



FOREIGN TRADE AND ECONOMIC GROWTH IN NIGERIA: A COINTEGRATION APPROACH

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ABSTRACT

The relationship between foreign trade and economic growth is a subject of intense debate among economic researchers and policymakers. This study analyze this relationship in Nigeria using advanced statistical techniques which is the Auto Regressive Distributed Lag (ARDL) model bounds test. The study covers the period from 1981 to 2023 and includes pre and post-estimation diagnosis tests to ensure the accuracy of the model. The results indicate the presence of a long-run relationship among foreign trade and economic growth, as confirmed by ARDL bounds test. In the short run, there is a significant association between foreign trade and economic growth. The Granger causality test reveals a bidirectional causality between economic growth and foreign trade. Based on these findings, it is suggested that the Nigerian government needs to moderate its trade policy as the economy seems too weak to absorb the adverse shocks from external trade. Most importantly, the problem that arises from exchange rate should be tackled and put in place to offset the likely negative effects of exposing the economy to external influences.

KEYWORDS: Foreign trade, economic growth, Granger causality

INTRODUCTION

Developing countries attach great importance to foreign trade in the pursuit of their economic growth. By mobilizing savings, facilitating payments for foreign traded goods and services and promoting efficient allocation of resources, the financial sector is seen as playing a critical role in facilitating economic growth. In recent decades, economists have debated the relationship between foreign trade and economic growth. Nigeria is essentially an open economy, with international trade accounting for a sizable portion of total output. (Mike and Okojie 2012).

Foreign trade which is the act of buying and selling of goods and services across borders has been identified as the oldest and most important part of a country's external economic relationships. Because of the belief that foreign trade can raise income, create jobs, facilitate competition, expand markets, and disseminate knowledge, the Nigerian economy, like many other developing countries, view foreign trade as the main engine of its development strategies. (Ogbaji & Ebebe 2013).

Foreign trade has a very important and central part in the development of a modern global economy.

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Its impact on the development and growth of countries has increased considerably over the years and has significantly contributed to the advancement of the world economy (Ojeyinka & Adeboye, 2017). Foreign trade has been identified as an instrument and driver of economic growth (Frankel and Romer, 1999). Its impact on Nigeria's economy is not only limited to the quantitative gains, but also structural change in the economy and facilitation of international capital flow.

With regards to trade, between 1965 and 2000 Nigeria earned US\$350 billion, while Gross Domestic Product (GDP) per capita increased from \$1000 in 1980 to \$1376 in 2001 (Obadan, 2003). In 2010 Gross Domestic Product (GDP) per capita further increased to \$2280.43 and further increased to \$2273.22 (World bank; 2020). Consequently, what the country earned within that period did not have any significant effect on economic growth. This did not show or prove the objective of foreign trade which is to enhance free trade by the removal of all trade barriers and restrictions.

Although, based on models of competitive and efficient markets, economic theory tells us that foreign trade should foster economic growth and development; empirical works such as Cuadros, Orts and Alguacil (2001) Olomola (1998) have not found concrete evidence for the existence of such a link. While some countries have benefited from trade, others have not enjoyed higher economic growth. Some have experienced crises and recessions in the years following financial openness (Fratzscher and Bussiere, 2004). Furthermore, the global financial crisis of 2007 to 2008 was triggered by, among other things, insufficient financial market regulation (Bumann, et al, 2012).

The impact of foreign trade on economic growth in the context of the Nigeria has not been extensively studied. It is against this backdrop that this study is intended to find out if foreign trade can cause an increase in economic growth in Nigeria.

Research problem

One of the policies adopted in Nigeria to enhance growth through foreign trade is the International Monetary Fund (IMF) Structural Adjustment Program (SAP) in 1986. The main objective of the SAP was to restructure and diversify the productive base of the economy. In addition, the program was also designed to create and enhance a realistic and sustainable exchange rate

system, tariff reform, liberalization, commercialization and privatization of public enterprises. Moreover, to further actualize trade openness, Nigeria Government specifically removed import and export licensing, seventy-four (74) items on import prohibition list were reduced to 16 and also took off eleven (11) items listed on export prohibition (Meroyi, 2016). Specifically, between the SAP period of 1986 and 1987, there was a significant reduction of trade tariffs from an average of 33 per cent to 23 per cent and tariff dispersion were drastically reduced (NBS, 2022). Relatedly, policy makers in Nigeria have implemented series of trade policies to achieve set objectives. For example the export promotion strategy in 1981, exchange rate liberalization and trade liberalization in 1986, creation of Nigerian Export-Import in 1991 and several trade bilateral and multilateral agreements with different countries. The main objectives of these trade policies were to achieve macroeconomic stability and to improve foreign trade relationship with the global community through hitch-free inflow and outflow of both liquidity and non-liquidity transactions across the borders. These activities are expected to increase international competitiveness which in the long run could bring about an improvement in national economic growth.

However, despite the efforts of the government especially the trade openness in 1986, the Nigerian economy still presents a typical picture of a less developed country characterized by so many economic instability and crisis (Alwell, Mansi and Vincent, 2017). It has also not significantly tapped from those expected gains from foreign trade policies which could have been traced to the mono-economic nature of the economy where the government mostly relied on oil revenue. The country has not been able to follow other oil-producing countries like Russia, Saudi Arabia and United Arab Emirate who have been able to diversify their export base. The continual dominance of the oil sector in export merchandise which account for over 70 per cent of its total earning has been a major drawback to the country's inability to fully actualize the benefit of the trade policies. For instance, an appraisal of foreign trade between 1980 and 2022 shows that trade in Nigeria by gross domestic product (GDP) has been experiencing a continual decline. In 1981 foreign trade as a per centage of GDP stood at 13.78 per cent.

It decreased to 10.04 per cent in 1982 and further declined to 9.38 and 9.14 per cent in 1983 and 1985 respectively. It increased to a significant 19.50 per cent in 1986. Between 1991 and 2000 it recorded an average of 42.87 per cent, an average of 40.97 per cent between 2001 and 2010. By 2012, it decreased to 31.05 per cent and further declined to an average of 29.70 per cent between 2013 and 2022 (World bank 2022). In line with the above, this study proffers solution to the question what is the impact of foreign trade on economic growth in Nigeria?

Conceptual, Theoretical and empirical literature

The examination of the relationship between foreign trade and economic growth has received much attention in the debates in the theoretical and empirical literature. The reason is obvious in the sense that economies would want to establish the direction of causality so that they can focus their priorities on the part that causes the other. This is a crucial aspect, particularly to policy makers, who would need to decide if they should encourage trade to speed up their economic growth or the other way round. They should primarily focus on economic growth that in turn will promote the degree at which they trade internationally (Kónya, 2006; Harrison, 1996).

Conceptual literature

i. Foreign trade

Foreign trade has been identified as an instrument and driver of economic growth (Frankel and Romer, 1999). Trade is believed to promote the growth of the economy by capturing the fixed and active benefits through a more efficient allocation of resources, healthy competition among nations, increase in the flow and a faster pace of technological progress and capital accumulation (Ejike, Anah, & Onwuchekwa, 2015). In measuring foreign trade, this study make use of balance of payment

ii Economic growth

Economic growth could be said to comprise three components; capital accumulation, growth in population and eventual growth in the labor force and technological progress. Capital accumulation results when some proposition of personal income is saved and invested in order to augment future output and income. Capital accumulation involves a trade-off between present and Future consumption, giving up a little now so that more

can be had later. Population growth, and the associated increase in the labor force, has traditionally been considered a positive factor in stimulating economic growth. A larger labor force means more productive workers, and a large overall population increases the potential size of domestic markets. Technological progress results from new and improved ways of accomplishing traditional tasks. Technological progress could be neutral, labor-saving, and capital-saving According to Ivic (2015) and (Abang & Omang; 2023).), economic growth includes changes in material production and during a relative short period of time, usually one year. In economic theory, the concept of economic growth implies an annual increase of material production expressed in value, the rate of growth of GDP or National Income (NI). In this study, economic growth is considered to increase in the volume of production in a country, or an increase in gross domestic product as the main quantitative indicators of production for a period of one year. Real gross domestic product (RGDP) shall be used as a measure of economic growth.

Theoretical framework

i. Neoclassical growth model

The Neoclassical growth theory is an economic model of growth that outlines how a steady economic growth rate results when three economic forces come into play: labor, capital, and technology. The main representatives of this school are Alfred Marshall (1842-1924), Carl Menger (1840- 1921), Friedrich von Wieser (1851-1926), Leon Walras (1834-1910), John Bates Clark (1847 –1938), William Stanley Jevons (1835-1882), Irving Fisher (1867-1947). The simplest and most popular version of the Neoclassical growth model is the Solow-Swan growth model. Solow's theory was outlined for the first time in an article entitled; A Contribution to the Theory of Economic Growth (1956), and then developed in the Technical Change and Aggregate Production Function (1957). The theory postulates that short-term economic equilibrium is a result of varying amounts of labor and capital that play a vital role in the production process. Solow proceeds from the assumption that a necessary condition for equilibrium of the economic system is the equality of aggregate demand and aggregate supply. In his theory, aggregate supply is determined on the basis of the production function of Cobb-Douglas, which expresses the functional dependence between

production volumes on the one hand, and the factors used and their combinations, on the other. The theory argues that technological change significantly influences the overall functioning of an economy. Neoclassical growth theory outlines the three factors necessary for a growing economy - investments, workforce and technological progress. However, the theory puts emphasis on its claim that temporary, or short-term equilibrium, is different from long-term equilibrium and does not require any of the three factors.

The general production function in the neoclassical growth model takes the following form:

$$Y = AF(K, L) \quad (2.1)$$

Where:

Y = Income, or the economy's Gross Domestic product (GDP)

K = Capital

L = Amount of unskilled labor in the economy

A = Determinant level of technology

Also, because of the dynamic relationship between labor and technology, an economy's production function is often re-stated as $Y = F(K, AL)$. This states that technology is labor augmenting and that workers' productivity depends on the level of technology.

The theory is based on the following assumptions:

➤ Capital subject to diminishing returns: An important assumption of the neoclassical growth model is that capital (K) is subject to diminishing returns provided the economy is a closed economy.

➤ Impact on total output: Provided that labor is fixed or constant, the impact on the total output of the last unit of the capital accumulated will always be less than the one before.

➤ Steady state of the economy: In the short term, the rate of growth slows down as diminishing returns take effect, and the economy converts into a steady-state economy, where the economy is steady, or in other words, in a relatively constant state. The key conclusions of the Neoclassical Model of Growth are

➤ Output as a function of growth: The neoclassical growth model explicates that total output is a function of economic growth in factor inputs, capital, labor, and technological progress.

➤ Growth rate of output in a steady-state equilibrium: The growth rate of total output in a steady-state equilibrium is equal to the growth rate

of the population or labor force and is never influenced by the rate of savings.

➤ Increased steady-state per capita income level: While the rate of savings does not influence the steady-state economy growth rate of total output, it does result in an increase in the steady-state level of per capita income and, therefore, total income as well, as it raises the total capital per head.

➤ Long-term growth rate: The long-term growth rate of an economy is solely determined by technological progress or regress.

ii. The Classical Theory of Comparative Advantage

The classical theory of comparative advantage was first developed by Robert Torrens, David Ricardo and John Stuart Mill in 1817. The central plan of Ricardo's comparative advantage theory emphasis is on trade interdependence between countries in order to enhance the efficiency of labour and utilization of resources which will propel growth and development. According to this theory, there is no country that is self-sufficient enough to provide all the needed resources to stimulate economic advancement. Therefore, it is imperative for the countries to focus on those commodities which they have a strong technical capacity to produce or on those commodities they can produce at a relatively cheaper cost. Similarly, imports goods that attract a high cost of production in which they have less ability to produce. It is believed that going this way will provide countries with the possibility to earn higher income and growth. (Alwell, Mansi & Vincent, 2017).

The assumptions of this theory are (i) Technology, surplus and distribution are exogenous in that economic growth is feud by technological progress independent of economic forces. (ii) distribution and production of a technologically fixed surplus are separated; (iii) prices are not a measure of social worth, but reflect distributional conflicts. This implies that prices of two commodities are determined by labour cost, i.e. the number of labour-units employed to produce each (iv) subsistence wages; (v) technology differs across countries, thus technological knowledge is unchanged; (vi) the state operates above class interests; (vii) immobility of capital and labour between two countries; (viii) commodities are produced under the law of constant costs or returns; (ix) there is free trade between the two countries, there being

no trade barriers or restrictions in the movement of commodities.

The theory has been criticized on the basis of the fact that: (i) self-interest hinders its operation. Here the doctrine does not operate if a country having comparative disadvantage does not wish to import a commodity from the other country due to strategic, military or development considerations country level analysis of trade; (ii) focus is on distribution, rather than production, of a technologically fixed surplus. The theory neglects the role of technological innovations in trade. This is unrealistic because technological changes help in increasing the supply of goods not only for the domestic market but also for international market; (iii) the theory is incomplete. It simply explains how two countries gain from international trade. But it fails to show how the gains from trade are distributed between the two countries. (iv) the assumption of free trade is unrealistic. This is because in reality trade is actually Every country applies restrictions on the free movement of goods to and from other countries; (v) wages, profits and technology are exogenous.

Empirical literature

The study by Elias, Agu and Eze (2018) evaluated the impact of international trade on the Nigeria economic growth. The objectives of this study were to ascertain the impact of export trade on the Nigerian economy and to determine the impact of import trade on the Nigerian economy. The study covered a period from 1980 – 2012. The study emphasized that underground economic activities of bunkering, smuggling, child and drug trafficking, and other related illegal activities should be properly checked, it was also recommended that the government should encourage export diversification, e.g. non-oil sector exports should be encouraged and concentration on oil sector export should be minimized.

The study by Osabuohien (2007), examined the impact of foreign trade on economic performance of ECOWAS members focusing on Ghana and Nigeria (1975-2004). The study employed Augmented Dickey Fuller (ADF)/ Phillips Perron (PP) test of stationarity, cointegration and vector error correction techniques. The study recommended that efforts should be made to align their import and export components through proper policies that will reduce importation of consumer goods, and on the other hand their

technologies should be enhanced in order to increase the value of their exports.

Ekpo (1995) also examined the impact of foreign trade and performance of the Nigerian economy for the period 1970 to 1992 using broad measures of and the ARDL technique. Using the aggregate production model, the analysis showed that capital stock and labour contributed positively to output growth during the period. However, an increase in trade share measured by the black-market premium rate and trade/GDP respectively, reduced output.

The paper by Karras (2003) investigated the issue that international trade accelerates productivity and promotes economic growth, using two panel data sets: one of 56 countries covering the period 1951-1998, and another of 105 countries over 1960-1997. The results show that the effect of trade on economic growth is positive and statistically significant, and economically sizable. The study by Blavasciunaite, Garsviene and Matuzeviciute (2020) investigated the impact of foreign trade balance on economic growth as well as to evaluate it during the periods of trade deficit. The estimations are based on the European Union (EU) 28 countries panel data over the period of 1998–2018, using the OLS method of multivariate regression analysis with fixed effects and focusing on two strategies: (i) including all trade balance periods, and (ii) adding deficit dummy variable. Evaluating all trade balance periods, the results indicate the negative and lagging impact of the trade balance on economic growth, and no significant differences of the impact were identified during the deficit periods.

Olufemi (2004) specifically investigated the causality between foreign trade variable and economic growth, using data from the Nigerian economy between 1993 and 2000. The author used the Engle and Granger causality and the VECM technique. The results indicated a unidirectional relationship between trade and economic growth. This shows that an increasing level of trade will be beneficial, depending on the level of economic development in Nigeria. The result is robust across different measures of trade and analytical techniques.

Ekpo and Egwaikhide (1994) examined the link between foreign trade variable (export) and economic growth in Nigeria between 1959 and 1989, using cointegration and error correction methods. This approach is appealing as it could eliminate the problem of spurious estimates,

which previous studies ignored. The study found a positive relationship between trade and growth.

Olomola (1998) used the endogenous growth model to explore the long-run relationship between foreign trade and economic growth in Nigeria. The study adopted Dickey-Fuller and Augmented Dickey-Fuller test to examine the stationarity properties of the variables was proxied by export/GPD and total trade/GDP for sample period of 1960 to 1998. The study found that total trade/GDP, has no positive significant relationship with long run growth in Nigeria.

Some studies have attempted addressing the issue of causality between foreign trade variable (especially export) and economic growth. Jung and Marshall (1985) used time series data to perform Granger (1969) causality tests between export and growth for 37 developing countries. The results provided evidence in favour of export led growth in only four instances. The result showed that the export promotion hypothesis is weaker than what previous statistical studies have indicated. Kunst and Mario (1989) also investigated the causality between productivity and exports using quarterly data for the period between 1965 and 1985. The result indicated no causal link from export to productivity.

Muhammed and Sampath (1999) also empirically examined the causality between exports (as a measure of foreign trade) and economic growth for 97 countries using data for the period 1960 to 1992. While determining the stationarity of the two variables and their order of cointegration, they found that GDP and exports are integrated of different orders for 36 countries. Among the other 61 countries, for 17 countries, there were no long-run relationship between the two variables, 35 countries showed causality at least in one direction. Uni-directional causality from GDP to exports was reported for 10 countries, from export to GDP for 5 countries and bi-directional causality for 20 countries. Nine (9) countries did not show any causality between GDP and exports at all. One important issue of relevance to this study, is that Nigeria was among the 9 countries without causal relationship between exports and economic growth. The findings were contracted from existing studies.

Odusola and Akinlo (1995) in their study used the traditional Granger (1969) causality test to examine the causal relationship between foreign trade and GDP growth. The set of trade variables considered were export, import, and terms of trade

and factor inputs, proxied by gross capital formation and labour force, using Nigerian data over 32 years from 1960 to 1992. The causality analysis using the Granger (1969) test indicated bi-directional causal effects between export and growth, there was a unidirectional relation between terms of trade and exports while imports had causal effects on capital formation only

Enoruo and Ahmad (1999) used Johansen's (1991) cointegration technique instead of the Granger (1969) causality test to examine the causal link between trade and economic growth. In the five (5) Asian countries, selected covering 1960 to 1998, they found that both variables and economic growth are cointegrated and that there was a bi-directional causality between trade and economic growth.

In the same vein, Ndiyo and Ebong (2004) using vector autoregressions (VARs) model empirically investigated the dynamic influence of foreign trade, foreign direct investment (FDI), and other macroeconomic influence on growth. The study established a negative influence of trade, exchange rate, fiscal deficit, average world prices and balance of payments disequilibria on growth in Nigeria.

Oyefabi and Tukur (2019) in their study purposed to examine the extent to which foreign trade has impacted the growth of the Nigerian economy covering the period from 1981 to 2018. Real Gross Domestic Product (RGDP) was used as a proxy for economic growth. The Augmented Dickey-Fuller test (ADF) was employed to ascertain the stationarity of the variables, and the result revealed that the variables became stationary after the first difference. Based on the findings from the study, it was therefore recommended that the government should embark on a comprehensive trade liberalization policies and programs in order to ensure the acceleration and sustenance of the Nigerian economy.

Hlalefang and Kolisi (2017) adopted the Autoregressive distributed lag model to examine the extent at which foreign trade influences the economic growth of Ghana and Nigeria making use of a set of data that span from 1980 to 2016. It was concluded from their findings that, while trade has a positive and significant impact on the economic growth of Ghana, a Negative impact of trade on the economic growth of Nigeria was noticed.

Ejike, Anah, and Onwuchekwa (2015) conducted a study which was premised on the effect of foreign trade liberalization on the economic growth of Nigeria covering a period between 1980-2015. Evidence from the Ordinary least Square revealed a positive and significant relationship between trade and economic growth within the sampled period.

Barboza (2007) used a dynamic model to determine the contribution of foreign trade on output growth in Latin America. The study used panel data to fully capture short run and long-run effects in the context of a panel analysis. The result showed that trade does not have a straight positive relationship to productivity growth; i.e., it is not clear whether fast reformers grow faster. Second, there are significant variations between the short run and long run estimates under the ECM but not under the Phillips and Loretan specification. This study uses data from the Penn World Tables 6.1 and from the World Bank Economic Indicators for a sample of twenty Latin American countries for the period 1950 to 2000.

Moreover, Iheanacho (2017), examined the impact of foreign trade liberalization in the developing economies using a time series data from 1981 to 2014. The result as presented by the Autoregressive Distributed Lag (ARDL) bound test approach revealed that trade has a negative and significant longrun impact on economic growth while the short-run showed evidence of a positive relationship.

Masoud and Khalid (2017) utilised the ARDL model to investigate the relationship between foreign trade and economic growth of China over the sampled period 1960 to 2015. The result of their study showed evidence of a positive correlation between trade and economic growth in the long run.

Ojeyinka and Adegboye (2017) developed a simultaneous equation model to capture the joint effect of foreign trade liberalization on agricultural and manufacturing sectors in Nigeria. Using a generalized method of moment technique, they revealed that trade exerts a positive and significant impact on the output of the agricultural export, while a significant negative relationship exists between trade and manufacturing output in Nigeria. The study further revealed that the exchange rate has a positive but not significant impact on agricultural output while the exchange rate and inflation have a negative and significant impact on the manufacturing sector.

The relationship between foreign trade and economic growth of selected East Asian countries was understudied by Jin (2000) using the VAR techniques of analysis. Results from the Impulse Response Functions (IRF) and Forecast Error Variance Decomposition (FEVD) revealed that trade does not promote growth in the selected countries. It was further revealed from the study that fiscal and foreign policy has a positive influence on economic growth.

Model specification

The theoretical foundation upon which this study is based is the neoclassical growth theory which emphasizes the role of labour and capital in the growth process. It should be noted that the neoclassical model is essentially of the same structural form with the Cobb-Douglas production function. Using an AK version of endogenous growth model, Pagano (1993) postulates that the three factors (Labour, Capital and Output) aforementioned in turn increase the rate of economic growth. The extended model predicts that there is an additional efficiency gain caused by the accumulation of human capital as a result of financial openness. To explain the model, it is assumed that aggregate output is a linear function of aggregate capital stock. Our baseline neoclassical model is of the form:

$$Y_t = A_t K_t^\alpha L_t^\beta \quad (1)$$

Where;

Y = Output

A = Total factor productivity or efficiency parameter

K = Stock of capital

L = Labour force

t = time

α = output elasticity of capital

β = output elasticity of labour

This production function represents a competitive economy with the presence of externality or spillover effects (Ghatak and Siddiki, 1999). Each firm face constant returns to scale, but the economy as a whole show increasing returns to scale with respect to K_t . Endogenizing the Solo residual or total factor productivity in line with the postulations of the endogenous growth theory by augmenting the entire framework to incorporate other variables relevant to the present study.

Furthermore, it is assumed that the population is constant and the economy produces a single commodity which can either be consumed or be invested.

Also, assume that the rate of repayment of capital stock is zero and gross investment is:

$$I_t = K_{t+1} - K_t = K_{t+1} - I_t + K_t \quad (2)$$

This is assumed to be a closed economy with only one-sector and no government. If we assume that financial intermediaries channel a proportion α of saving, S_t , to investment, a proportion $(1 - \alpha)$ of saving is lost through the process of intermediation and does not go directly to investments. On the basis of this, the capital/money market equilibrium condition can be expressed as:

$$\gamma S_t = I_t \quad (3)$$

Using equations (1) and equation (2), the growth rate (g) at time $t+1$ can be written as:

$$g_{t+1} = \left(\frac{Y_{t+1} - Y_t}{Y_t} \right) = \left(\frac{AK_{t+1} - AK_t}{AK_t} \right) = \frac{K_{t+1}}{K_t - 1} \quad (4)$$

$$g_{t+1} = \left(\frac{I_t + K_t}{K_t - 1} \right) = \left(\frac{I_t}{K_t} \right) = \frac{AI_t}{AK_t} \quad (5)$$

Where g_{t+1} is the growth rate of output at time $t+1$ and the steady state is defined as

$$K_t = K_{t+1} = K; Y_t = Y_{t+1} = Y; g_t = g_{t+1} = g \quad (6)$$

Substituting equation (4) and (6) the steady state growth rate (g) can be written as follows:

$$g = A \left(\frac{I}{Y} \right) = A \gamma s \quad (7)$$

Where s is $\frac{S}{Y}$. Taking the logarithms of equation (7) can be expressed as:

$$\ln g = \ln A + \ln \gamma + \ln s \quad (8)$$

Equation (8) shows the growth rate as a linear function of its determinants and channels through which foreign trade affects growth (A, γ, s).

$$g_t = A_t \gamma_t^\alpha s_t^\beta \quad (9)$$

Where;

g = Output

A = Total factor productivity or efficiency parameter

γ = Stock of capital

s = Labour force

α = output elasticity of capital

β = output elasticity of labour

In line with the postulations of the neoclassical growth theory by augmenting the entire framework to incorporate other variables relevant to the present study.

Specifically A is expanded to include a hybrid of other foreign trade variables influencing economic growth in Nigeria. Thus,

$$A = f(FT) \quad (10)$$

Where FT represent foreign trade variables respectively. In this study, the augmented neoclassical model is used.

Incorporating equation (9) into (8), transforms (8) into:

$$g_t = FT K_t^\alpha L_t^\beta \quad (11)$$

Equation 10 is the augmented version of the neoclassical model. However, since the study is not on economy-wide output, but on the effect of financial openness and foreign trade on economic growth in Nigeria, we modify equation 3.9 to include the real gross domestic product as our dependent variable represented as:

$$RGDP = f(FT K_t^\alpha L_t^\beta) \quad (12)$$

The framework is further strengthened by the emergence of endogenous growth theories and models (e.g., Romer, 1986; Barro, 1991) which suggest that other endogenous factors like macroeconomic policies (inflation, interest rate, GDP, government spending and tax, trade policies etc.), political stability, market distortions, human capital, GDP per capita, labor force, exchange rate etc., can also affect economic growth. Renelt (1991) for example has attempted to integrate exogenous forces with endogenous factors in explaining economic growth across countries.

Expanding Equation (12) and adding other relevant variables of interest such as Institutional Quality Index (Proxy for Governance) variable which helps us to measure the socio-political environment in which this study is based. We measured this Index based on the data collected by the World Bank and other relevant bodies like Political Risk Group for different countries including Nigeria.

The expanded and augmented equation becomes:

$$RGDP = f(BOP, FDI, HCD, REER, GFCF) \quad (13)$$

Equation (13) can be expressed econometrically as:

$$RGDP = \alpha_0 + \alpha_1 BOP + \alpha_2 FDI + \alpha_3 HCD + \alpha_4 REER + \alpha_5 GFCF + \varepsilon_t \quad (14)$$

Presenting equation 3.18 in its log linear form:

$$\ln RGDP = \alpha_0 + \alpha_1 BOP + \alpha_2 \ln FDI + \alpha_3 HCD + \alpha_4 REER + \alpha_5 GFCF + \varepsilon_t \quad (15)$$

$RGDP$ = Real Gross Domestic Product

measured in billions Naira

BOP = Balance of Payments as a measure of foreign trade in billions of Naira

FDI = Foreign Direct Investment measured in billion Naira

HCD = Human Capital Development

REER = Real Effective Exchange rate measured in per centage

GFCF = Gross Fix Capita formation measured in millions Naira

$\alpha_1, \alpha_2, \alpha_3, \alpha_4, \alpha_5$, parameters to be estimated

Analysis of results and interpretation

Descriptive statistics

In table 1 we present the descriptive statistics. The reason for this is to find the statistical properties of

the various variables under study. As can be seen, on the average, real gross domestic product (RGDP) stood at 35149.25 billion naira over the period of study. Having a maximum and minimum values of 72322.18 and 13779.26 billion naira respectively. The analysis was also fortified by the values of the skewness and kurtosis of all the variables involved in the models. The skewness is a measure of the symmetry of the histogram while the kurtosis is a measure of the tail shape of the histogram. The bench mark for symmetrical distribution i.e. for the skewness is how close the variable is to zero (Ovat, Abang, Okoi & Ndem; 2022). An analysis of skewedness of the distribution shows that CPS, GFCF, HL, INF, RGDP and RINT are all positively skewed while BOP was are negatively skewed.

Table 1: Descriptive statistics

	BOP	GFCF	HCD	REER	RGDP	RINT
Mean	-1.384383	19558.67	1.059268	171.5341	35149.25	11.17785
Median	3.608333	1636.054	1.210000	100.8600	23688.28	10.10833
Maximum	18.18000	748290.6	1.670000	622.6340	72322.18	23.24167
Minimum	-70.32500	1317.360	0.470000	49.78000	13779.26	5.388750
Std. Dev.	18.04431	115189.2	0.418434	160.2151	20812.04	3.913605
Skewness	-2.549614	6.2468100	4.26201	1.764415	0.652130	0.912874
Kurtosis	9.998246	40.02325	1.547206	4.698650	1.825465	3.844246
Jarque-Bera	128.0867	2671.920	4.678292	26.20251	5.262738	6.911236
Probability	0.000000	0.000000	0.096410	0.000002	0.071980	0.031568
Sum	-56.75970	821464.3	43.43000	7032.898	1441119.	458.2917
Sum Sq.		5.44E+1			1.73E+1	
Dev.	13023.88	1	7.003478	1026755.	0	612.6521
Observation						
s	43	43	43	43	43	43

Source: Author's computation using Eviews 10 (2024)

Stationarity (Unit root) test

Table 2a shows the unit root test result. The unit root test was conducted with the aim of establishing the stationarity conditions of the variables. The test was based on the Augmented Dickey-fuller (ADF) test as well as the Phillips-Perron test. The result of the stationary test below (table 2) shows that all the variables except real gross domestic product (RGDP), human capital development (HCD), Foreign Direct Investment (FDI) were not stationary at level. The Phillips Perron test which is a confirmatory test stated same result as ADF. However, upon first differencing, all the variables which did not attain stationarity at level became stationary. Stationarity

was achieved for both ADF and Phillips Perron at 5 percent level of significant. With a mixture of stationarity order, that is both I(0) and I(1), the justification for the use of ARDL comes to play. In table 2b below, the Kwiatkowski-Phillips-Schmidt-Shin (KPSS) tests was carried out as a confirmatory test on variables whose result differs for the ADF and Phillips-Perron. The result shows that the variables in this category: credit to private sector (CPS and inflation (INF) agree with the result of the Phillips-Perron but differ with that of ADF while Gross Fix Capita Formation (GFCF) agree with the ADF but differ with that of Phillips-Perron to be stationary at level.

Table 2a: Unit root test result using Augmented Dickey-Fuller (ADF) and Phillips-Perron tests

Variables	ADF			Phillips-Perron			
	Level	1 st Difference	Order of Integration	Level	1 st Difference	Order of Integration	Order of Integration
RDGP	0.132424	-2.531464	I(1)	1.358597	2.796295	I(1)	
HCD	-0.955594	-8.627223	I(1)	-1.035644	-10.48494	I(1)	
REER	-3.048145	-	I(0)	-3.192246	-	I(0)	
GFCF	1.371349	-	I(0)	1.245883	2.093806	I(1)	
BOP	5.038637	-	I(0)	-5.585432	-	I(0)	
FDI	0.827878	-8.634211	I(1)	0.509283	-8.695572	I(1)	

ADF test critical test values.

Level:

At 5% = -2.938987

10% = -2.607932

1st Difference:

5% = -2.938987

10% = -2.607932

Level:

At 5% = -2.925169

10% = -2.600658

Phillip-Peron test critical values

1st Difference:

5% = -2.926622

10% = -2.601424

Source: Author's computation using Eviews 10. (2024)

Table 2b: Unit root test result using Kwiatkowski-Philips-Schmidt-Shin (KPSS) tests

Variables	KPSS		
	Level	1 st Difference	Order of Integration
GFCF	0.325549	-3.028124	I(1)

KPSS test critical test values.

Level:

At 5% = 0.463000

10% = 0.347000

1st Difference:

5% = -2.938987

10% = -2.607932

Source: Author's computation using E-views 10. (2024)

Correlation matrix

The correlation matrix shows the correlation values, which measure the degree of linear relationship between each pair of variables. The correlation values can fall between -1 and +1. -1 indicates a perfectly negative linear correlation between two variables. 0 indicates no linear

correlation between two variables. 1 indicates a perfectly positive linear correlation between two variables (Abang & Ayodele; 2022). From the result as shown in table 4.4, the result shows that all the variables that enter the model are positive and are correlated.

Table 3: Correlation matrix

	BOP	GFCF	HCD	REER	RGDP	RINT
BOP	1.000000					
GFCF	0.170952	1.000000				
HCD	-0.241748	0.795182	1.000000			
REER	-0.530452	0.196765	0.137842	1.000000		
RGDP	0.426156	0.935552	0.775864	-0.427862	1.000000	
RINT	0.143851	0.446259	0.401970	-0.529307	-0.335563	1.000000

Source: Author's computation using E-views 10 (2024)

Granger Causality

Table 4: Granger causality (Foreign trade and economic growth)

Lags: 2				
Null Hypothesis:	Obs	F-Statistic	Prob.	Decision
BOP does not Granger Cause RGDP	42	1.11029	0.3411	Accept
RGDP does not Granger Cause BOP		2.10476	0.1375	Accept
FDI does not Granger Cause RGDP	42	2.13471	0.1342	Accept
RGDP does not Granger Cause FDI		4.47911	0.0188	Reject
FDI does not Granger Cause BOP	42	0.49483	0.6140	Accept
BOP does not Granger Cause FDI		1.45746	0.2470	Accept

Source: Author's computation using E-views 10 (2024)

Co-integration test

From the result of the unit root test, the variables were stationary at both I(0) and I(1). The ARDL bound test was conducted so as to test if there is any existence of long run relationship among the variables. As seen from the result in table 2, the calculated F-statistics with the value of 8.037383

is greater than the upper and lower bound critical bound value of all level of significance. This however means that the null hypothesis of no cointegration is rejected while the alternative hypothesis of cointegration is accepted. Thus, there is cointegration and long run relationship between the variables.

Table 5: ARDL Bounds test Cointegration result

ARDL Bounds Test		
Test Statistic	Value	K
F-statistic	6.276734	5
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	2.08	3
5%	2.42	3.38
2.5%	2.7	3.73
1%	3.06	4.15

LOWER BOUND @ 5% = 2.42

UPPER BOUND @ 5% = 3.38

Source: Author's computation using E-views 10 (2024)

Lag length selection criteria

Before the estimation of the result, the lag length selection test was carried out. The intention of the test is to however seek to know the optimal lag length with which the variables specified in the model will be lagged. This was carried out putting to series of criteria such as the sequential modified LR test statistic, final prediction error, Akaike information criterion, Schwarz information criterion and Hannan-Quinn information criterion.

It was discovered from the result as depicted in table 6, show that the Schwarz information criterion (SC) and Hannan-Quinn information criterion (HQ) shows a one lag length.

While the sequential modified LR test statistics, Final prediction error (FPE) and the Akaike information criterion (AIC), shows two lag length. Though the Schwarz information criterion with one lag length would have best been used because its superiority and a better result that it gives than the other criterion with higher lag length. However, in this equation, the default lag length selected by the system which is three was allowed for the estimation. This is so as to obtain the best and robust result in determining the maximum period for which the variables would be adjusted.

TABLE 6: Var lag length selection criteria (inflation and fiscal policy equation)

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-1342.041	NA	6.89e+23	69.07902	69.29230	69.15554
1	-1129.040	360.4626	4.53e+19	59.43796	60.71762*	59.89709*
2	-1100.426	41.08751*	4.03e+19*	59.25260*	61.59865	60.09434
3	-1075.965	28.85130	4.95e+19	59.28025	62.69268	60.50460

* indicates lag order selected by the criterion

LR: sequential modified LR test statistic (each test at 5% level)

FPE: Final prediction error

AIC: Akaike information criterion

SC: Schwarz information criterion

HQ: Hannan-Quinn information criterion

Long run and short run ARDL analysis of foreign trade and economic growth equation

The long run results of the foreign trade and economic growth is reported in table 6. From the result and in consonance with theoretical expectation, a positive but not statistically significant relationship exists between balance of payment (BOP) and real gross domestic product (RGDP) in Nigeria. The value of the coefficients of (0.006583) implies that an increase in balance of payment by one per cent will result to an increase in real gross domestic product by 0.006583 per cent. There exist a positive and statistically significant relationship between foreign direct investment (FDI) and real gross domestic product (RGDP). This is consistent with theoretical expectation. Thus, a one per cent increase in foreign direct investment will lead to a 0.065830

per cent increase in real gross domestic product. However, a one percent increase in human capital development (HCD) will lead to a 0.025608 per cent decrease in real gross domestic product. This is not consistent with theoretical expectation and it is likewise not statistically significant. According to the result, real effective exchange rate has a negative but statistically significance relationship with real gross domestic product (RGDP). The result shows that a one per cent increase in real effective exchange rate will lead to a 0.000966 per cent decrease in real gross domestic product (RGDP) *ceteris paribus*. Gross domestic product per capita (GFCF) has a positive and also significant relationship with real gross domestic product (RGDP). The result shows that a one per cent increase in gross domestic product per capita will lead to a 0.000909 percent increase in real gross domestic product (RGDP). This is consistent with theoretical expectation.

Table 7: Long run ARDL result of foreign trade and economic growth equation

Dependent variable: RGDP

Variable	Coefficient	Std. Error	t-Statistic	Prob.
BOP	0.006583	0.004159	1.582831	0.1575
LFDI	0.065830	0.019720	3.338265	0.0124
HCD	-0.025608	0.128450	-0.199361	0.8476
REER	-0.000966	0.000381	-2.531646	0.0421
GFCF	0.000909	0.000109	8.360021	0.0001
C	7.335342	0.616200	11.90416	0.0000

Source: Author's computation using E-views 10 (2024)

The short run results of foreign trade and economic growth equation is reported in table 8. The first, second and third period lag of real gross domestic product were both positive, negative and negative and where all not statistically significant except the third lag which was statistically significant with a coefficient of 0.159835, -0.247276 and -0.464751 per cent respectively. Hence a one per cent increase in the one, second and third period lag of real gross domestic product (RGDP) will lead to a 0.159835 per cent increase and 0.247276 and 0.464751 per cent decrease respectively in real gross domestic product.

The relationship between balance of payment (BOP) and real gross domestic product (RGDP) in the short run is negative in the current period and positive in first, second and third period lag. They are all however statistically significant except the first period lag which is not statistically significant. Hence a one percent increase in balance of payment will lead to a 0.000678 percent decrease in real gross domestic product in the current period and 7.822305, 0.000209 and 0.000335 per cent increase after the first, second and third period lag respectively.

The relationship between foreign direct investment (FDI) and real gross domestic product (RGDP) in the short run is negative in the current period, and positive after the first, second and third period lags. Only the first and second period lag are statistically significant. Hence a one per cent increase in foreign direct investment (FDI) will lead to a 0.002 per cent decrease in real gross domestic product and, 0.011, 0.013 and 0.003 per cent increase in real gross domestic product (RGDP) during the first, second and third lag period. Similarly, the relationship between human capital development (HCD) and real gross domestic product (RGDP) are all positive and statistically significant both at the current, after first, second and third period lags.

The result shows that a one per cent increase in human capital development during the current, after first, second and third period lags will lead to a one per cent increase in real gross domestic product (RGDP) by 0.010, 0.018, 0.028 and 0.025 per cent respectively. The result also reveals that there exist a positive and statistically significant relationship in the current period between real effective exchange rate and real gross domestic product (RGDP). A one percent increase in real effective exchange rate (REER) will lead to a 0.00019 per cent increase in real gross domestic product respectively. While a negative relationship exist between real effective exchange rate and real gross domestic product (RGDP) after the first, second and third lag period. Thus, a one percent increase in real effective exchange rate in the first,

second and third period lag will lead to a decrease by 5.74, 7.86 and 4.21 percent in real gross domestic product. The result suggests that the current, first, second and third period lag of gross domestic product per capita have a positive impact on real gross domestic product (RGDP). It is positive in the current period but negative after the first, second and third period lag. It is not statistically significant in the first period lag only, but it is statistically significant in the current, second and third period lag. The result shows that a one per cent increase in gross domestic product per capita in the current, first, second and third period will lead to an increase in real gross domestic product (RGDP) by 0.0004, 3.52, 0.000147 and 0.000219 per cent respectively.

The error correction mechanism (ECM) has the correct sign and size. The ECM coefficient of -0.165163 indicates that it takes about 16 percent for the short run disequilibrium to adjust to the long run equilibrium within the year. The t-statistics of -9.033136 shows that the error correction term is statistically significant at five per cent level of significance. R-squared value of 0.993005 and the value of R-squared adjusted of 0.980630 indicates that about 99 per cent of total variation in the RGDP is explained by balance of payment (BOP, foreign direct investment (FDI), human capital development (HCD), real effective exchange rate (REER), gross domestic product per capita and only one per cent was unexplained which may be accounted for by other factors not included in the model. The Durbin Watson (D-W) statistics of 2.18 indicates no autocorrelation in the model. Therefore, the results can be used for forecasting and economic simulation.

Table 8: Short run ARDL (Error Correction) result of financial openness and economic growth equation

Dependent variable: D(LRGDP)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LRGDP(-1))	0.159835	0.153823	1.042085	0.3333
D(LRGDP(-2))	-0.247276	0.126489	-1.954919	0.0915
D(LRGDP(-3))	-0.464751	0.101734	-4.568282	0.0026
D(BOP)	-0.000678	0.000117	-5.773566	0.0007
D(BOP(-1))	7.822305	0.000116	0.674341	0.5217
D(BOP(-2))	0.000209	9.85E-05	2.122427	0.0715
D(BOP(-3))	0.000335	9.44E-05	3.546959	0.0094
D(LFDI)	-0.001877	0.001384	-1.357034	0.2169
D(LFDI(-1))	0.011463	0.001949	5.882276	0.0006
D(LFDI(-2))	0.012849	0.001851	6.940418	0.0002
D(LFDI(-3))	0.002683	0.001401	1.915433	0.0970
D(HCD)	0.010102	0.004185	2.413882	0.0465
D(HCD(-1))	0.018250	0.005124	3.561733	0.0092
D(HCD(-2))	0.028268	0.005206	5.429415	0.0010
D(HCD(-3))	0.024678	0.004915	5.020472	0.0015
D(REER)	0.000193	2.263732	8.568375	0.0001
D(REER(-1))	-5.744205	2.329005	-2.476058	0.0425
D(REER(-2))	-7.861402	2.352301	-3.348762	0.0123
D(REER(-3))	-4.206505	2.111204	-1.991308	0.0867
D(GFCF)	0.000410	2.201521	18.61248	0.0000
D(GFCF (-1))	3.520005	7.850025	0.448236	0.6675
D(GFCF (-2))	0.000147	5.621192	2.619110	0.0345
D(GFCF (-3))	0.000219	4.721002	4.635062	0.0024
CointEq(-1)*	-0.165163	0.018284	-9.033136	0.0000
R-squared	0.902237			
Adjusted R-squared	0.881170			
Durbin-Watson stat	2.181942			

Source: Author's computation using E-views 10 (2024)

Stability Test for foreign trade and economic growth equation

Figure 1 and 2 shows that both the CUSUM and CUSUMSQ statistics falls within the critical bound

of \pm five percent level of significance. This plot indicates that the coefficients of the results been estimated are stable in the long run during the period 1980 to 2022 and that there exists a long run relationship between foreign trade and economic growth in Nigeria. This thus implies that the coefficients are changing gradually.

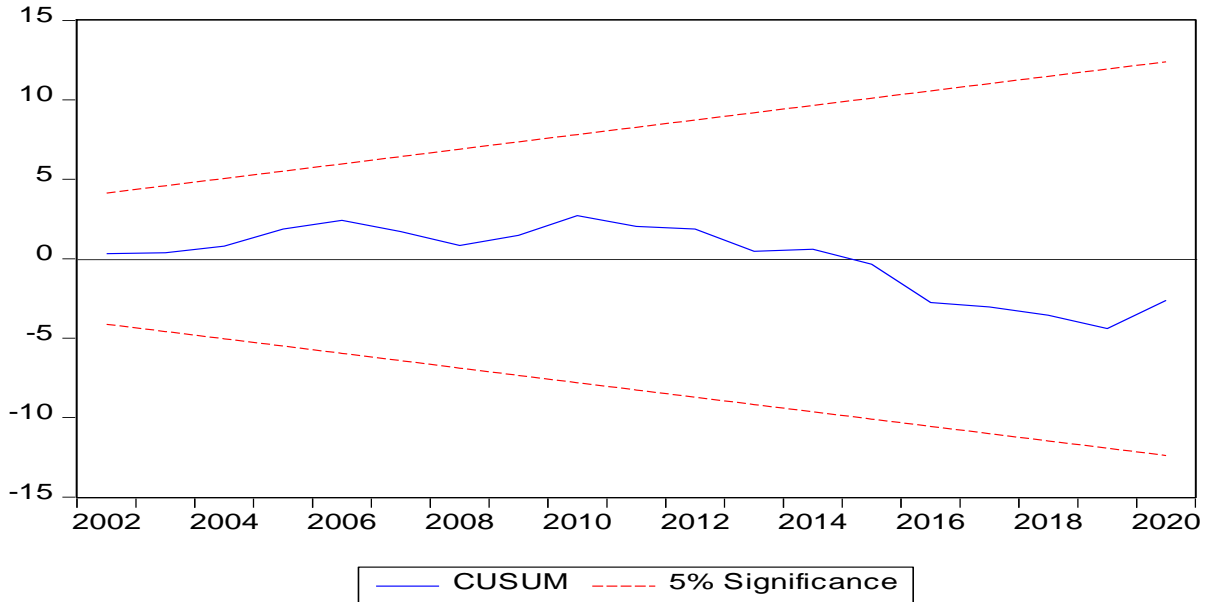


FIG. 1: CUSUM of foreign trade and economic growth equation

Source: Author's computation (2024)

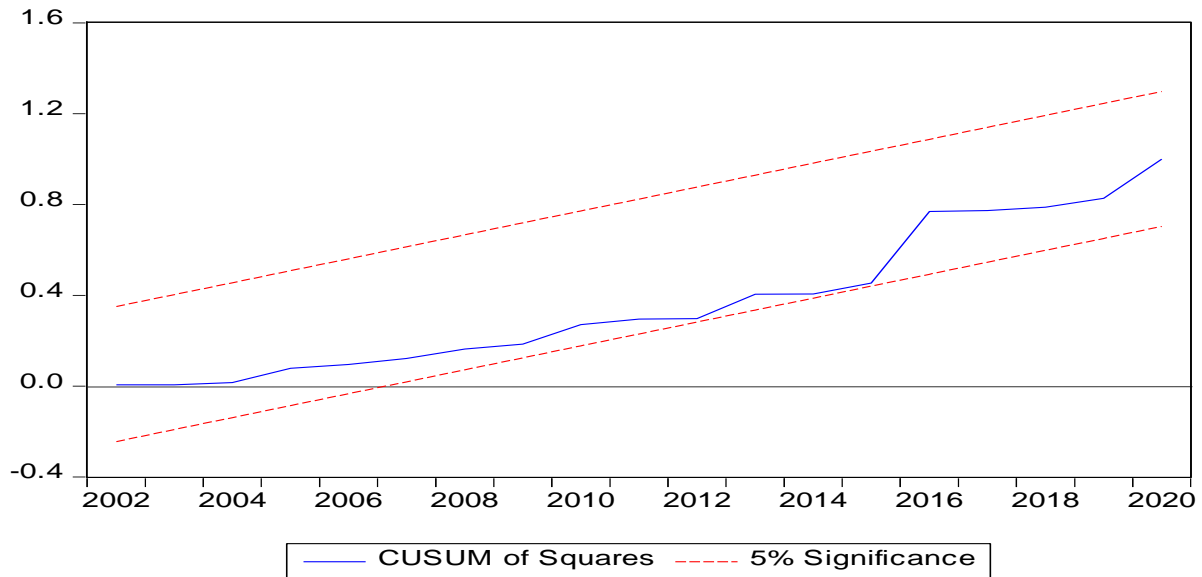


FIG. 2: CUSUM of SQUARES of foreign trade and economic growth equation

Source: Author's computation (2024)

CONCLUSION AND RECOMMENDATION

The main objective of this study was to examine the impact foreign trade on economic growth. To achieve the above objectives, empirical techniques based on bounds testing procedure was adopted within the frame work of autoregressive distributed lag (ARDL) modeling. The study used annual data that spanned from 1981 to 2023 and adopted the ARDL bounds testing approach and several estimation tests. Some of the tests that were used includes the unit root test, cointegration test, Granger causality test, the ECM, CUSUM and the CUSUMSQ. The specified equations were estimated and the following summaries of findings are presented below.

Previous literatures were reviewed in chapter two of the study and the result and conclusion of the study reviewed has a mixed result. While some study stated that foreign trade actually impact economic growth. Other study however is of the opinion that foreign trade has no impact on economic growth. This study was able to fill the research gap by examining at the same time the various measurement of foreign trade and their impact on economic growth. Several findings were made in the conduct of this study. The estimated result of foreign trade shows that human capital and real effective exchange rate has a negative and insignificant impact on economic growth but the first, second and third lag of human capital has both positive and significant impact on economic growth while real effective exchange rate remain negative. The result further indicates that foreign direct investment and gross domestic product per capita has a positive and significant impact on economic growth in the long run. Balance of payment, was also shown to have a positive but insignificant impact on economic growth.

Based on the findings of the study, and in line with the findings of the study, the following recommendations are made to boost the economic growth of the Nigerian economy:

The Nigerian government needs to moderate its trade policy as the economy seems too weak to absorb the adverse shocks from external trade. Most importantly, the problem that arises from exchange rate should be tacked and put in place to offset the likely negative effects of exposing the economy to external influences.

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