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Impact of International Trade on Economic Growth in Nigeria: An approach of time series Econometric Model

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Abstract

This study examined the impact of international trade on economic growth in Nigeria. Specifically, the study intends to: (i) examine the impact of international trade on economic growth in Nigeria, (ii) ascertain the causality relationship between export, import, trade openness, exchange rate, foreign interest and economic growth in Nigeria. The study employed the OLS regression models to obtain its data. For test of stationarity, the study employed the Augmented Dickey-Fuller co-integration test which shows that GDP, Trade openness and export were all stationary at level while the Import and Exchange rate were stationary at first difference. Also, Autoregressive Distributive Lag Model (ARDL) was employed to test for the existence of long run

equilibrium relationship. Summary of the findings showed that: the coefficient of the proxies for international trade has positive and significant impact on real GDP (RGDP) (F – statistics (14.56916) > its critical value (1.694), and there is bilateral cause-effect relationship between international trade and economic growth in Nigeria. The study concluded that international trade has positive significant impact on economic growth in Nigeria within the period of 1980-2019. The study recommended that government should start and sustain export promotion strategy by the means of income or profit tax exemption, credit subsidies, duty drawbacks and duty exemption and marketing and institutional support.

Keywords: International Trade, Economic Growth

1. Introduction

International trade is the exchange of capital, goods and services across international borders or territories. In most countries, such trade represents a significant share of Gross Domestic Product (GDP). Therefore, international trade has been an area of interest to policymakers as well as economists. It enables nations to sell their domestically produced good to other countries of the world (Adewuyi, 2019) ^[2]. International trade has been regarded as an engine of growth, which leads to steady improvement in human status by expanding the range of people's standard and preferences (Adewuyi, 2018) ^[3]. Since no country has grown without trade, international trade plays a vital role in restructuring the economic and social attributes of countries around the world, particularly, the less developed countries. Furthermore, over the years, development economists have long recognized the role of trade in the growth process of national economies as trade provides both foreign exchange earnings and market stimulus, for accelerated economic growth. The economic growth of Nigeria, to large extent, depends on its trade with other nations. Nigeria as a developing country has been grappling with the realities of the developmental process not only politically and socially but also economically. In the 1960s, agriculture was the mainstay of the economy and the greatest foreign exchange earner, and the Nigerian government was able to execute investment projects through domestic savings, earnings from exports of agricultural products and foreign aids (Ezike & Amah, 2011) ^[14]. But since the advent of oil as a major source of foreign exchange earnings in Nigeria since 1974, the picture has been almost that of general stagnation in agricultural exports. This led to the loss of Nigeria's position as an important producer and exporter of palm oil produce, groundnut, cocoa and rubber (CBN Annual Report, 2016) ^[7]. Between the year 1960 and 1980, agricultural and agro-allied exports constituted an average of sixty percent of total export in Nigeria, which is now accounted for, by petroleum oil export, (CBN Annual Report, 2017) ^[8]. However, the importance of international trade in the Nigerian economy has grown rapidly in recent times, especially since 2002. Economic openness measured as the ratio of export and imports to GDP has risen from just above 3 percent in 1991 to over 11 percent in 2008 due to the unrest in Nigeria's oil-producing Niger Delta region which

resulted in significant disruption in oil production and shortfalls in oil export from Nigeria.

It should be noted that trade plays a vital role in shaping the economics and social performance and prospects of countries around the world, especially those of developing countries (Egwaikhide, 2017) ^[12]. The role of international trade in economic development has been acknowledged worldwide. This is because it provides opportunities to expand the production possibilities and consumption baskets available to the people (Aliyu, 2007). Through imports, domestic absorption is expanded, while exports enable economic agents in a country to earn foreign exchange to embark on various economic activities especially production and consumption. International trade has been and is today an economic force that has spurred commerce, promoted technology and growth, spread cultural patterns, stimulate exploration and frequently fanned the flames of war (Oyejide, Ogunkola & Ndung 2001). No country has grown without trade. All economies are increasingly open in today's economic environment of globalization. And for trade to act as an engine of development, trade must lead to steady improvement in human conditions by expanding the range of people's choice, increase in global competition development and expansion of technology, liberalization of cross-border movements and the development of supporting services (Egwaikhide, 2017) ^[12].

As international trade progressed and technology developed, these explorations were to turn up another area of foreign trade, still important today. This was the import of raw materials by a nation and the re-export of finished and manufactured products. As a result, not only living standards advanced but national incomes were also increased. Also, international trade prompted the development of the monetary system of record-keeping and accounting and an entire vocation of commerce. International trade added in public displeasure towards usury (interest over legal rate charged to borrower for the use of money) (Deppler & Ripley, 2017). Another distinct contribution of international trade was the strong promotion given to exploration, map reading and ship construction technology. Early international trade routes ranged over vast expanses thus, requiring advanced transportation to make possible further search for new products and market. However, the contribution of trade to development depends a great deal on the context in which it works and the objectives it serves. This study, therefore, intends to examine international trade as an engine of growth in developing countries using Nigeria as a case study.

1.1 Statement of the problem

Trade policy since the 1960s has witnessed extreme policy swings from high protectionism in the first few decades after independence to its current more liberal stance (Adewuyi, 2017). Tariffs have at various times been used to raise fiscal revenue, limit imports to safeguard foreign exchange or even protect the domestic industries from competition. Besides, various forms of non-tariff barriers such as quotas, prohibitions and licensing schemes have, on various occasions, been extensively used to limit imports of particular items.

Despite the lucrative nature of international trade, it cannot be said authoritatively that international business is flawless. The increasingly complex nature of the overall business environment, rapid and unpredictable changes in political,

economic, technological regulatory and financial variables provide constant pressure on international trade transactions. Against, these backdrops, it is imperative to investigate the international trade impact on economic growth in Nigeria.

1.2 Objectives of the Study

This study aims to examine the impact of international trade on economic growth in Nigeria. Specifically, the study intends to:

1. examine the impact of international trade on economic growth in Nigeria.
2. ascertain the causality relationship between export, import, trade openness, exchange rate, foreign interest and economic growth in Nigeria.

2. Conceptual literature

2.1 International Trade

International trade is also known as foreign trade. It is different from inter-regional trade or internal-local or domestic or internal trade. The inter-regional trade or internal-local or domestic or internal trade refers to trade between regions within a country. But international trade, on the other hand, is a trade between two nations or countries (Jhingan, 2006) ^[15]. It may be defined as the exchange of goods and services between one country and another. The trade is bilateral if it involves only two nations. Example, a trade between Nigeria and USA. The trade is multilateral if it involves more than two countries. Example, a trade between Nigeria, Japan and USA. Commodities produced at home country and sold to other countries are called exports and commodities purchased from other countries are called imports. International trade is the exchange of capital, goods and services across the international borders or territories (Yakubu & Akanegbu, 2015) ^[22].

2.2 Theoretical literature

2.2.1 Heckscher-Ohlin International Trade theory

The Heckscher-Ohlin international trade theory was developed by the Swedish economist Bertil Ohlin (1899–1979) on the basis of work by his teacher the Swedish economist Eli Filip Heckscher (1879–1952). For his work on the theory, Ohlin was awarded the Nobel Prize for Economics (the Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel) in 1977. Heckscher-Ohlin international trade theory, in economics, developed the General Equilibrium or factor Endowment or factor proportions theory of international or theory of comparative advantage in international trade the H.O. theory states that the main determinant of the pattern of production, specialization and trade among regions is the relative availability of factor endowments and factor prices. Regions or countries have different factor endowments and factor prices. Countries in which capital is relatively plentiful and labour relatively scarce will tend to export capital-intensive products and import labour-intensive products, while countries in which labour is relatively plentiful and capital relatively scarce will tend to export labour-intensive products and import capital-intensive products. To Ohlin, the immediate cause of international trade always is that some commodities can be bought more cheaply from other regions whereas in the same region their production is possible at high prices. Thus, the main cause of trade between regions is the difference in prices of commodities based on relative factor endowments and factor prices

Some countries are relatively well-endowed with capital: the typical worker has plenty of machinery and equipment to assist with the work. In such countries, wage rates generally are high; as a result, the costs of producing labour-intensive goods—such as textiles, sporting goods, and simple consumer electronics—tend to be more expensive than in countries with plentiful labour and low wage rates. On the other hand, goods requiring much capital and only a little labour (automobiles and chemicals, for example) tend to be relatively inexpensive in countries with plentiful and cheap capital. Thus, countries with abundant capital should generally be able to produce capital-intensive goods relatively inexpensively, exporting them in order to pay for imports of labour-intensive goods. In the Heckscher-Ohlin theory, it is not the absolute amount of capital that is important; rather, it is the amount of capital per worker. A small country like Luxembourg has much less capital in total than India, but Luxembourg has more capital per worker. Accordingly, the Heckscher-Ohlin theory predicts that Luxembourg will export capital-intensive products to India and import labour-intensive products in return.

Despite its plausibility, the Heckscher-Ohlin theory is frequently at variance with the actual patterns of international trade. One early study of the Heckscher-Ohlin theory was carried out by Wassily Leontief, a Russian-born U.S. economist. Leontief observed that the United States was relatively well-endowed with capital. According to the theory, therefore, the United States should export capital-intensive goods and import labour-intensive ones. He found that the opposite was in fact the case: U.S. exports are generally more labour-intensive than the types of products that the United States imports. Because his findings were the opposite of those predicted by the theory, they are known as the Leontief Paradox.

2.2.2 Keynesian theory of Income Determination in an Open Economy

The theory of income determination in an open economy was propounded by John Maynard Keynes in 1936. It involved the removal of assumption that there are no exports or imports and government expenditure in national income analysis. This means that imports and exports and government expenditure and taxation are added in the theory of open economy national income analysis. Government expenditures are like investment because they raise the demand for goods. They are injections in that national income. On the other hand, taxes are leakages in the national income like savings because they tend to reduce the demand for consumer goods. The impact of exports and imports is similar to that of the government expenditure. Exports are injections because they increase the demand for goods in the same economy. Imports, on the other hand, are leakages in the national income because they represent the supply of goods to the given economy.

The analysis of the determination of income in an open economy is based on the following assumptions. A) The domestic economy international trade is small relative to total trade b) There is less than full employment in the economy c) The general price level is constant up to the full employment level d) Exchange rate area fixed e) There are no tariffs, trade and exchange restrictions f) Gross exports are determined by external factors g) Export (X), investment (I) and government expenditure (G) are autonomous g) Consumption (C), imports (M), savings (S) and taxes (T) are

each a fixed proportion of income (Y) and their relationship with income are linear..

Functional equation of an open economy theory is represented as: $Y=C+I+G+(X-M)$, where Y=National Income, C= Consumption Expenditure, I= Investment Expenditure, G= Government Expenditure and Nd = net trade (Jhingan, 2008).

This theory has been criticized for its unrealistic assumptions, first constant consumption is not realistic, second price is not constant in reality, and thirdly total output of a nation does not depend on consumption, investment and government expenditure and net export only. Regardless of these criticisms this theory has been instrumental in research studies concerning economic growth and government expenditure and net export. In spite of these criticisms, the theory of economic growth determination in an open economy will be adopted in this work with modification where the TOT will be factored-in as the independent variable.

2.3 Empirical literature

The link between international trade and poverty reduction has attracted the attention of the researchers and scholars. The empirical review of literature was written as follows:

Emehelu (2021)^[13] examined the effects of international trade on the economic growth of Nigeria from 1981-2018 using the ordinary least squares (OLS) technique. Independent variables such as, policy changes (dummy), exchange rates and liberalization/openness were regressed on real Gross Domestic Product (GDP) of Nigeria using secondary data from Central Bank of Nigeria Statistical Bulletin 2018. Findings from the study revealed that exchange rates in the country had negative and insignificant relationship with economic growth. However, the several trade policies in Nigeria have been seen to retard growth in economic prosperity of Nigeria's economy since the impact is negative and significant on GDP growth. Consequently, the study recommends that since import and export trade have no significant effects on growth in Nigeria, the federal government should embark on programmes and policies to promote local production and discourage importation of certain essential products for trade to have the desired impact on the growth of Nigeria's economy.

Obisike, Onwuka, Okoli and Udeze (2020) examined the impact of international trade on Nigeria's economic growth drawing evidence from oil terms of trade from 2000 to 2018. The study made use of secondary data which includes oil commodity terms of trade and non-oil commodity terms of trade and GDP and employed Ordinary Least Square (OLS) regression technique. The estimated result revealed that in the short run, the oil commodity terms of trade (OCTOT) and non-oil commodity terms of trade (NOCTOT) had positive impact on Nigeria's economic growth, well the granger causality test shows that OCTOT, NOCTOT and GDP are independent of each other. From the results, the study therefore concludes that international trade both in oil and non-oil are vital for economic growth.

Olarotimi, Nchom, Osuji, and Udeorah, (2020)^[18] examined the impact of international trade on economic growth in Nigeria covering the period of 1980 to 2018. The objectives of this study were to ascertain the impact of foreign direct investment (FDI) inflow, net-export (NEX) and foreign exchange rate (EXR) on the growth of the Nigerian economy (GDP). Dynamic Ordinary Least Square (DOLS)

multiple regression analysis technique was employed to estimate the model. The results showed that all the explanatory variables except exchange rate were positively linked with economic growth. More so, all the explanatory variables were statistically significant with economic growth except net export. The study recommended that; Government should maintain a good market driven exchange rate policy in order to encourage local production that will lead to increase in international competitiveness which in turn will result to increase in economic growth.

Igwebuike, Agu and Eze, (2018) evaluated the impact of international trade on the Nigeria economic growth covering the period from 1980 – 2012. 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. Multiple regression analysis technique was employed in estimating the various components of foreign trade. The results of the study showed that there is a significant impact of Export trade on the Nigerian economic growth. The study also revealed that there is no significant impact of import trade on the Nigerian economic growth. The study recommended that conscious efforts should be made by government curtail on import trade which has a negative effect or strain the economy, the underground economic activities of bunkering, smuggling, child and drug trafficking, and other related illegal activities should be properly checked and the government should encourage export diversification, e.g., non-oil sector exports should be encouraged and concentration on oil sector export should be minimized.

Afolabi, Danladi and Azeez (2017), examined the impact of international trade on economic growth in Nigeria, with the objective of identifying the major factors influencing economic growth through international trade. They applied Augmented Dickey-Fuller (ADF) test together with Phillip-Perron (PP) test of Unit Root Tests to ascertain the stationarity properties of the variables. The Ordinary Least Square (OLS) technique was used to test for the significant relationship between the level of economic growth and international trade. Economic growth was proxied to GDP, exchange rate, government expenditure, interest rate, foreign direct investment, import and export were used as independent variables. The result revealed that government expenditures, interest rate, import and export are all positively significant while exchange rate and foreign direct investment are negatively insignificant to the growth process of the Nigerian Economy. The econometric results suggest that Nigerian government should give more emphasis to specialization on agriculture so as to diversify her production and export base in order to enable the country benefit all the gains of trade including economic growth. The country's trade should not only be on primary and oil exports but also the promotion of non-primary exports and non-oil exports i.e. manufactured goods. Promotion of exports within the context of sub-regional and regional economic integration should be vigorously pursued to expand Nigerian international market and the importation policy of the government should be strictly adhered to in order to control dumping and to encourage the local investors.

Lawal and Ezeuchenne, (2017) ^[16] investigated the impact of international trade on the economic growth over a period of 1985-2015. The econometric tests employed made use of the Unit Root Test to establish stationarity of the variables, the

Johansen Co-integration Test was used to determine the long run relationship between the variables while the Vector Error Correction Model (VECM) was used to analyze the data so as to determine the speed of adjustment of the variables. The result showed that there is a long run relationship between international trade and economic growth, import and trade openness are both insignificant in the short run but significant in the long run while export and balance of trade are significant in both the short and long run. The granger causality test showed that economic growth is independent of imports, exports and balance of trade but economic growth is unidirectional with trade openness. Therefore, the study recommends that government should increase its exploration of finished goods and reduce importation of finished goods to increase economic growth.

Abiodu (2017) ^[11] examine the contribution of international trade to economic growth in Nigeria, a developing country, and establishes a nexus between international trade and economic growth. The variables considered are real GDP, a proxy for economic growth, export volumes, import volumes, trade openness, gross capital formation and exchange rate as independent variables. Augmented Dickey-Fuller (ADF) test was used for the unit root test and the variables were found to be stationary at levels. Granger Causality was also deployed to test the causality between the dependent and independent variables and a uni-directional relationship was established for some of the variables. The results reveal that there is, overall, a positive relationship between economic growth and international trade

Owolabi-meris, Olediran and Inuk (2015) ^[19] conducted an investigation into the impact that international trade (through import and export channels) has on Nigeria's economy. Through the Johansen Cointegration test on data from 1971 to 2012, this study finds a long run relationship existing between international trade and economic growth in Nigeria. The Ordinary Least Square results suggest that export is positively associated with economic growth while imports connote otherwise. The Granger causality test finds a unidirectional causation running from GDP to Import. However, the test failed to find a mutual correlation between Export and economic growth. This study therefore suggests that export promotion strategies should be put in place in order to encourage local farmers and producers to increase production which in turn will stimulate exports and enhance economic prosperity in Nigeria.

Yakubu and Akanegbu (2015) ^[22] examined the impact of international trade on economic growth in Nigeria for the period 1981 to 2012. Using degree of openness to proxy international trade, the ordinary least squares technique was employed to estimate the impact of international trade on Gross Domestic Product. The variable of the data are RGDP, Degree of openness, foreign exchange and interest rate. The result of the analysis shows that all the variables except interest rate were statistically significant. Therefore, the study recommends that policy makers should adopt policies on trade liberalization such as reduction of non-tariff barriers, reducing tariffs, reducing or eliminating quotas that will enable the economy to grow at spectacular rates. And thus, this study supports the proposition that degree of openness has direct robust relationship with economic growth since the proxy variable is positive and statistically significant in the model.

Ovikuomagbe and Uduakobong, (2013) conducted a study to examine the effect of the growth of total exports on poverty reduction in Nigeria for the period 1980 to 2010. Using the ordinary least squares (OLS), after correcting for stationarity and heteroskedasticity biases, the results show that the growth rate of total export value or earnings is positively significant to explain changes in the real gross domestic product per capita used as a proxy for poverty. Thus, an increase in the total export value increases the real gross domestic product per capita and thus reduces poverty. The total export volume however is not significant. Separating the total export volume into oil and nonoil exports, nonoil export growth was found to have a positive effect on the real gross domestic product per capita while the effect of oil export growth is negative. However, both were insignificant. The study concludes that total exports growth has positive significant impact on poverty reduction in Nigeria. the study recommended that diversification of Nigeria’s export from the predominantly oil exports to incorporate nonoil exports that have a higher export value going by the world market price is expedient.

Atoyebi, Jubril, Adekunjo and Edun (2012), examined the impact of international trade on economic growth in Nigeria from 1970-2010. The study employed Phillips Peron unit root test and Johansen to test for stationarity and cointegration of the variables. The result of stationery and normality test reveals that the model is fairly well specified and could be used for policy analysis. Empirical investigations reveal that three variables are statistically significant at 5% and these variables are export, foreign direct investment and exchange rate and they are positively related to real GDP while other variables such as import, inflation rate, openness exert a negative influence on real GDP. The study demonstrates that increase participation in global trade helps Nigeria to reap static and dynamic benefit of international trade despite non conformity of the coefficient of the openness. Both international trade volume and trade structure towards high technology export result in positively effect on Nigeria economy. We therefore recommend that the government should design appropriate strategy by diversifying the economy through export promotion, stimulating foreign direct investment and exchange rate stability in order to boost productivity of Nigeria economy by raising the standard of living of the citizens.

Gap in literature

The work of Emehelu (2021) [13] who examined the effects of international trade on the economic growth of Nigeria from 1981-2018 using the ordinary least squares (OLS) technique and Ezindu, Onwuka, Okoli and Udeze, (2020) who examined the impact of international trade on Nigeria’s economic growth drawing evidence from oil terms of trade from 2000 to 2018 were not elucidated properly, so there is

need for further research on the topic.

The study covered literature gaps by adding extra variables like trade openness, value of export, value import, foreign exchange rate to the existing model.

The study covered literature gaps by carried out this study in three-phase procedural steps: pre-estimation, estimation and post estimation. The pre-estimation/pre-diagnostic test involves descriptive Statistics, Augmented Dickey-Fuller Unit Root test statistic test. The estimation procedural step involves Autoregressive distributive Lag Model. In addition, the post estimation procedural step involves Breuch-Godfrey Serial Correlation Langrage Multiplier Test for serial correlation.

3. Methodology

This study made use of ex-post-facto research design which enables us to measure the effect or relationship between dependence variable and explanatory variables using time-series secondary data. The data analytical techniques were Augmented Dickey-Fuller Unit Root test statistic Johansen Co-integration test were pre-estimation test carried out in the study. Heteroscedasticity White Test, Ramsey Reset, Jarque Bera, Breuch-Godfrey Serial Correlation LM Test and autoregressive-distributed lag models.

3.1 Theoretical framework

The study adopts the work of Keynesian framework. In a simple Keynesian framework, the desired aggregate demand relationship in the goods market in the Keynesian framework is expressed as follows:

$$Y = C + I + G + (X - M) \tag{1}$$

3.2 Model specification

This study specifically adopts the model of Lawal and Ezeuchenne, (2017) [16], Abiodu (2017) [1] and Ezindu, Onwuka, Okoli and Udeze, (2020) to study of the impact of international trade on economic growth. The functional form of the model is specified as follows:

$$RGDP = F(IMP, EXP, TOP, EXR, FINTR) \tag{2}$$

$$RGDP_t = \beta_0 + \beta_1 IMP_t + \beta_2 EXP_t + \beta_3 TOP_t + \beta_4 EXR_t + \beta_5 FINTR_t + \mu_t \tag{3}$$

Where: β_0 : Intercept; $\beta_1, \beta_2, \beta_3, \beta_4$ and β_5 are the parameter estimates; RGDP = Gross Domestic product (It is used to measure economic growth); IMP: Import (total import both oil-import and non-oil import); EXP: Export (Total oil export and non-oil export); EXR: Exchange Rate; OPEN: Trade Openness (Expressed as (Import + Export)/GDP); FINTR: Foreign Interest Rate; μ : Error term and t: Period

4. Presentation of data and results

Table 1: Result of Descriptive Statistics

	RGDP	EXPORT	IMPORT	EXR	FINTR	OPEN
Mean	1842419.	8812613.	13145197	80.69966	18.41593	12.20456
Median	268435.0	846530.3	628415.5	97.39930	17.24625	6.888911
Maximum	11411067	62211243	2.40E+08	210.2762	31.65000	108.8133
Minimum	5205.100	2314.700	2213.500	2.020600	13.64202	0.695559
Std. Dev.	2532406.	17634463	40801662	70.31049	3.261615	19.75183
Skewness	1.674174	1.958853	4.590397	0.123650	2.043417	3.523333
Kurtosis	6.182116	5.355964	25.22824	1.346097	8.291347	16.50699

Jarque-Bera	35.56215	34.83164	963.9691	4.660920	74.50094	386.8236
Probability	0.000000	0.000000	0.000000	0.097251	0.000000	0.000000
Sum	73696777	3.53E+08	5.26E+08	3227.986	736.6374	488.1822
Sum Sq. Dev.	2.50E+14	1.21E+16	6.49E+16	192799.0	414.8870	15215.26
Observations	40	40	40	40	40	40

Source: E-view 10.0 output

Table 1 above depicts descriptive statistics for the obtained variables (Dependent and independent). These variables comprise of GDP, EXPORT, IMPORT, EXCHANGE RATE (EXR), FOREIGN INTERERST RATE (FINTR), and TRADE OPPENESS (OPEN). The output shows a mean of 1842419, median of 268435.0, maximum of 11411067, minimum of 5205.100, and sum of the variable is 73696777 respectively for the RGDP. The mean, median, maximum, minimum and sum of EXPORT are given respectively as; 8812613, 846530.3, 62211243, 2314.700 and 73696777. The mean, median, maximum, minimum and

sum of IMPORT are given respectively as; 13145197, 628415.5, 2.40E+08, 2213.500 and 5.26E+08. The mean, median, maximum, minimum and sum of EXCHANGE rate are given respectively as; 80.69966, 97.39930, 210.2762, 2.020600 and 3227.986. Also, the mean, median, maximum, minimum and sum of Foreign Interest rate are given respectively as; 18.41593, 17.24625, 31.65000, 13.64202 and 736.6374. The mean, median, maximum, minimum and sum of Trade Openness are given respectively as; 12.20456, 6.888911, 108.8133, 0.695559 and 488.1822.

Table 2: Unit Root Test Results

Variables	Variables Full Meaning	ADF- Statistics	Critical Value	Lag Value	Remark
RGDP	Real Gross domestic Product (Proxy for Economic growth)	-3.763914	1% level = -4.211868 5% level = -3.529758 10% level = -3.196411	0	1(0)
IMP	Import (total import both oil and non-oil import)	-3.046424	1% level = -2.632688 5% level = -1.950687 10% level = -1.611059	0	1(1)
EXP	Export (Total oil export and non-oil export)	-3.301547	1% level = -2.644302 5% level = -1.952473 10% level = -1.610211	0	1(0)
EXR	Exchange Rate	-6.859023	1% level = -3.615588 5% level = -2.941145 10% level = -2.609066	0	1(1)
OPEN	Trade Openness	-4.323035	1% level = -4.211868 5% level = -3.529758 10% level = -3.196411	0	1(0)
FINTR	Foreign Interest Rate	-4.035038	1% level = -4.211868 5% level = -3.529758 10% level = -3.196411	0	1(1)

Source: Author's computation

Table 2 above indicates the results of the ADF test for Unit root; it can be found that RGDP, TOP, FINTR and EXPORT are all stationary at Level while IMPORT and EXR are stationary at first difference. Not having a stationarity time series data implies not having a short-run relationship among the individual time-series data. This result is expected since most macro- economic time series data are known to exhibit such behaviour. Since all the time series variables are not all stationary at level form, there is a need to conduct a cointegration test. The is to show that although all the variables are non-stationary, the variables may have a long-term equilibrium relationship and the variables may be cointegrated and will not produce a spurious result.

4.1 ARDL Bound Co-integration Test

H₀ = There is no co-integration (no long run relationship among Variable)

Table 3: Co-integration Test Results

ARDL Bounds Test			
Date: 01/06/22 Time: 11:48			
Sample: 1981 2019			
Included observations: 39			
Null Hypothesis: No long-run relationships exist			
Test Statistic	Value	k	
F-statistic	3.97535	5	

Source: Author's computation from E-view 9.

The co-integration results in table 3 for the model (FINTR, EXR, EXP, IMP, OPEN and RGDP) revealed that f-statistics was 3.97535 greater than low bound (2.62) and upper bound (3.79) at the 5 percent level of significance. Thus, there is a long-run relationship among the variables (FINTR, EXR, EXP, IMP, OPEN and RGDP). We therefore reject the null hypothesis of there is no co-integration amongst the variables and accept the alternative hypothesis that states there is no co-integration amongst the variables.

4.2 Estimation of Regression Model

Empirical Results of the Auto-regressive Distributive Lag Model (ARDL)

Dependent Variable: RGDP				
Method: ARDL				
Date: 01/06/22 Time: 11:42				
Sample (adjusted): 1981 2019				
Included observations: 39 after adjustments				
Maximum dependent lags: 1 (Automatic selection)				
Model selection method: Akaike info criterion (AIC)				
Dynamic regressors (0 lag, automatic): IMPORT EXPORT EXR TOP FINTR				
Fixed regressors: C				
Variable	Coefficient	Std. Error	t-Statistic	Prob.*
RGDP (-1)	0.306596	0.173217	1.770017	0.0863
IMPORT	-0.356152	0.109644	-3.248257	0.0037
EXPORT	0.662572	0.216596	3.059022	0.0049
EXR	0.919624	0.480041	1.191572	0.0876
OPEN	0.556152	0.209644	2.652840	0.0015
FINTR	-1.9899.90	91499.68	-0.217486	0.8292
C	461691.9	1971452.	0.234189	0.8163
R-squared	0.732027	Mean dependent var		1889527.
Adjusted R-squared	0.681782	S.D. dependent var		2547693.
S.E. of regression	1437175.	Akaike info criterion		31.35541
Sum squared resid	6.61E+13	Schwarz criterion		31.65399
Log likelihood	-604.4304	Hannan-Quinn criter.		31.46254
F-statistic	14.56916	Durbin-Watson stat		2.050858
Prob(F-statistic)	0.000000			
*Note: p-values and any subsequent tests do not account for model selection.				

Source: Author’s computation from E-view 9

The auto-regressive distributive lag model was carried out to examine parameters estimates. In testing this hypothesis, foreign interest rate (FINTR), export (EXR), import (IMP), exchange rate (EX), trade openness, (OPEN) exchange rate (EXCHR) was regressed against real gross domestic product (RGDP). The result of the regression analysis represented the model for the impact of international trade on economic growth in Nigeria. The empirical result showed that the coefficient of import (IMP) has negative and significant impact on real GDP (RGDP) because observed values of t – statistics (3.24827) was greater than its critical value (1.694). The empirical result showed that the coefficient of export (EXP) has positive and significant impact on real GDP (RGDP) because observed values of t – statistics (3.059022) was greater than its critical value (1.694). The empirical result showed that the coefficient of exchange rate (EXR) has positive and insignificant impact on real GDP (RGDP) because observed values of t – statistics (1.191572) was less than its critical value (1.694). The empirical result showed that the coefficient of trade openness (OPEN) has positive and significant impact on real GDP (RGDP) because the observed values of t – statistics (2.652840) was less than its critical value (1.694). The empirical result showed that the coefficient of foreign interest rate (FINTR) has negative insignificant impact on real GDP (RGDP) because the observed value of t-statistics (-0.217486) was less than its critical value (1.694). The result of the F – statistical test shows that the overall regression of the variables was statistically significance because the observed values of the F – statistics (14.56916) was greater than its critical value (1.864251). Again, our empirical result shows that the R-squared (R²) is 0.732027.

4.3 Granger Causality Test result

The essence of causality analysis, using the Granger causality test, is to ascertain whether a causal relationship exists between two variables of interest.

Table 4: Result of Causality Test

Pairwise Granger Causality Tests			
Date: 01/06/22 Time: 01:35			
Sample: 1 40			
Lags: 2			
Null Hypothesis:	Obs	F-Statistic	Prob.
EXPORT does not Granger Cause GDP	38	17.1332	8.E-06
GDP does not Granger Cause EXPORT		1.75293	0.1890
EXR does not Granger Cause GDP	38	2.07715	0.1414
GDP does not Granger Cause EXR		6.84527	0.0033
INTR_FOR_ does not Granger Cause GDP	38	0.57600	0.5677
GDP does not Granger Cause INTR_FOR_		0.48753	0.6185
TOP does not Granger Cause GDP	38	0.15758	0.8548
GDP does not Granger Cause TOP		0.36093	0.6997
IMPORT does not Granger Cause GDP	38	1.16007	0.3259
GDP does not Granger Cause IMPORT		1.86483	0.1709
EXR does not Granger Cause EXPORT	38	2.07363	0.1418
EXPORT does not Granger Cause EXR		0.18321	0.8334
INTR_FOR_ does not Granger Cause EXPORT	38	0.25427	0.7770
EXPORT does not Granger Cause INTR_FOR_		0.35502	0.7038
TOP does not Granger Cause EXPORT	38	0.04245	0.9585
EXPORT does not Granger Cause TOP		2.76958	0.0773
IMPORT does not Granger Cause EXPORT	38	1.10592	0.3429
EXPORT does not Granger Cause IMPORT		7.33616	0.0023
INTR_FOR_ does not Granger Cause EXR	38	1.00024	0.3787
EXR does not Granger Cause INTR_FOR_		1.58851	0.2195
TOP does not Granger Cause EXR	38	0.15752	0.8549
EXR does not Granger Cause TOP		0.18856	0.8290
IMPORT does not Granger Cause EXR	38	2.66230	0.0847
EXR does not Granger Cause IMPORT		4.14171	0.0248
TOP does not Granger Cause INTR_FOR_	38	0.30875	0.7365
INTR_FOR_ does not Granger Cause TOP		0.66154	0.5228
IMPORT does not Granger Cause INTR_FOR_	38	0.23374	0.7929
INTR_FOR_ does not Granger Cause IMPORT		0.01157	0.9885
IMPORT does not Granger Cause TOP	38	2.89942	0.0692
TOP does not Granger Cause IMPORT		0.12074	0.8867

4.4 The result of the Granger Causality test

Evaluating the results in table 4, based on the decision rule, we conclude that Export trade granger causes gross domestic product (GDP) while GDP does not granger cause Export trade (Uni-direction of causality). Exchange rate does not granger cause gross domestic product but gross domestic product granger cause Exchange rate (uni directional causality). The Foreign Interest rate and gross domestic product does not granger cause each other (Zero causality). Trade openness and Import does not granger cause GDP (Zero directional causality). Exchange rate and export trade does not granger cause each other (Zero directional causality). Foreign Interest and export trade does not granger cause (Zero directional causality). Trade openness and export does not granger cause (Zero directional causality). Foreign interest and exchange rate does not granger cause each other (Zero directional causality). Trade openness and exchange rate does not granger cause each other (Zero directional causality). Import trade does not granger cause Exchange rate but exchange rate granger causes Import trade (Uni directional causality).

Trade openness and foreign interest rate does not granger cause each (Zero directional causality). Import and foreign interest rate does not granger cause each other (Zero directional causality). Import trade and trade openness does not granger cause each other (Zero directional causality).

4.5 Econometric /Second Order Test

The null hypothesis; there is Autocorrelation.

Table 5: Result of Breuch-Godfrey Serial Correlation LM Test

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	0.204271	Prob. F (1,26)	0.7129
Obs*R-squared	0.172837	Prob. Chi-Square (1)	0.6809
Test Equation:			
Dependent Variable: RESID			
Method: ARDL			
Date: 01/06/22 Time: 01:58			
Sample: 1980 2020			
Included observations: 39			
Presample missing value lagged residuals set to zero.			

Source: E-view Results

The Breuch-Godfrey Serial correlation LM Test was used to identify whether the model suffers from autocorrelation problem. The autocorrelation problem violates of ordinary least square assumption that says there is no correlation among error terms of different observation. Breuch-Godfrey Serial correlation LM Test was a statistic that ensures that the assumption of ordinary least square was not violated. The null hypothesis; there is autocorrelation problem. The result of Breuch-Godfrey Serial correlation LM Test (0.204271) and its P-value was (0.7129). Because Breuch-Godfrey Serial correlation LM Test (0.204271) was less than its P-value was (0.7129), we conclude that the model is free from Autocorrelation problem. This denotes that prediction base of the ordinary least square estimates were efficient and unbiased.

4.6 Result of Ramsey Reset Test

The null hypothesis; there is specification Error.

Ramsey RESET Test			
Equation: UNTITLED			
Specification: RGDP (-1) FINTR EXR EXP IMP OPEN C			
Omitted Variables: Squares of fitted values			
	Value	Df	Probability
t-statistic	0.179937	26	0.6038
F-statistic	0.121200	(1, 26)	0.5038
F-test summary:			
	Sum of Sq.	Df	Mean Squares
Test SSR	3.90E+12	1	3.90E+12
Restricted SSR	1.39E+13	27	5.16E+11
Unrestricted SSR	1.00E+13	26	3.86E+11
Unrestricted Test Equation:			
Dependent Variable: RGDP			
Method: ARDL			
Date: 01/06/22 Time: 02:00			
Sample: 1986 2020			
Included observations: 38			
Maximum dependent lags: 1 (Automatic selection)			
Model selection method: Akaike info criterion (AIC)			
Dynamic regressors (0 lag, automatic):			
Fixed regressors: C			

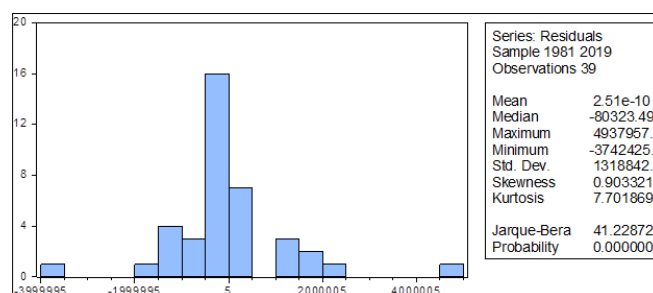
Source: Author's computation from E-view 9

This second order test checks whether the model of the

study suffers model specification error. The null hypothesis; there is model specification error. The Ramsey reset test showed that there was no specification error because F-statistics 0.121200 is less than Probability value (0.5038). It means that model include core variables in the model, does not include superfluous variables, the functional form of the model was very well chosen, there is no error of measurement in the regress and regressor.

4.6.1 Histogram normality test

Normality test is done to check if the residuals of the error term have a normal distribution. Normality test is conducted using Jacques-Bera (JB) test. In testing for normality, approach used by Paavola (2006) for testing normality using Jacques-Bera test was adopted.



Sources: E-view 9.0 Version

Jarque-Bera (JB) test is statistics that compute both skewness and Kurtosis. Skewness shows the degree symmetry (normal distribution). The normal measurement is zero/0. Kurtosis is a statistic that compute degree of peakedness. The normal measurement is three/3. A distribution is skewed if one of its tails is longer than the other. A skewed distribution can be positive or negative. Positive skewed distribution means that it has a long tail in the positive direction. Negative skewed distribution means that it has a long tail in the negative direction.

The null hypothesis is that there is no skewness and Kurtosis in the model. We reject the null hypothesis because the Jarqua-Bera statistics (41.22872) is greater than probability value (0.000). We reject null hypothesis and accept the alternative that there is no skewness and Kurtosis in the model. The skewness is normal because the value was 0.903321. The model of the study produced positive skewed distribution meaning that it has a long tail in the positive direction. The kurtosis was 7.701869 meaning that the degree of peakedness was high that normal value of three (3). This implies that the standardized residuals from the estimated model in the regression framework is normally distributed, which is consistent with the OLS assumption.

4.7 Test of hypotheses

The results for the various hypotheses testing are presented in the section.

4.7.1 Test of hypothesis one

H_{01} = International trade has no significant impact on economic growth in Nigeria

In testing this hypothesis, the proxies for international trade (foreign interest rate (FINTR), export (EXR), import (IMP), exchange rate (EX), trade openness, (OPEN) exchange rate (EXCHR) were regressed against real GDP (RGDP). The empirical result showed that the coefficient of the proxies

for international trade have positive and significant impact on real GDP (RGDP) because observed values of F – statistics (14.56916) was greater than its critical value (1.694). The empirical finding reveals that international trade has positive and significant impact on economic growth in Nigeria.

4.7.2 Test of hypothesis two

H_{02} = There is no causal relationship between export, import, trade openness, exchange rate, foreign interest and economic growth in Nigeria

In testing this hypothesis, the causality relationship between international trade and economic growth in Nigeria are determined. The empirical finding reveals that there is bilateral cause-effect relationship between international trade and economic growth in Nigeria.

5. Summary of the findings

The following are the major findings of the study:

1. The empirical result showed that the coefficient of the proxies for international trade have positive and significant impact on real GDP (RGDP) (F – statistics (14.56916) > its critical value (1.694). The empirical finding reveals that international trade has positive and significant impact on economic growth in Nigeria.
2. The empirical result showed that the causality relationship between international trade and economic growth in Nigeria are determined. The empirical finding reveals that there is bilateral cause-effect relationship between international trade and economic growth in Nigeria.

6. Conclusion

This study concludes that international trade has positive significant impact on economic growth in Nigeria within the period of 1980-2019. It further empirically examined the impact of exports, imports, Exchange rate, foreign interest rate and trade openness on the economic growth in Nigeria using GDP as the dependent variable and exports, imports, Exchange rate, foreign interest rate and trade openness as the independent variables. Data analysis revealed that a significant relationship exists between exports, imports, exchange rate and the economic growth in Nigeria. Furthermore, the study revealed that the Model employed for the analysis best fit the obtained variable with an R-square of 78.7%. The granger causality result depicts that there is a causal relationship between Exchange rate, import, export and the economic growth within the period of study.

7. Recommendations of the study

Based on the findings of this study, the following recommendations were made.

1. Government should start and sustain export promotion strategy by the means of income or profit tax exemption, credit subsidies, duty drawbacks and duty exemption and marketing and institutional support. The income or profit exemptions are given to favoured export activities such as non-traditional exports. Credit subsidies to provide increased access, charge lower interest rate for export financing compared to other credit and extend maturity for loans to buy capital goods for export activities.

2. The government should start and sustain export diversification. Non-oil sector exports especially agricultural sector should be encouraged and concentration on oil sector export should be minimized. Expenditure on projects and infrastructures that would facilitate trade and economic growth should be encouraged, and the monetary authority should give priority to exchange rate stability. The government should encourage farmers by providing them with loans, agricultural schools, farm to market roads, as most of the export goods come from the agricultural sector.

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