sources of Data

The research relied mainly on secondary data published by the Central Bank of Nigeria (CBN). These annual time series data for analysis relate to international trade and economic growth in Nigeria. The annual time series data with respect to RGDP, BT, TO, TBAL, ER and FDI were obtained from the statistical bulletin of the Central Bank of Nigeria (CBN). The period covered for this study is from 1986 to 2018 (CBN, 2021).

4. Data Analysis

4.3. Unit Root Tests

Table 4.2: Summary of Unit Root Test Results

Variables	*ADF Statistic*	*5% Critical Values*	*Order of Integration*	*P-Values*
RGDP	-2.119271	-1.955681	I(1)	0.0352
TBAL	-3.208255	-1.953381	I(1)	0.0024
TO	-4.605217	-1.953381	I(1)	0.0000
ER	-5.906005	-3.595026	I(1)	0.0003
FDI	-6.606964	-1.953381	I(1)	0.0000

Source: Authors' Computation from Eviews 9 Outputs (2020)

To address the phenomenon of spurious regression usually associated with non-stationary time series data, the Augmented Dickey Fuller (ADF) unit root test was carried out to ascertain the stationarity status of each individual time series data.

Based on the outcome of ADF Unit Root test results shown in Table 4.2, after first differencing, the corresponding p-value to ADF statistic (0.0352) is less than 0.05 indicating a rejection of the null hypothesis that the time series data with reference to RGDP has a unit root at 5% level of significance. This implies that RGDP is not stationary at level but became stationary after first differencing.

With reference to the time series data on TBAL, after first differencing, the corresponding p-value to ADF statistic (0.0352) is less than 0.05 indicating a rejection of the null hypothesis that the time series data with reference to TBAL has a unit root at 5% level of significance. This implies that the time series data on trade balance is not stationary at level but became stationary after first differencing.

Also, based on the outcome of ADF Unit Root test results shown in Table 4.2, after first differencing, the null hypothesis of unit root is rejected based on the p-value (0.0000) corresponding to the ADF statistic in respect of foreign direct investments which is less than 0.05. This implies that the time series data corresponding to foreign direct investments is also not stationary at level but became stationary after first differencing.

From the unit root test results with reference to the time series data on TO, after first differencing, the corresponding p-value to ADF statistic (0.0000) is less than 0.05 indicating a rejection, at 5% level of significance, of the null hypothesis that the time series data with reference to TO has a unit root. This implies that the time series data on trade openness is stationary after first differencing.

With reference to the time series data on ER, the corresponding p-value to ADF statistic (0.0000) is less than 0.05 indicating a rejection, at 5% level of significance, of the null hypothesis that the time series data with reference to ER has a unit root. This implies that the time series data on ER is stationary after first differencing.

The outcome of the unit root test implies that the time series data with reference to RGDP, TBAL and FDI, TO and ER were not stationary at level but became stationary after first differencing implying that the time series were integrated of order one I(1). This unit root test outcome is consistent with the theoretical assertion that most economic time series are not stationary at level, but become stationary after first differencing.

4.4. Test of Cointegration

Table 4.3a: Johansen Test of Cointegration

Unrestricted Cointegration Rank Test (Trace)

Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.702142	96.84816	69.81889	0.0001
At most 1 *	0.649698	62.93625	47.85613	0.0011
At most 2 *	0.463585	33.56541	29.79707	0.0176
At most 3 *	0.363192	16.12571	15.49471	0.0401
At most 4	0.117178	3.489683	3.841466	0.0617
Trace test indicates 4 cointegrating eqn(s) at the 0.05 level				

Source: Authors' Computation from Eviews 9 Outputs (2020).

From the result in Table 4.3a, the Trace test indicates four cointegrating equation at the 0.05 level of significance while the Max-eigen statistic indicates two cointegrating equations. The value of the calculated Trace statistic is more than the critical values with their P-values less than 0.05 (0.0401). This means that there is Cointegration which implies the existence of a long-run relationship among the variables.

4.5. Granger Causality Test Results

Table 4.4: Summary of Granger Causality Test

Null Hypothesis	Observations	F-Statistic	Prob.	Remarks
ER does not Granger Cause RGDP	28	3.08572	0.0650	Accept Null Hypothesis
RGDP does not Granger Cause ER		2.66471	0.0910	Accept Null Hypothesis
FDI does not Granger Cause RGDP	28	4.52674	0.0220	Unidirectional Causality
RGDP does not Granger Cause FDI		1.42646	0.2606	Accept Null Hypothesis
TBAL does not Granger Cause RGDP	28	6.46827	0.0059	Reject Null Hypothesis
RGDP does not Granger Cause TBAL		4.18061	0.0283	Reject Null Hypothesis
TO does not Granger Cause RGDP	28	6.19500	0.0070	Reject Null Hypothesis
RGDP does not Granger Cause TO		4.87218	0.0172	Reject Null Hypothesis
FDI does not Granger Cause ER	28	0.35929	0.7020	Accept Null Hypothesis
ER does not Granger Cause FDI		2.57988	0.0975	Accept Null Hypothesis
TBAL does not Granger Cause ER	28	8.71806	0.0015	Reject Null Hypothesis
ER does not Granger Cause TBAL		7.52268	0.0031	Reject Null Hypothesis
TO does not Granger Cause ER	28	0.13215	0.8769	Accept Null Hypothesis
ER does not Granger Cause TO		0.66216	0.5253	Accept Null Hypothesis
TBAL does not Granger Cause FDI	28	0.89765	0.4213	Accept Null Hypothesis
FDI does not Granger Cause TBAL		9.17985	0.0012	Reject Null Hypothesis
TO does not Granger Cause FDI	28	3.73482	0.0394	Reject Null Hypothesis
FDI does not Granger Cause TO		2.63960	0.0929	Accept Null Hypothesis
TO does not Granger Cause TBAL	28	5.45154	0.0115	Reject Null Hypothesis
TBAL does not Granger Cause TO		0.63712	0.5379	Accept Null Hypothesis

Source: Authors' Computation from Eviews 9 Outputs (2020).

Table 4.4 comprises the results of the Pairwise Granger causality test. Based on the p-value associated with the F-statistic (0.0650), we do not reject the null hypothesis that exchange rates does not Granger cause real gross domestic product at 5% level

of significance. Also,the F-statistic and the associated p-vale indicate that we do not reject the null hypothesis that government real gross domestic product does not Granger cause exchange rates at 5% level of significance. The Granger Causality test therefore shows the absence of causality running from exchange rates to real gross domestic product.

Based on the p-value corresponding to the F-statistic (0.0220), we reject the null hypothesis that foreign direct investment does not Granger cause real gross domestic product at 5% level of significance. However, the F-statistic and the associated p-vale (0.2606) indicates that we do not reject the null hypothesis that real gross domestic product does not Granger cause foreign direct investment at 5% level of significance. The Granger Causality test shows unidirectional causality between foreign direct investment and real gross domestic product.

Based on the p-value corresponding to the F-statistic (0.0059), we reject the null hypothesis that trade balance does not Granger cause real gross domestic product at 5% level of significance. Also, the F-statistic and the associated p-vale (0.0283) indicated a rejection of the null hypothesis that real gross domestic product does not Granger cause trade balance at 5% level of significance. The Granger Causality test showed bidirectional causality between trade balance and real gross domestic product.

Based on the p-value corresponding to the F-statistic (0.0070), we reject the null hypothesis that the degree of trade openness does not Granger cause real gross domestic product at 5% level of significance. Also, the F-statistic and the associated p-vale (0.0172) indicate a rejection of the null hypothesis that real gross domestic product does not Granger cause the degree of trade openness at 5% level of significance. The Granger Causality test shows bidirectional causality between degree of trade openness and real gross domestic product.

Based on the p-values corresponding to the F-statistic, with reference to causality between exchange rates and the degree of trade openness, there is no causality between the degree of trade openness and foreign exchange rates.

Based on the p-value corresponding to the F-statistic (0.0015), we reject the null hypothesis that trade balance does not Granger cause foreign exchange rate at 5% level of significance. Also, the F-statistic and the associated p-vale (0.0031) indicated a rejection of the null hypothesis that exchange rate does not Granger cause trade balance at 5% level of significance. The Granger Causality test showed bidirectional causality between trade balance and foreign exchange rates.

Based on the p-values corresponding to the F-statistic, with reference to causality between exchange rates and foreign direct investment, there is no Granger Causality between foreign direct investment and foreign exchange rates.

Based on the p-value corresponding to the F-statistic (0.0115), we reject the null hypothesis that the degree of trade openness does not Granger cause trade balance at 5% level of significance. However, the F-statistic and the associated p-vale (0.5379) indicate an acceptance of the null hypothesis that degree of trade openness does not Granger cause trade balance at 5% level of significance. The Granger Causality test shows unidirectional causality between TBAL and TO.

Based on the p-value corresponding to the F-statistic (0.0929), we do not reject the null hypothesis that FDI does not Granger cause the TO at 5% level of significance. However, the F-statistic and the associated p-vale (0.0394) indicated a rejection of the null hypothesis that TO does not Granger cause FDI at 5% level of significance. The Granger Causality test showed unidirectional causality between FDI and TO. Based on the p-value corresponding to the F-statistic (0.0012), we reject the null hypothesis that FDI does not Granger cause trade balance at 5% level of significance. However, the F-statistic and the associated p-vale (0.4213) indicated an acceptance of the null hypothesis that trade balance does not Granger cause FDI at 5% level of significance. The Granger Causality test shows unidirectional causality between FDI and trade balance in Nigeria during the period under review.

4.6. Regression Results and Interpretation

Table 4.5: Summary of Regression Result

Dependent Variable: LOG(RGDP)

Variables	Coefficient	Std. Error	T-Statistic	Prob.
C	3.727432	2.118498	1.759469	0.0898
LOG(TO)	-0.066209	0.083066	-0.797059	0.4324
TBAL	5.06E-06	2.89E-05	0.175277	0.8622
LOG(ER)	0.249917	0.093075	2.685103	0.0122
LOG(FDI)	0.254571	0.095553	2.664203	0.0129
R-squared	0.827600			
Adjusted R-squared	0.802059			
F-statistic	32.40312			
Prob(F-statistic)	0.000000			
Durbin-Watson stat	1.610834			

Source: Authors' Computation from Eviews 9 Outputs (2020).

From the estimated regression results presented in Table 4.5, the Adjusted coefficient of determination (adjusted R^2) from the estimated regression model showed that about 80% (0.802059) of the total changes in RGDP is explained by ER, FDI, TBAL and TO. This is an indication that a substantial proportion of the variations in real gross domestic product is explained by the variables explicitly captured in the regression model, implying that the regression model had a very good fit.

From the estimated regression result in Table 4.5, the Coefficients of TBAL, ER and FDI were all positive while the coefficient of the TO was negative. The evaluation of the signs associated with the estimated regression coefficient indicates that the coefficients of ER, FDI and TBAL conform to a-priori expectation while the coefficient of TO did not conform to a- priori expectation. The non-conformity to a-priori expectation of the degree of trade openness can be attributed to the unfavourable terms of trade associated with the Nigerian economy. Hence, evaluation based on economic a-priori criteria reveals that the estimated regression model is consistent with theoretical stipulations.

The regression result in table 4.5 shows that on the average, a unit change in TBAL will result in an average change in RGDP by 0.00000506 units, holding ER and FDI and TO constant. The estimated coefficient of ER revealed that, a percentage change in foreign exchange rate will on the average result in a percentage change in RGDP by 0.249917units, holding FDI, TBAL and TO constant. The estimated coefficient of FDI shows that on the average, a relative change in FDI will result in a relative change in RGDP by 0.254571units, holding ER, TBAL and DO constant. Also, the estimated coefficient of degree of trade openness (TO) shows that on the average, a relative change in TO will result in a relative change in RGDP by -0.066209 units, holding ER, TBAL and FDI constant. The test of significance carried out based on the student's t-test for each of the parameter estimate in the model, the estimated coefficient of TBAL is not statistically significant at 5% level of significance. The corresponding p-value of 0.8622 is greater than the 0.05 critical value, hence we accept the null hypothesis that the coefficient of TBAL is not statistically significant at 5% level of significance. This implies that TBAL does not have significant impact on RGDP in Nigeria during the period under review.

The student's t-test on the coefficient of ER indicates that it is statistically significant at 5% level of significance. The p-value corresponding to the coefficient of ER is 0.0122 which is greater less than 0.05 critical values. Hence, reject the null

hypothesis that the coefficient of ER is not statistically significant at 5% level of significance and accept the alternative hypothesis that the coefficient of foreign exchange rates is statistically significant at 5% level of significance. This implies that ER have significant impact on RGDP in Nigeria during the period under review.

The student's t-test on the estimated coefficient of TO reveals that the coefficient is not statistically significant at 5% level of significance with a p-value of 0.4324. This implies that TO do not have a significant impact on RGDP in Nigeria during the period under review.
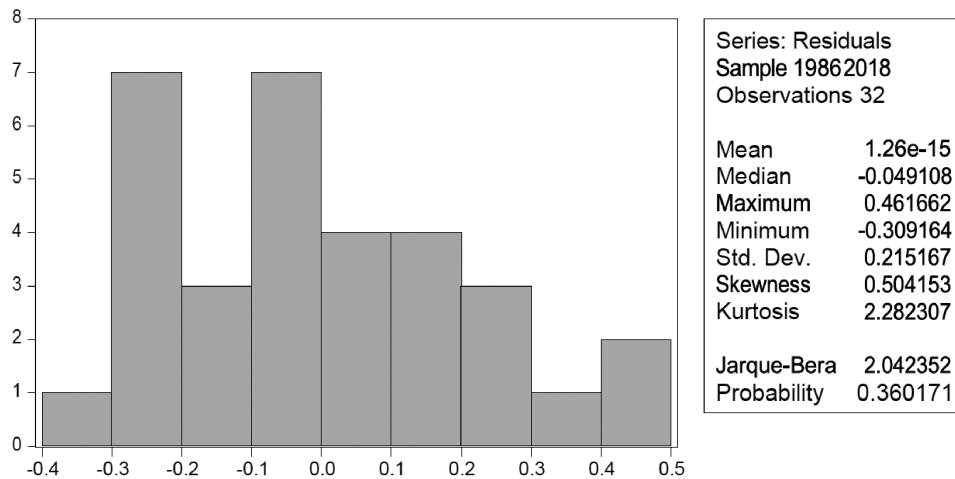
However, the student's t-test on the coefficient of FDI is statistically significant at 5% level of significance. The p-value corresponding to the coefficient of FDI is 0.0129 which is lower than 0.05 critical values. Hence, we reject the null hypothesis that the coefficient of FDI is not statistically significant in favour of the alternative hypothesis that the coefficient of FDI is statistically significant at 5% level of significance. This implies that FDI does have significant impact on RGDP in Nigeria during the period under review.

The Durbin Watson statistic corresponding to the estimated regression equation (D-W = 1.610834) tends towards two (2) which represents the threshold for rejecting the null hypothesis of first order serial correlation. The outcome of the Durbin Watson test therefore shows that the regression model is devoid of first order serial correlation.

The F-Statistic (ANOVA) is used to test the equality of parameter estimates with a view to establishing the overall significance of the regression. The F-statistic corresponding to all the estimated regression parameters is 32.40312 and it statistically significant at the 5% significance level with a p-value of 0.000000. This implies that the equation or model employed is statistically significant which means that the relationship between RGDP and the indicators of foreign trade under consideration is statistically significant at 5% level of significance. This evaluation outcome revealed that although some of the explanatory variables explicitly captured in the regression model are individually not statistically significant, jointly, they are statistically significant

Jarque Bera Test of Normality

The ordinary least square estimation technique is also hinged on the underlying assumption that the error term is normally distributed. The estimated regression model is therefore evaluated using Jarque Bera test of normality to determine if the error term is normally distributed. The normality assumption is of tremendous

| Series: Residuals |
| Sample 1986 2018 |
| Observations 32 |
| |
| Mean   1.26e-15 |
| Median   -0.049108 |
| Maximum   0.461662 |
| Minimum   -0.309164 |
| Std. Dev.   0.215167 |
| Skewness   0.504153 |
| Kurtosis   2.282307 |
| |
| Jarque-Bera 2.042352 |
| Probability 0.360171 |

Table 4.6: Jarque Bera Test of Normality

Source: Authors' Computation from Eviews 9 Outputs (2020)

implications as all the test statistics (t-statistic and F-statistic) are hinged on the assumption that the error term is normally distributed.

Table 4.6 comprises the Jarque Bera statistic corresponding to the estimated regression model. The estimated Jarque Bera statistic is 2.042352 and the p-value value of 0.360171 implies that we do not reject the null hypothesis of normal distribution at 5% level of significance. This implies that the estimated residual is normally distributed at 5% level of significance. This outcome lends reliability to the estimated t-statistic and F-statistic in the test of significance.

4.8. Test of Research Hypotheses

The hypotheses of the study were tested using empirical evidence from the study. The results of the hypotheses testing are reported below:

H_{01}: The degree of trade openness has no significant impact on economic growth in Nigeria.

In testing the first hypothesis of the study regarding trade openness and economic growth in Nigeria, the estimated regression result and the test of significance for each individual parameter in the specified model reveal that the coefficient of TO in the estimated regression model is not statistically significant at 5% level of significance. However, the outcome of the Granger causality test showed bidirectional causality running from degree of trade openness to real gross domestic product and from

real gross domestic product to the degree of trade openness. Also the adjusted R^2 shows that about 80% of the total variation in real gross domestic product is explained by all the explanatory variables explicitly captured in the specified regression model. Hence, we reject the null hypothesis that trade openness has no significant impact on economic growth in Nigeria and accept the alternative hypothesis that trade openness has a significant impact on economic growth in Nigeria during the period under review. The outcome of the test of hypothesis provides an empirical basis for understanding the relationship between the TO and the level of aggregate productivity in the Nigerian economy.

H_{02}:   Trade balance has no significant impact on economic growth in Nigeria.

In testing the second hypothesis of the study regarding the impact of international trade balance on economic growth in Nigeria, the estimated regression result and the test of significance for each individual parameter in the specified model reveal that the coefficient of TBAL is not statistically significant at 5% level of significance. Hence, we do not reject the null hypothesis that trade balance has no significant impact on economic growth in Nigeria.

4.9. Discussion of Findings

In this section, we discuss the major findings from the analysis of data relating to the relationship between The Impact of International Trade on Economic Growth in Nigeria. Related variables and indicators of foreign trade considered in the specified regression models included the degree of TO, ER, TBAL, as well as FDI. The empirical findings from the regression model reveal the fundamental role of international trade in stimulating productivity in the Nigerian economy. Specifically, FDI and ER were found to have significant positive impact on RGDP in Nigeria during the period under review. This finding is consistent with the findings of Egbulonu and Ezeocha (2018), as well as Rashid and Lin (2018) who also found significant relationship between foreign direct investments, foreign exchange rates and economic growth during the periods under consideration. TBAL and TO on the other hand were found to have no significant impact RGDP in Nigeria during the same period. The significant impact of FDI is an indication that the inflow of foreign capital into the real sector of the economy constitutes a major driver of productivity in the Nigerian economy.

The insignificant impact of the TO on RGDP in Nigeria is attributable to the unfavorable terms of trade that characterize Nigeria's international trade activities.

Nigeria's exports are predominantly commodity exports with high internal price volatility and uncertainties, whereas her imports are made up of manufactured durable consumer goods and industrial machinery.

Thus, the findings of the study are instructive for domestic macroeconomic and foreign trade policies, with specific reference to the level of aggregate productivity in the Nigerian economy in relation to foreign exchange management policies, trade policies and the broad stabilization policies of government. Considering the fact that Nigeria is an import dependent economy in terms of the supply of durable and non-durable consumer goods as well as raw materials for industrial sector production, there are important implications of exchange rate management for settlements of international trade obligations as well as domestic productivity in the country. The structure and direction foreign investments inflow into the economy is also critical determinant of productivity in the economy. It is therefore imperative for government to realign her trade policy and stabilization policy mechanisms in consonance with the contemporary realities of globalization. The country's huge import dependence, even for consumer goods and services that can be produced in the country, is therefore not sustainable for the attainment of optimal aggregate productivity and the creation of competitive advantages within the context of globalization. The findings of the study therefore support the need for sustained investment in infrastructure necessary for creating the enabling environment for domestic and foreign investments into the strategic sectors of the Nigerian economy.

5.   Conclusion

The findings of this study reveal that the degree of TO has a significant impact on economic growth in Nigeria indicating that TO is a major driver of economic growth in Nigeria during the periods under consideration. Based on the findings of this study, ER has significant impact on economic growth in Nigeria, indicating that ER is also a major driver of economic growth in Nigeria. Also, the findings of this study showed that FDI has a significant impact on economic growth in Nigeria during the period under consideration. This indicates that TO is a significant driver of growth in Nigeria. However, the results of this study shows that TBAL has no significant impact on economic growth in Nigeria during the period under review, indicating that Nigeria's terms of trade is not favourable as a driver of economic growth in Nigeria. The findings of the study were robust enough for the achievement of the stated broad as well as specific objectives of the study. Considering the findings

of the study, the inherent patterns and trajectory of international trade as well as the dynamics of global economic environment have to be integrated into domestic policy making in order to guarantee the survival of the country's economy, considering the fierce competition that characterize the contemporary global economic environment. It should therefore be noted that the outcome of this study is instructive for both policy and planning as far as Nigeria's economic growth is concerned. Hence, there is a pertinent need for the finding of this study to be implemented with a view to increasing productivity and stimulating optimal performance of the Nigerian economy.

5.1. Recommendations

Based on the findings of the study from the empirical investigation, the following policy recommendations are designed.

i)   There is need for effective foreign exchange management capable of ensuring optimal productivity in the critical sectors of the economy. This can be achieved by diversification of the economy away from oil with a view to expanding export of non-oil goods and services to strengthen naira exchange rate under the managed float regime. In addition, there should be heavy investment in infrastructural development to encourage industries and manufacturing companies to go into massive production of exportable goods and services with a view to boosting the country's foreign exchange earnings from non-oil sector. In this way, the degree of trade openness will optimally enhance the growth potentials of the Nigerian economy.

ii) Adequate measures should be put in place by government to enhance the local sourcing of raw materials and manufacturing input through effective regulatory mechanisms and fiscal incentives. A technological policy aimed at developing a local engineering industry is also advocated. This is with a view to ensuring that the link between agriculture and the manufacturing sector will be established, leading to expansion of export base which would attract more foreign exchange into the country. This could culminate into high external reserves favourable terms of trade.

iii) Domestic production activities should be encouraged by government by giving incentives and subsidies to local producers as well as improving the technological and infrastructure development with a view to reducing the outflow of foreign exchange and stabilizing the foreign exchange rate.

iv) The government should provide adequate regulatory framework and enhance the capacity of regulatory agencies to check the quality of products from domestic industries in ensuring they meet international standards in order to encourage international competitiveness.

References

Adenugba, A. A. and Dipo, S. O. (2013). Non-Oil Exports in the Economic Growth of Nigeria: A Study of Agricultural and Mineral Resources. *Journal of Educational and Social Research,* 3 (2), 403-418

Afaha, J.S. and Oluwatobi A.O. (2012). Foreign trade and economic growth: evidence from Nigeria. *Arabian Journal of Business and Management Review (OMAN Chapter,)* 2(1), 35-37

Afolabi, B., Danladi, J. D., and Azeez, M.I. (2016). International trade and economic growth in Nigeria. *Global journal of human-social science: E-economics*, *17(5),* 2249-460x.

Agbo, E. I., Agu, R. E., and Eze, L.O. (2018). Impact of international trade on the economic growth of Nigeria. *European journal of business and management 10 (18),* 2222-2839.

Alfred, T.Y. (2018) International Trade and Economic Growth in Ghana; Benefts, Constraints and Impacts. *Scholar Journal of Applied Sciences and Research*, 1(2).

Andabai, P.W., and Maryann, N. (2018). International Trade and Performance of the Nigerian Economy (1990-2017): A Causality Investigation. *Research Journal of Finance and Accounting,* 9(4).

Arodoye, N. L. and Iyoha, M. A. (2014). Foreign trade-economic growth nexus: Evidence from

Nigeria. *CBN Journal of Applied Statistics,5(1),* 1400-0410

Blanchard, O. (2009). *Macroeconomics.* Fifth Edition. Pearson Prentice Hall, Pearson Education, Inc., Upper Saddle River, New Jersey, USA

Central Bank of Nigeria CBN (2021) Annual Report and Statement of Account

Chima, M. (2013). The impact of international Trade on Nigeria s economic Growth: 1970-2009. *American economics review,* 56(7), 679-733

Dumani, M., Nelson, J. and Siaisiai, S.T. (2018). Foreign Trade and Its Impact on Economic Growth in Nigeria. *International Journal Of Economics, Commerce And Management*, 6(4).

Edoumiekumo, S.G. and Opukri, C.O. (2013). Economic Growth Factor in Nigeria: The Role of Global Trade. *American Journal of Humanities and Social Sciences*, 1(2), 51-55.

Egbulonu, K.G. and Ezeocha, J.A. (2018). Trade Openness and Nigeria's Economic Growth.

Elias, I.A., Agu, R.E., and Eze, L.O. (2018). Impact of International Trade on the Economic Growth of Nigeria. *European Journal of Business and Management*, 10 (18).

Ezike, J. E, Ikpesu, F, and Amah, P. (2012). Macroeconomic Impact of Trade on Nigerian Growth: An Empirical Evaluation. *Research Journal of Business Management and Accounting*, 1(4), 079 – 083.

Hasnain, A. (2018). Impact of International Trade on Economic Growth in Bangladesh.

International Journal of Development and Economic Sustainability, 6 (3), 1-11.

International Journal of Science and Research, 7(11).

Magaji, S (2000) Nigeria and Foreign Debt: The desire for Economic Development versus Imperialism. *Journal of Economics and Alied Field*. 1(1), 37-49

Magaji, S and Saleh, A.S (2010) The Role of Small Scale industries in the Economic Development of Nigeria. *Abuja Journal of Banking and Finance* 2(2), 11-22

Magaji, S., Muhammed I.R and Abubakar, I.D (2015) Analysing the Nexus between SMEs and Economic Growth in Nigeria. *Abuja Journal of Business and Management* 1(2), 55-67

Mongoe, S. and mongale, I. P. (2014). The Impact of International Trade on Economic Growth in South Africa: An Econometrics Analysis. *Mediterranean Journal of Social Sciences,* 5(14).

Muhammad, M. Y. and Benedict N. A. (2018). Trade Openness and Economic Growth: Evidence from Nigeria. *European Journal of Business, Economics and Accountancy*, 6(4).

Omoju, O. and Adesanya, O. (2012). Does Trade Promote Growth in Developing Countries?

Empirical Evidence from Nigeria. *International Journal of Development and Sustainability*, 1(3), 743-753

Sanusi L . S. (2010). Banks in Nigeria and National Economic Development; A Critical review, seminar on becoming an economic driver while applying banking regulation, CIBN, Lagos.

Shivneil, K.R. and Priteshni, P.C.(2017). Analysis of Fiji s Export and Its Impact on Economic Growth. *International Journal of Business and Social Research*, 7(3).

United Nations Conference on Trade and Development (UNCTAD) (2018). *World Economic Situation and Prospects*. New York: United Nations

Yakeen, A.M and Magaji, S. (2016) Does Exchange Rate Policy Matter for Economic Growth? Evidence from the Economic Community of West Africa. *Social Science and Law Conference. Nile University, Abuja*. Nov 12.