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Interative effects of trade openness and foreign direct investment on economic growth in Nigeria

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Abstract

The study examined the interactive effects of trade openness and foreign direct investment on economic growth in Nigeria over the period of 1982 to 2021. Specifically, the study sought to: determine the effects of trade openness on the economic growth in Nigeria and ascertain the effects of foreign direct investment on the economic growth in Nigeria. These variables consist of real gross domestic product (RGDP), Foreign Direct Investment (FDI), trade openness (TRAOPEN), inflation rate (INFLA), exchange rate (EXR) and trade tariff (TRADE). The variables used in the model were foreign direct investment (FDI), trade openness (TRAOPEN), and trade tariff (TRADE). The methods of data analysis was Autoregressive distributive lag Model. The following findings were stipulated; trade openness (TRAOPEN) has positive and significant impact on real gross domestic product (RGDP) its probability value of 0.0001 was less than 0.05 but it was positive and significant impact on real gross domestic product (RGDP) its probability value of 0.0027 was less than 0.05 in long run; foreign direct investment (FDI) has positive and significant impact on real gross domestic product (RGDP) its probability value of 0.0001 was less than 0.05 but it was positive and significant impact on real gross domestic product (RGDP) its probability value of 0.0027 was less than 0.05 in long run. The study recommends that policymakers of Nigeria government should consistently formulate and implement policies that would increase their annual inflows of FDI and their degree of trade openness.

Keywords: Trade openness: Foreign Direct Investment: Economics growth

1. Introduction

Trade openness is the liberalization of the exchange of goods and services across borders through increased integration among countries. These countries are joined together in terms of free movement of capital and labour, and free foreign trade and finance (Igudia, 2004). However, the debate surrounding the relationship between trade openness and economic growth in developing economies is between pro-traders and anti-traders (Oluwatoyin & Folasade, 2014). Trade has been an area of interest to policy makers as well as economists. It enables nations to sell their domestically produced goods to other countries of the world. And it has been regarded as an engine of growth which leads to steady improvement in human status by expanding the range of people's standard of living and preferences (Adewuyi, 2002).

Foreign direct investment (FDI) remains an important key aspect of global development discourse. Target ten for Sustainable Development Goal (SDG) recognizes that FDI into Africa and other least developed and developing countries can go a long way in reducing inequality within and among countries (United Nations, 2019). FDI benefits developing countries in transferring production technology, skills, enhancing productivity, creating business for local firms, generating better-paying jobs, and accessing international marketing networks (World Bank, 2020). According to the United Nations Conference on Trade and Development (UNCTAD, 2018), FDI is a vital source of private external finance for developing countries. It adds to investible resources and capital formation. Moreover, in improving the host

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country's economy and productivity, FDI enhances the private sector-led growth, thereby effectively fighting poverty (Organisation of Economic Cooperation and Development (OECD), 2019).

A major component of capital inflows, foreign exchange, and an important contributor to the GDP of most developing economies is foreign direct investment (FDI) (Insah, 2013). FDIs not only provide foreign exchange to fill the gap between targeted foreign exchange requirements and net export earnings, but also gaps in management, entrepreneurship, technology, and skills which are partly or wholly filled by the local operations of firms owned by foreign investors (Todaro & Smith, 2011 cited in Igudia, 2014). FDI inflows also encourage local enterprises to invest more in ancillary industries thereby propelling increased productive activities. The role of foreign direct investment (FDI) in stimulating economic growth is one of the controversial issues in the development literature. In the standard Solow type growth model, FDI enables host countries to achieve investment that exceeds their own domestic saving and enhances capital formation. According to this theory, the potential beneficial impact of FDI on output growth is confined to the short run. In the long run, given the diminishing marginal returns to physical capital, the recipient economy could converge to the steady state growth rate as if FDI had never taken place, leaving no permanent impact on the growth of the economy (De Mello, 2012 cited in Abdulhamid, Ahmed & Seid, 2021). With an increasing pace of globalization that resulted partly from liberalization of trade and exchange rate regimes, the volume of FDI has increased throughout the world. In the last few decades, FDI has been growing at a pace that far exceeds the volume of international trade. According to UNCTAD, 2008 cited in Abdulhamid, Ahmed and Seid, 2021, FDI inflow to the developing countries increased from $8,392 million to $246,056 million between 1990 and 2000. With globalization and trade liberalization, one of the basic interests in development and international economics is to check if trade openness promotes economic growth. The idea that trade openness affects economic growth is not new again. However, the nature of the effect is being seriously debated in the literature.

1.1. Statement of the Problem

The role of FDI and trade openness has been widely recognized as the considerable mechanisms of economic growth. Foreign Direct Investment is expected to contribute to economic growth of a Country through capital accumulation of new productive activities into the host countries economy. However, accumulation of new capital is dependent upon certain level of macroeconomic and institutional development (Abdulhamid, Ahmed & Seid, 2021).

Trade openness often leads to a shift in the balance of an economy. Some industries grow, some decline. Therefore, there may often be structural unemployment from certain industries closing. Trade liberalisation can often be painful in the short run, as some industries and some workers suffer from the decline in uncompetitive firms. Again, trade openness could lead to greater exploitation of the environment, e.g. greater production of raw materials, trading toxic waste to countries with lower environmental laws (Egbulonu & Ezeocha, 2018). Trade openness may be damaging for developing economies who cannot compete against free trade. The infant industry suggests that trade protection is justified to help developing economies diversify and develop new industries. Most economies had a period of trade protectionism. It is unfair to insist that developing economies cannot use some tariff protectionism. Because of this argument, some argue that trade openness often benefits developed countries more than developing countries (Elijah & Balarabe, 2019).

Openness of trade has brought Nigerians heavy reliance on foreign items. This has led to negative impacts on home industries and also to a huge demand on foreign exchange and a depreciation of the naira over the years. The country's domestic manufacturing is contracting and unable to meet the rising demand of the country's large and expanding population. This contraction is mainly due to the high cost and unreliability of electricity, poor infrastructure, increase in cost of procuring raw materials, increase in cost of capital, multiplied taxation and governments inconsistent policies (Zaman, Donghui, Yasin, Shah & Imran, (2018). All these have brought about a greater reliance on imports.

The influx of foreign made goods into Nigeria is most alarming and a threat to local firms. Cheaper and low quality goods flood the market due to relaxed safety checks. The population of Nigeria makes it a big market for multinationals and the global market. This makes import difficult especially for industries that require key imported raw materials. Therefore, it is in the light of these backdrops that this study examines the interactive effects of trade openness, foreign direct investment and economic growth in Nigeria.

Objectives of the Study

The aim of the study is to examine the interactive effects of trade openness, foreign direct investment and economic growth in Nigeria. The specific objectives are to:

- determine the effect of trade openness on economic growth in Nigeria.

- ascertain the effect of foreign direct investment on economic growth in Nigeria.

1.2. Significance of the Study

This study will be beneficial and relevant to policy-makers and investors. The outcome of this study will be useful to policy-makers in providing empirical evidence to policy makers in the design of different programs aiming at enhancing private investment and for forecasting purposes. The study is useful in policy formulation regarding international trade strategies for poverty reduction through activities of trade open and foreign investment in Nigeria. It would act as a reference point of the role of international trade in promoting economic growth in Nigeria. The findings will inform policy makers and national planners on the long run effect of international trade on economic growth. This can influence their future policy and decision making on matters relating to trade openness or trade tariff.

The outcome of this study will be useful to investors and entrepreneur in Nigeria to identify the benefits of International technology transfer (ITT) in stimulating international trade as international technology transfer as refers to any process by which a party in one country gains access to technical information of a foreign party and successfully absorbs it into its production process. The technology adoption helps to explain the income gap between developed and developing countries.

2. Conceptual Literature

2.1. Trade Openness

A country's degree of openness to internal trade is relevant for attracting foreign direct investment. Trade openness is determined as the ratio of imports plus exports to gross domestic product. Dondashe and Phiri (2018) note that trade openness contributes in attracting foreign direct investment into a country. Owusu (2017) suggests that trade liberalization is an insignificant determinant of foreign direct investment inflows. It found that a more friendly environment for enterprises is more successful in obtaining FDI.

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

2.1.1. Foreign Direct Investment

Foreign direct investment (FDI) is viewed as an investment in the form of a controlling ownership in a business in a specific nation by an individual or organisation situated in another nation. FDI involves mergers and acquisitions, building new facilities, reinvesting benefits earned from abroad tasks and intercompany loans (Orji, Nwagu, Ogbuabor & Onyinye, 2021). Foreign direct investment (FDI) is therefore defined "as an increase in the book value of the net-worth of investment in one country held by investors of another country where the investments are under the managerial control of the investor" (Graham, 1995). To buttress the definition above, Todaro and Smith (2003) noted that most FDI are infant subsidiaries of Multinational Corporations (MNCs) such that the investors are the parent organizations of firms. Thus, foreign direct investment flows represent the expansion of the international activities of Multinational Corporations.

2.1.2. Economic Growth

Economic growth is the increase in the value of goods and services produced by a country over a period and Real Gross Domestic Product (RGDP) is used as a proxy for economic growth. Real gross domestic product is an inflation-adjusted measure which reflects the value of all goods and services produced by an economy in a given year, usually expressed in base-year prices, and is often graded as constant-price or inflation-corrected GDP. Unlike nominal GDP, real GDP can account for changes in price level and provide a more accurate figure of economic growth (Dibia & Onwuchekwa, 2019). According to Salami, Apelogun, Omidiya & Ojoye, (2015), economic growth can be defined as the sustained increase in a country's productive capacity, and per capita national output or net national product over a while. These increases are the basic causes of economic growth. Fiscal policy is one of the most important tools that have a significant effect on all economic sectors and have a real effect on economic variables like the Gross national product, inflation, unemployment, etc. Taxes can be seen as a fiscal policy, macroeconomic, and internal revenue mobilization tool for the attainment of economic growth. Economic growth can be proxied, using different economic indicators, ranging from

Gross National Product (GNP), Gross Domestic Product (GDP), Human Development Index, and Per Capita Income. But in this study, economic growth was measured with Gross Domestic Product (GDP), and Human Development Index.

Trade Openness, Foreign Direct Investment and Economic Growth

Often, the role of FDI in promoting economic growth is connected to trade openness. Kudakwashe, and Regret (2021) stressed that open trade policy is crucial for the growth effects of FDI. This happens as foreign investors use complex integration strategies that require unrestricted imports of intermediate goods at all stages of the production process. Kudakwashe, and Regret (2021) identified trade openness as an important channel through which the host country can exploit the positive growth effects of FDI. In his study, Kudakwashe, and Regret (2021) also cited in found that openness and net foreign direct investment contributed more towards innovations in economic growth. According to the World Bank 2018 report, countries that are open to international trade tend to grow faster, innovate and improve productivity, as supported by several empirical studies such as Keho and Yaya (2017) and Malefane and Odhiambo (2018). FDI contributes more jobs to the local economy by directly adding new jobs and indirectly when local spending increases due to purchases of goods and services by the new increase in employees. All of these in turn are expected to have positive multiplier effects for an economy. The benefits from the balance of payments effects include improvement in the capital account due to the inflows of new capital into the host country and improvements in the current account balance because of possible decline in imports of goods and services which would otherwise have been imported. The additional taxes from multinational corporations also have the potential to improve the budget situation of the host country (Abdulhamid, Ahmed & Seid, 2021).

3. Theoretical Literature

3.1. 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.

3.2. Empirical Literature

Pratiwa and Nadila (2022) investigated the effect of trade openness on the economic growth of agricultural countries. Specifically, the study sought to examine export, import, gross domestic product (GDP), Gross Fixed Capital Formation (GFCF) on real Gross Domestic Product (RDGP). The samples of 72 agrarian nations generated by the World Bank were used for data examination over a period of 2011 to 2020. The method of data analysis was fixed effects panel data analysis. The result reports that from 2011 to 2020; 16 out of 72 nations have succeeded in experiencing positive economic growth, the value of GFCF was US$ 2,859.04 billion, and later grew by 19 percent to US$ 3,393.73 billion, the population tends to increase continuously year by year, and 2 out of 72 countries experienced export plus import exceed their GDP. Moreover, trade openness is positively associated with economic growth, with a coefficient of 3.81. Besides that, an increase in GFCF may boost economic growth by approximately 3.32 percent. On the contrary, one percent additional population significantly delivers around 25.46 percent negative economic growth. The study recommends that policy-makers should ensure sustainable job creation so that more employment opportunities will follow one unit addition in the population.

Orji, Nwagu, Ogbuabor and Onyinye (2021) conducted a study to investigate the foreign direct investment and growth nexus in Nigeria. The specific objectives of the study was to investigate the effect of foreign direct investment (FDI) on economic growth in Nigeria, which is currently Africa's largest economy, and also determined the long-run relationship between FDI and economic growth in Nigeria from 1981 to 2017. The study adopted the autoregressive distributed lag modeling approach and ordinary least square in the analysis. The empirical results revealed that FDI has a positive and significant relationship with economic growth in Nigeria within the period under review. The study recommends that Nigerian government should formulate trade policies that will attract more FDI in all sectors of the economy especially in the service and manufacturing sectors, so as to improve the infrastructural facilities and production of goods in the country and also expand its labour force.

Sarania (2021) conducted a study to examine the interactions among infrastructure, trade openness, foreign direct investments and economic growth in India. The study specifically examines the dynamic interrelationships among infrastructure, trade openness, foreign direct investments (FDI), and economic growth, and fixed capital formation, labour and inflation rate in the context of India for the period 1970 to 2018. The method of data analysis of the study were the application of Toda–Yamamoto (TY) causality test and the auto-regressive distributed lag (ARDL) bounds testing approach to co integration to offer policy implications of the effectiveness of these important macroeconomic determinants in the short and long-run. The findings of the study revealed that economic growth, trade openness, capital, labour and inflation are key determinants of infrastructure development in the long run and economic growth, infrastructure, trade openness, capital and labour are the long-run determinants of FDI. The study further recommend that government spending on infrastructure network and dependence on FDI inflows may not be effective tool to deal with economic downturns in the short run while maintenance of higher economic growth is important for accelerating inflows of FDI and improvement of infrastructure facilities, catalyzing as a key driving force of growth in the long run.

Kudakwashe, and Regret (2021) conducted a study to examine the growth effects of foreign direct investments (FDI) in Zimbabwe.. The specific objectives of the Study were to investigate on foreign direct investment (FDI) growth effects in Zimbabwe over a period 1990 to 2019. FDI-Led growth theories often view FDI as an enabler of economic growth. However, the extent may depend upon the source of FDI. Nonetheless, existing studies on Zimbabwe base their conclusions on aggregate FDI. Accordingly, we provide fresh evidence by disaggregating FDI inflows by sources. This is logical given the reality that FDI from different sources is Heterogeneous. We used the Autoregressive-Distributed-Lag (ARDL) Technique to estimate a time series model derived from neoclassical and endogenous growth models. Results indicated that FDI has a significantly positive growth effect. More importantly, we document that FDI sources do matter greatly. Specifically, I FD flows from Africa and Asia were found to have positive and significant growth effects. However, FDI from Europe and the United States has negative and insignificant impacts. We recommended that Zimbabwe should rationally embrace the recently launched AFCFTA. It is vital to strike a balance between market deepening and promoting domestic production. Also, while most FDI from Asia is from is china, we urge Zimbabwe to provide conducive environment to investors from the rest of Asia. This can be achieved through signing bilateral FDI agreements with Asian countries.

Mbingui and Etoka-Beka (2021) analyze the effects of trade openness on economic growth in the Republic of Congo. Specifically, the study sought to examine economic openness (OPEN), import (IMP) and Export (EXP) and real gross domestic product (RGDP) over the period from 1986 to 2016. Method of data analysis was Vector Error Correction Model (VECM). The result shows that in the short and long term, trade openness negatively affects economic growth in Congo. This means that Congo does not benefit from the trade openness policy. This result is explained by the strong dependence of the Congolese economy on exports of raw materials (natural resources). The study recommended that

policy of trade openness should be allowed to increase imports of goods and services that include new technologies, and through quality training, its innovative products would be better understood in society in order to boost the national economy; the installation of multinational firms in the Congo would be favorable insofar as it increases competition and encourages domestic firms to improve their technologies and reorganize their management and organizational methods.

Mordi, Adewumi and Oyedokun, (2021) conducted a study to ascertain the relationship between trade openness and foreign direct investment in Nigeria. Specifically, the study sought to examine the impact of trade openness on foreign direct investment in Nigeria over the period of 1980 to 2019. The sources of data were national bureau of statistics, Central Bank of Nigeria bulletin and World Development Indicator (WDI). The dependent variable is FDI, while the independent variable is trade openness. Data analysis was done using inferential and descriptive statistics. The descriptive statistics was used because it involves simple percentages, frequencies, bars. The result of the findings showed that a positive correlation between Trade openness and FDI ($r = .073$, $p<.05$). This implies that effective trade openness will improve Foreign Direct Investment while ineffective trade openness will adversely affect Foreign Direct Investment. The study recommends that the Nigerian government should embark on policies that would attract more foreign direct investment (FDI) to the dynamic products and sectors with a high-income elasticity of demand such as the Nigerian local content policy, industrial policies and trade policies.

Abdulhamid, Ahmed and Seid (2021) conducted a study to examine the effects of foreign direct investment on economic growth in Sub-sahara Africa. Specifically, the study the sought to ascertain effect of foreign direct investment inflow on economic growth. The methodology involves estimating augmented endogenous growth model using panel data for the period of 1975-1999. The method of data analysis was ordinary least method square. The results indicate that foreign direct investment has marginally significant positive effect on economic growth. Domestic economic conditions such as macroeconomic policy, openness, and domestic investment have significant positive effect on economic growth. The study recommends that government of sub-sahara Africa countries should use appropriate and responsive policies that emphasize on attraction and efficient utilisation of foreign direct investment and encouragement of foreign trade in order to increase and sustain economic growth in the sub-region.

Nketiah, Cai, Adjei and Boamah, (2020) investigated the relationship among foreign direct investment, trade openness and economic growth in Ghana. Specifically, the study sought to establish the relationship among foreign direct investment, trade openness and economic growth in Ghana taking the period of post-liberalization covering 1975-2017. The Augmented Dickey-Fuller (ADF) test for unit root, regression analysis, descriptive analysis, and Pearson correlation was used to investigate the relationships. The study extracted and used secondary data sources derived from the World Development Indicators (WDI) of the World Bank and Bank of Ghana website over the period 1975-2017. The study used foreign direct investment, inflation, and trade openness as independent variables while GDP growth (annual %) was the dependent variables. Using the Ordinary Least Squares (OLS) estimator, the study revealed that trade openness is the main factor affecting GDP growth (annual %) in Ghana. Also, the study finds that foreign direct investment and Inflation had impact but were not statistically significant on GDP growth (annual %). Therefore, the study concludes by recommending robust measures to enhance trade openness in terms of encouraging exports and inflow of FDI through the creation of an enabling and friendly environment to do business for output growth dynamics in Ghana.

Elijah and Balarabe (2019) examined the dynamic impact of trade openness on the economic growth in Nigeria. Specifically, the study sought to investigate the dynamic impact of trade openness on the economic growth in Nigerian economy over the period of 1980 to 2016. Secondary data were sourced from the 2016 Central Bank of Nigeria Statistical Bulletin'. The tests of diagnostic conducted are: cointegration test, unit root test and error correction model. The result revealed that trade openness had negatively impacted on the economic growth in both the short run and long run. Based on study findings, it is recommended that since the imports of the country are more than its export; the government needs to have the present efforts to sustain the diversification of the economy to achieve economic growth led by exports. Lastly, the study also recommends that the government of the country should sustain the policy of Treasury Single Account (T.S.A) so as that the loopholes will be blocked in the private and public sectors of the nation, and also to make sure there is equity in the utilization of the revenue generated internally for the masses to benefit.

3.3. Gap in Literature

Based on available information from the literature, the works of Pratiwa and Nadila, (2022) that investigated the effect of trade openness on the economic growth of agricultural countries, incorporated Gross Fixed Capital Formation (GFCF) which is wrong variable for trade openness in the study. Orji, Nwagu, Ogbuabor and Onyinye (2021) that conducted a study to investigate the foreign direct investment and economic growth in Nigeria but the study failed to use second order tests to affirm results of estimated parameters. There is no clear consensus till date in the literature as to whether

trade openness, foreign trade investment stimulate economic growth or retards economic growth as empirical result varies from region to region and country to country. Therefore there is need for further research on the topic. The study covered literature gaps by adding extra variables like total export value (TEV), total import value (TIV), foreign direct investment (FDI), trade openness (TRAOPEN), and trade tariff (TRADE) and also incorporate control variables like exchange rate and inflation rate in the study.

4. Methodology

This study made use of Ex Post Facto research design. These variables consist of real gross domestic product (RGDP), Foreign Direct Investment (FDI), trade openness (TRAOPEN), inflation rate (INFLA), exchange rate (EXR) and trade tariff (TRADE) for a period of 1982 to 2021 as defined in our model specification and were sourced from Central Bank of Nigeria's (CBN) statistical bulletin for various years. The data collected was subjected to descriptive statistic, correlation matrix, Augmented Dickey-Fuller Unit Root test statistic, Johansen Co-integration test, Heteroscedasticity White Test, Ramsey Reset, Jarque Bera, Breuch-Godfrey Serial Correlation LM Test. The method of data analysis was Autoregressive distributive lag

4.1. Model Specification for the Study

Thus, the model is represented in a functional form as shown below:

$$RGDP = f (FDI, EXR, TRAOPEN, TRADE, INFLA)…………3.9$$

Where, Where, RGDP is real GDP, FDI is foreign direct investment, EXR is exchange rate, TRAOPEN is trade openness (Trade openness calculated as the ratio of import plus export to GDP (%), TRADE is trade tariff and INFLA is inflation rate.

In a linear function, it is represented as follows:

$$RGDP_t = \beta_0 + \beta_1 FDI_t + \beta_2 EXR_t + \beta_3 TRAOPEN_t + \beta_4 TRADE_t + \beta_5 INFLA_t + \mu_t ……………… 3.9$$

Where: β_0 = Constant term, β_1 to β_8 = Regression coefficient, μ_t = Error Term, $_t$ = the period

To reduce the outliers among the variables, all variables will be expressed in logarithmic form.

$$RGDP_t = \beta_0 + \beta_1 LogFDI_t + \beta_2 EXR_t + \beta_3 LogTRAOPEN_t + \beta_4 LogTRADE_t + \beta_5 INFLA_t + \mu_t …………3.10$$

Where: β_0 = Constant term, β_1 to β_8 = Regression coefficient and μ_t = Error Term.

4.2. Presentation and Analysis of Results

The mean *is the average of a data set*. The mode is the most common number in a data set. The median is the middle of the set of numbers. The maximum is the largest value in the data set, minimum is the lowest value in the data set. A sum is the grand total of all the data (the observations) in a dataset. The standard deviation is the average amount of variability in a dataset.

This correlation matrix presents a table showing correlation coefficients between sets of variables. Each random variable (X_i) in the table is correlated with each of the other values in the table (X_j). This test presented clear understanding on the assumption of ordinary least square that there is no perfect or exact linear relationship among explanatory variables. The result of correlation matrix showed that every explanatory variable in the study is linearly independent of each other.

In the table 4.1, the variables that were tested with unit root are shown, the values for Augmented Dickey-Fuller (ADF) statistic is presented, the lag level of each variable is identified. The Mackinnon critical values at 5% level of significant were pointed out. The order of integration of each variable was enumerated, and finally the stationarity position of each variable was also stated. When Augmented Dickey-Fuller statistic is greater than Mackinnon 5 percent critical value in absolute term, it is concluded that the variable is stationary. These variables real gross domestic product (RGDP), foreign trade exchange rate (EXR), foreign direct investment (FDI), trade openness (TRAOPEN), and trade tariff (TRADE) are stationary at first difference, that is they are I(1) process while only inflation rate (INFLA) variable was

stationary at level 1(0). Therefore, they contain unit root. The existence of unit root in most variables paves way for further investigation on the nature of the long run relationship among the variables.

Table 1 Result of Descriptive Statistics

	RGDP	FDI	EXR	TRAOPEN	TRADE	INFLA
Mean	210439.7	428567.0	70054.95	574140.0	608998.6	16.48044
Median	205596.8	113623.6	97.39930	38.30000	162181.3	10.30663
Maximum	527576.0	1488922.	139.9400	224.6000	1874638.	75.40165
Minimum	31546.80	264.3000	0.546400	9.340000	2880.200	0.686099
Std. Dev.	144542.8	527873.8	308834.7	55.53566	745344.5	14.45014
Skewness	0.566420	0.993379	4.129483	1.684709	0.869145	2.132570
Kurtosis	2.554494	2.497168	18.05263	4.764335	2.028158	8.508016
Jarque-Bera	2.469667	7.000076	491.3202	24.10977	6.610211	80.88277
Probability	0.290883	0.030196	0.000000	0.000006	0.036695	0.000000
Sum	8417589.	17142679	2802198.	2296.560	24359945	659.2178
Sum Sq. Dev.	8.15E+11	1.09E+13	3.72E+12	120284.2	2.17E+13	8143.457
Observations	40	40	40	40	40	40

Source: e-view's Result

Table 2 Result of Correlation Matrix

	RGDP	FDI	EXR	TRAOPEN	TRADE	INFLA
RGDP	1.000000	-0.454741	-0.227662	-0.449320	-0.476861	0.311375
FDI	-0.454741	1.000000	0.465008	0.887771	0.737441	-0.380535
EXR	-0.227662	0.465008	1.000000	0.429806	-0.143563	-0.118502
TRAOPEN	-0.449320	0.887771	0.429806	1.000000	0.611193	-0.295031
TRADE	-0.476861	0.737441	-0.143563	0.611193	1.000000	-0.371852
INFLA	0.311375	-0.380535	-0.118502	-0.295031	-0.371852	1.000000

Source: e-view's Result

Table 3 Results of Stationarity (unit root) test

Variables	Variables' Name	ADF- Statistic	5% Critical Value	Remark
RGDP	Real gross domestic product	-6.660596	-2.941145	1 (1)
FDI	Foreign Direct Investment	-4.651514	-2.941145	1 (1)
TRAOPEN	trade openness	-11.52674	-2.941145	1 (1)
EXR	Exchange Rate	-6.163554	-2.941145	1 (1)
TRADE	Trade Tariff	-5.945844	-2.941145	1 (1)
INFLA	Inflation Rate	-3.222126	-2.938987	1 (0)

Source: Author's computation from E-view 9

4.3. Bound Co-integration Test Results

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

Table 4 Bound Co-integration Test Results

Test Statistic	Value	K
F-statistic	5.398144	7
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	2.03	3.13
5%	2.32	3.5
2.5%	2.6	3.84
1%	2.96	4.26

Source: Author's Computation from E-view 9

The co-integration result in table 4.4 for the model (RGDP, INFLA, FDI, TRAOPEN, EXR, and TRADE) reveals that there is a long-run relationship among the variables (RGDP, FDI, TRAOPEN, EXR, and TRADE) since f-statistic (5.398144) was greater than 5% lower and upper bound critical value (3.50). We therefore reject the null hypothesis of no co-integration amongst the variables and accept the alternative hypothesis.

4.4. Estimation of Regression Model

Table 5 Empirical Results of the Auto-regressive Distributive lag Model ARDL

Cointegrating Form				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LOGFDI)	0.783613	0.172809	4.534561	0.0001
D(LOGTRADE)	-0.100615	0.048187	-2.088021	0.0446
D(LOGTRAOPEN)	0.350407	0.114552	3.058933	0.0001
D(EXR)	-0.145681	0.087531	-1.664340	0.1055
D(INFLA)	-0.395023	0.099039	-3.985600	0.0001
CointEq(-1)	-0.464987	0.136401	-3.408981	0.0018
Cointeq = LOGRGDP - (0.3457*LOGFDI -0.7938*LOGTRADE + 0.3327				
*LOGTRAOPEN -0.0000*EXR + 0.0117*INFLA + 12.9595)				
Long Run Coefficients				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOGFDI	0.242111	0.217511	1.113097	0.2737
LOGTRADE	-0.291342	0.143083	-2.036171	0.0498
LOGTRAOPEN	0.102526	0.031668	3.237479	0.0027
EXR	-0.421835	0.252721	-1.669171	0.1045
INFLA	0.668687	0.177806	3.760767	0.0009
C	12.959487	2.482676	5.219966	0.0000

Source: Author's Computation from E-view 9

The result of the regression analysis represents the model for the interactive effects of trade openness, foreign direct investment and economic growth in Nigeria. The empirical result shows that the coefficient of foreign direct investment (FDI) has positive and significant impact on real gross domestic product (RGDP) because its probability value of 0.0001 was less than 0.05 in short run but it was positive and insignificant impact on real gross domestic product (RGDP)

because its probability value of 0.2737 was greater than 0.05 in long run. The trade openness (TRAOPEN) has positive and significant impact on real gross domestic product (RGDP) its probability value of 0.0001 was less than 0.05 but it was positive and significant impact on real gross domestic product (RGDP) its probability value of 0.0027 was less than 0.05 in long run. The foreign exchange rate (EXR) has negative and insignificant impact on real gross domestic product (RGDP) because its probability value of 0.1055 was greater than 0.05 but it was negative and insignificant impact on real gross domestic product (RGDP) because its probability value of 0.1045 was greater than 0.05

The trade tariff (TRADE) has negative and significant impact on real gross domestic product (RGDP) because its probability value of 0.0446 was less than 0.05 in short run but it was negative and significant impact on real gross domestic product (RGDP) because its probability value of 0.0498 was less than 0.05 in long run. The inflation rate (INFLA) has negative and significant impact on real gross domestic product (RGDP) because its probability value of 0.018 was less than 0.05 in short run but it was positive and significant impact on real gross domestic product (RGDP) because its probability value of 0.009 was greater than 0.05 in long run. The result of the F – statistical test shows that the overall regression of the variables is statistically significance. This is because observed values of the F – statistics (10.05576) was greater than its critical value (0.000001). Again, our empirical result shows that the R-squared (R^2) is 0.728374.

4.5. Econometric /Second Order Test

The null hypothesis; there is Autocorrelation.

Table 6 Result of Breuch-Godfrey Serial Correlation LM Test

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	7.014152	Prob. F(1,29)	0.0001
Obs*R-squared	6.019023	Prob. Chi-Square(1)	0.0003

Source: Author's Computation from E-view 9

The Breuch-Godfrey Serial correlation LM Test was used to identify whether the model suffers from autocorrelation problem. The autocorrelation problem violates ordinary least squares assumption that says there is no correlation among error terms of different observation. Breuch-Godfrey Serial correlation LM Test is a statistic that ensures that the assumption of ordinary least squares was not violated. The result of Breuch-Godfrey Serial correlation LM Test shows that there is no serial correlation problem because its f-statistic (7.014152) was greater than its P-value (0.0001). So, we reject the null hypothesis and accept the alternative hypothesis.

4.6. Result of Ramsey Reset Test

Table 7 Result of Ramsey Reset Test

Ramsey RESET Test			
Equation: UNTITLED			
Specification: RGDP RGDP(-1) TEV TIV FDI EXR TRAOPEN TRADE INFLA			
C			
Omitted Variables: Squares of fitted values			
	Value	**Df**	**Probability**
t-statistic	6.035201	29	0.0000
F-statistic	36.42365	(1, 29)	0.0000
F-test summary:			
	Sum of Sq.	Df	Mean Squares
Test SSR	1.23E+11	1	1.23E+11
Restricted SSR	2.21E+11	30	7.38E+09
Unrestricted SSR	9.81E+10	29	3.38E+09

Source: Author's Computation from E-view 9

The null hypothesis; there is Specification Error.

This second order test checks whether the model of the study suffers model specification error. The null hypothesis; there is model specification error. From the results of the Ramsey Reset test, the probability values (0.0000) for Ramsey Reset's t-statistics was less than 0.05. So, we reject the null hypothesis and accept the alternative hypothesis. This implies that model include core variables in the model. It does not include superfluous variables. The functional form of the model is very well specified, there is no error of measurement in the regressand and regressors.
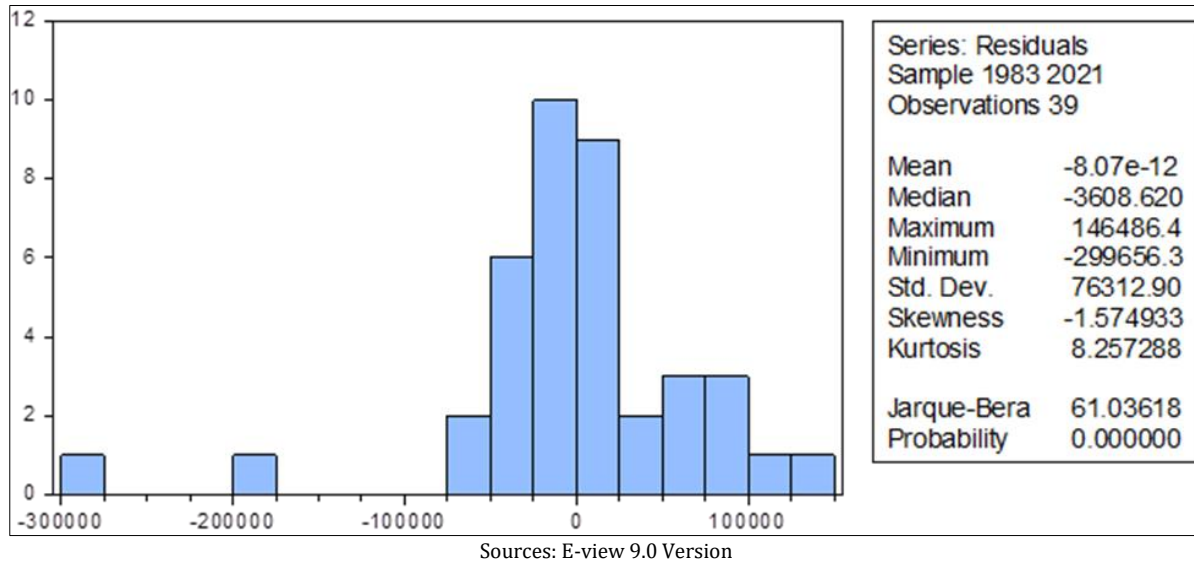
4.6.1. Histogram Normality Test

Sources: E-view 9.0 Version

Figure 1 presents Normality test for each of the Distribution

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 statistics 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 probability value of Jarqua-Bera statistics (0.0000000) which is less than 0.05. This implies that the residuals do follow normal distribution.

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} Trade openness has no significant effects on economic growth in Nigeria.

The trade openness (TRAOPEN) has positive and significant impact on real gross domestic product (RGDP) its probability value of 0.0001 was less than 0.05 but it was positive and significant impact on real gross domestic product (RGDP) its probability value of 0.0027 was less than 0.05 in long run. Trade openness has 35 percent positive and significant impact on economic growth in Nigeria in short run. A percent change in trade openness results to 35 percent increase in economic growth in Nigeria in short run. Again, Trade openness has 10 percent positive and significant impact on economic growth in Nigeria in long run. A percent change in trade openness results to 10 percent significant increase in economic growth in Nigeria in long run.

4.7.2. Test of Hypothesis two

H_{02} : Foreign direct investment has no significant effects on economic growth in Nigeria.

The foreign direct investment (FDI) has positive and significant impact on real gross domestic product (RGDP) its probability value of 0.0001 was less than 0.05 but it was positive and significant impact on real gross domestic product (RGDP) its probability value of 0.0027 was less than 0.05 in long run. Foreign direct investment has 78 percent positive and significant impact on economic growth in Nigeria in short run. A percent change in foreign direct investment results to 78 percent increase in economic growth in Nigeria in short run. Again, foreign direct investment has 24 percent positive and insignificant impact on economic growth in Nigeria in long run. A percent change in trade openness results to 24 percent insignificant increase in economic growth in Nigeria in long run. The empirical result shows that the coefficient of foreign direct investment (FDI) has positive and significant impact on real gross domestic product (RGDP) because its probability value of 0.0001 was less than 0.05 in short run but it was positive and insignificant impact on real gross domestic product (RGDP) because its probability value of 0.2737 was greater than 0.05 in long run.

5. Summary

The trade openness (TRAOPEN) has positive and significant impact on real gross domestic product (RGDP) its probability value of 0.0001 was less than 0.05 but it was positive and significant impact on real gross domestic product (RGDP) its probability value of 0.0027 was less than 0.05 in long run. Trade openness has 35 percent positive and significant impact on economic growth in Nigeria in short run. A percent change in trade openness results to 35 percent increase in economic growth in Nigeria in short run. Again, Trade openness has 10 percent positive and significant impact on economic growth in Nigeria in long run. A percent change in trade openness results to 10 percent significant increase in economic growth in Nigeria in long run.

The foreign direct investment (FDI) has positive and significant impact on real gross domestic product (RGDP) its probability value of 0.0001 was less than 0.05 but it was positive and significant impact on real gross domestic product (RGDP) its probability value of 0.0027 was less than 0.05 in long run. Foreign direct investment has 78 percent positive and significant impact on economic growth in Nigeria in short run. A percent change in foreign direct investment results to 78 percent increase in economic growth in Nigeria in short run. Again, foreign direct investment has 24 percent positive and insignificant impact on economic growth in Nigeria in long run. A percent change in trade openness results to 24 percent insignificant increase in economic growth in Nigeria in long run. The empirical result shows that the coefficient of foreign direct investment (FDI) has positive and significant impact on real gross domestic product (RGDP) because its probability value of 0.0001 was less than 0.05 in short run but it was positive and insignificant impact on real gross domestic product (RGDP) because its probability value of 0.2737 was greater than 0.05 in long run.

6. Conclusion

This study concludes that there is positive and significant interactive effect of trade openness, foreign direct investment on economic growth in Nigeria. This study was in line the postulation of John Maynard Keynes and post Keynesian analysis that strengthen net export of a country results to economic growth. Nigeria has profited from international trade over the years. However, the gains of trade could be greater if the economy and the production structures had been responsive and more adaptable to changes both internally and externally on the basis of international economic system. Furthermore, Nigeria has a crying need for diversification of exports if it is to escape the vicious cycle of primary commodity exports and cyclical export price collapses. This is a broad consensus that the ultimate goal of export orientation in Nigeria should be to achieve significant export diversification, through building new comparative advantages in non-traditional exports, especially in labour intensive manufactures.

Recommendations of the Study

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

- Policymakers of Nigeria government should consistently formulate and implement policies that would increase their annual inflows of FDI and their degree of trade openness. Nigeria government should strengthen the competiveness of exports by combing the imports of high technology and domestic independent research. In addition, there should be infrastructure development to further enhance private enterprise investments that are more productive and boost incomes.
- The government should start and sustain trade openness through border tariffs reduction, trade regulations should be reviewed, and ambitious trade modernization programs for customs services and port infrastructure have to be launched. This would also give further impetus to the envisioned reforms in Nigeria which involves far – reaching changes to the trade regime that promises to create new opportunities by improving the efficiency of production and consumption, while requiring adjustment of domestic producers to the more competitive economic environment

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

References

[1] Abdulhamid, S., Ahmed, S and Seid, H. (2021) the effects of foreign direct investment on economic growth: the case of Subsahara Africa; *Southwestern Economic Review;* 5 (3); 2-17.

[2] Central Bank of Nigeria (2017; 2019). *Annual Report and Statement of Account*. December, Abuja, Nigeria.

[3] Dondashe, N. and Phiri, A. (2018) Determinants of FDI in South Africa: Do Macroeconomic Variables Metter? *Munich Personal RePEc Archive (MPRA)* Paper No. 83636.

[4] Egbulonu, K. G. and Ezeocha, J. A. (2018) Trade Openness and Nigeria's Economic Growth; *International Journal of Development and Economic Sustainability*; 6 (3); 1-11.

[5] Elijah, S, and Balarabe, A. M. (2019) dynamic impact of trade openness on the economic growth in Nigeria; *International Journal of Engineering and Advanced Technology;* 8 (5); 609-626.

[6] Ezike, J. E., Ikpesu, F., and Amah, P. (2012). "Macroeconomic Impact of Trade on the Nigerian Growth: An empirical Evaluation". *Research Journal of Business Management and Accounting, 1 (4)*; 079-083.

[7] Igudia, P. (2014). Globalization and economic development: Nigeria's experience and prospects, globalization and Africa's economic development, Ibadan: Nigerian Economic Society, 347-375.

[8] Ijirshar.V.U.(2019) impact of trade openness on economic growth among ECOWAS Countries *CBN journal of applied statistics;* 10 (1); 75-96

[9] Insah, B. (2013). Foreign Direct Investment Inflows and Economic Growth in Ghana. *International Journal of Economic Practices and Theories,* 3(2), 115-121

[10] Keho, Y. (2017). 'The impact of trade openness on economic growth: The case of Cote d'Ivoire'. *Cogent Economics & Finance*, 5(1); 12-19.

[11] Kudakwashe. C .L and Regret. S (2021) growth effects of foreign direct investments in zimbabwe, *Journal of Management and Social Sciences; 9(4):149-166*

[12] Mbingui, C., and Etoka-Beka, A. S. (2021). effects of trade openness on economic growth in the republic of Congo. Theoretical Economics Letters, 11, 724-742.

[13] Mordi. O; Adewumi .A.M and Oyedokun. G .E (2021) trade openness and foreign direct investment in Nigeria; *Journal of Management and Social Sciences;* 6(3): *22-30*.

[14] Muhammad, M. Y. and Akanegbu, B.N. (2018) trade openness and economic growth: evidence from Nigeria; *European Journal of Business, Economics and Accountancy;* 6 (4); 12-23.

[15] Nketiah, E., Cai, X., Adjei, M. and Boamah, B.B. (2020) Foreign Direct Investment, Trade Openness and Economic Growth: Evidence from Ghana. *Open Journal of Business and Management*, 8, 39-55.

[16] OECD, (2016). *Technology and productivity: The challenge for economic policy*. Paris: OECD.

[17] Ogbebor. T .O and Ohiomu. S.(2018) foreign direct investment, trade openness and economic growth in ECOWAS. *Amity Journal of Economic;* 3 (2): 63-75

[18] Ogbokor, C. A., (2016). Foreign direct investment and economic progress: Application of a dynamic model. *International Journal of Economics and Finance Studies*, *10*(1); 55-65.

[19] Oluwatoyin, M. A. & Folasade, A. B. (2014). Trade openness, institutions and economic growth in Sub-Saharan Africa (SSA). Developing Country Studies, 4(8), 1-14.

[20] Orji A, Nwagu G.U, Ogbuabor J.E, and Onyinye. A.O (2021) foreign direct investment and growth nexus: further evidence *Journal of Infrastructure Development;* 13(1): 65–78.

[21] Owusu, M. (2017) The Determinants of Foreign Direct Investment Inflows in Ghana. Kwame Nkrumah University of Science and Technology, Kumasi.

[22] Pratiwa, A.S. and Nadila, P. A. W. (2022) Impact of Trade Openness on Economic Growth: Evidence from Agricultural Countries; *Journal of Asian Finance, Economics and Business; l 9 (3); 0023–0031*

[23] Sarania.R (2021) interactions among infrastructure, trade openness, foreign direct investments and economic growth in India; *Journal of Infrastructure Development*; 13(1): 21–43.

[24] United Nations Conference on Trade and Development (2018). 'Annual Report 2018'. https://unctad.org/annualreport/2018.

[25] United Nations Conference on Trade and Development (2019). 'Annual Report 2019: Beyond Uncertainty'. https://unctad.org/en/PublicationsLibrary/dom2020_en.pdf OECD. (2019). Development Co-operation Report 2019.

[26] World Bank, (2020). '*Foreign Direct Investment and Employment Outcomes in Developing Countries.* A Literature review of the effects of FDI on job creation and wages. *By Abhishek Saurav, Yan Liu, Aarushi Sinha.*

[27] Zaman, Q, Donghui, Z. Yasin, G. Shah, Z. and Imran, H.G. (2018) Trade openness and foreign direct investment FDI inflows among a comparative study of Asian Countries .*European online and social sciences.*7(2): 386-395