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## FOREIGN DIRECT INVESTMENT INFLOWS AND NON-OIL EXPORTS IN NIGERIA: A VAR INVESTIGATION

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### ABSTRACT

*This study examined foreign direct investment (FDI) and non-oil exports on the Nigerian economy for the period 1981 to 2021. The VAR estimation technique was used to figure out the dynamic impacts of the variables of interest on each other over time. While E-views 12 statistical software was employed in computing the VAR results, time series data were obtained from World Development Indicators (WDI), and the study established that Non-Oil Exports endogenously influenced Gross National Income in the short run and endogenously contributed and influenced Gross National Income in the long run which was based on the forecast error variance decomposition test while Foreign Direct Investment Inflows endogenously influenced Gross National Income in the short run and endogenously influenced it in the long run period. Based on these findings, the study recommended that in order to maintain export competitiveness, the non-oil export of the country should be well packaged for international acceptance. The government's exchange rate, interest rate, and inflation policy should be well managed by monetary authorities because a favorable interest rate would lower the cost of production for producers in the non-oil sector while a favorable exchange rate would make their products more competitive in the international market.*

**Keywords:** Foreign direct investment inflows, exchange rate, interest rate, non-oil exports

### INTRODUCTION

Over time, foreign direct investment (FDI) has been a powerful engine for economic growth because of its impact on the provision of new technology, goods, management abilities, and a competitive corporate climate. Nations, especially emerging ones, support policies that promote inflow of FDI due to the positive ripple effects associated with the provision of funds and expertise that help small businesses expand and increase international sales and transfer of technology, thereby forming new varieties of capital inputs.

Nigeria's position in the World Bank's annual Doing Business index has stayed entrenched at the bottom. According to the level of difficulty in carrying out essential business tasks including starting a firm, obtaining electricity, executing contracts, obtaining credit, registering property, paying taxes, etc., the country ranks 146th out of 190 countries. Additionally, a large decrease in FDI inflows into the country in recent years has been attributed to weak institutional and legal frameworks, lack of property right protection, high level of corruption, poor business climate and insecurity (Abegunde & Oniyinde, 2020).

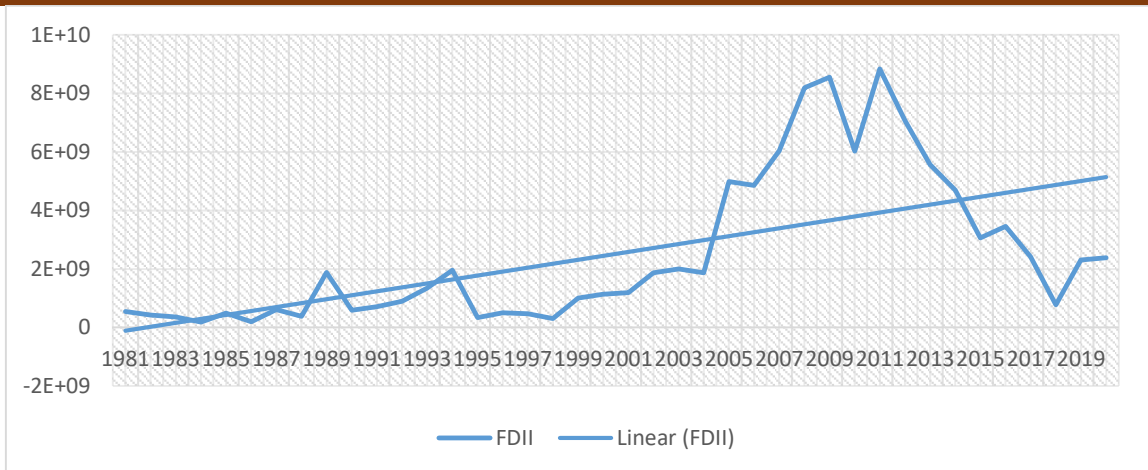


Fig 1: Trend Movement of Foreign Direct Investment Inflows of Nigeria for the period 1981-2020  
Source: Researcher’s Compilation from World Bank Development Indicators.

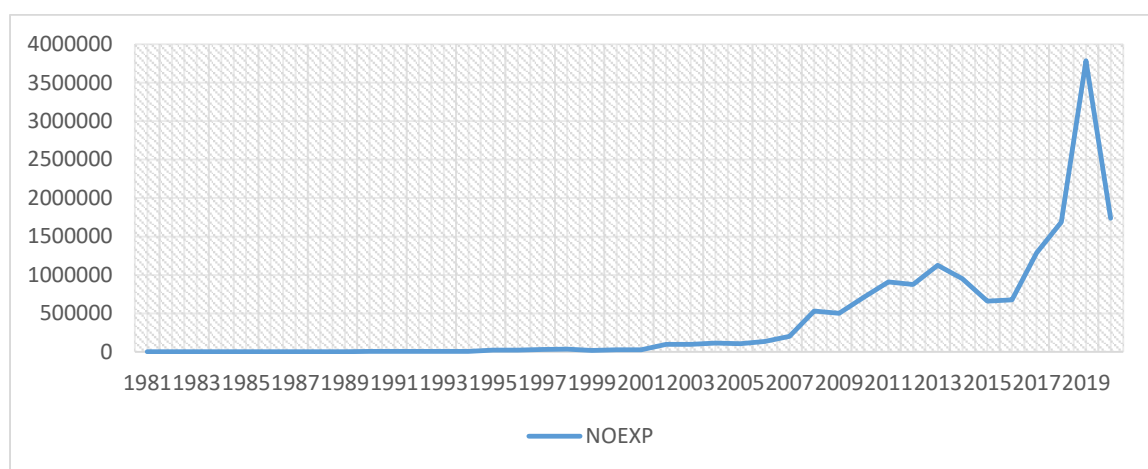


Fig 2: Trend Movement of Non-Oil Export in Nigeria for the Period 1981-2020  
Source: Researcher’s Compilation from World Bank Development Indicators

According to the data in Fig. 1, FDI inflow is relatively low from 1981 to 2004 before increasing sharply in 2005, averaging 4.9 billion USD, until reaching an all-time high in 2011 at 8.8 billion USD. From 2012 to 2020, FDI inflows experienced a decline. The level of FDI fell over time due to high exchange rates, ongoing inflation, uncertainties, and subpar infrastructural facilities. The rate and proportion of Nigeria's non-oil exports have been negatively impacted by the aforementioned issues with FDI inflows, as shown in Fig. 2 above, as observed from 1981 to 2001, maintaining a relatively low rate of 342.8 in 1981, 203.2 in 1982, 301.3 in 1983, etc., still 2001, averaging a value of 28008\$. However, since 2004, non-oil exports have increased significantly, reaching a record high of 3.7 million USD in 2019 and a downturn intercept of 1.7 million USD in 2020 as a result of the COVID 19 epidemic.

The fact that oil price swings frequently, hence, volatile, is one of the main issues with overdependence on oil export. This suggests that Nigeria’s economy's dynamics are subject to the whims and caprices of price of oil (Enoma & Isedu, 2011). This implies that the Nigerian economy is immediately impacted by any structural distortion in the economies of other countries that is capable of changing the price of oil. The current state of the Nigerian economy, which is strongly dependent on imports, is a perfect example. It is marked by a decline in exchange earnings, a decline in GDP, depletion of external reserves, lack of foreign exchange, and inflation. The urgent necessity to diversify in order to increase foreign earnings through non-oil exports is dictated by the continuous underwhelming performance of the non-oil sectors of the economy and the fragility of the external

sector. Nigeria's exports have historically been dominated by non-oil industries including mining and agriculture. In the 1960s, non-oil exports made up more than 66 per cent of Nigeria's total exports and made a significant contribution to the country's economic expansion (Ogunkola et al., 2008).

Despite the large number of research on FDI and the non-oil sector in Nigeria, there is little solid empirical data regarding the causal relationship between FDI and the non-oil industry and the advantages that follow. Researchers Alabi (2019), Akanegbu and Chizea (2017), Ugwuegbe et al. (2016), and Giwa et al. (2019) found a positive correlation between FDI and the non-oil sector. However, empirical literature on the subject have not yet agreed on the direction of this effect, suggesting that FDI may be either beneficial or not, to the non-oil sector of the economy; as there has been no much study on the subject in the context of developing nations like Nigeria.

Thus, the primary focus of this study is to determine the effect of FDI on Nigeria's non-oil sector. The non-oil sector is significant to developing economies. That is why a variety of policies and regulations are instituted to encourage inflow of FDI in the form of foreign capital and technology transfer. Therefore, it would be interesting to learn more about whether non-oil exports and foreign direct investment actually help Nigeria's economy thrive.

## CONCEPTUAL CLARIFICATIONS

### **Concept of Foreign Direct Investment**

FDI is the process by which people in one country acquire assets of a firm in another country in order to take control of the acquired company's production, distribution, and other operations (Moosa, 2002). FDI is driven by the objective of obtaining lasting interest by a resident entity in one economy (direct investor) in an entity resident in an economy other than that of the investor (Organization for Economic Cooperation and Development [OECD], 1996). The ongoing interest demonstrates the direct investor's continued long-term involvement with the business and significant amount of control over its management. Because portfolio investment is a short-term investment and the investor does not attempt to control the firm, it is distinguished from FDI by the terms "impact" or "control" and "long-term." The aspect of FDI that sets it apart from other forms of international investment is its influence over managerial choices and productivity. This influence suggests, for example, that the investor has the power to choose the company's or subsidiary's board of directors (Moosa, 2002).

### **Concepts of Non-Oil Exports and Non-oil Sector**

Exports of goods other than crude oil (petroleum products) are goods that are traded on the world market in order to generate profit. Agricultural exports, manufactured exports, solid mineral exports, and service exports are the four main components of Nigeria's non-oil export industry (Akeem, 2011). The list of non-oil exportable goods is endless and includes anything from industrial goods to solid minerals to entertainment and tourism services (Abogan et al., 2014). In the context of this study, this explains non-oil export. The non-oil sector of the Nigerian economy is the whole economy without the oil and gas sub-sector (Akeem, 2011). It includes the sub-sector of services such as transportation, communication, distributive trade, financial services, insurance, government, and solid minerals as well as agriculture, industry, and solid minerals. This definition is adequate for the study's objectives.

### **Concepts of Economic Growth and Gross Domestic Product (GDP)**

The term "economic growth" refers to increase in total amount of products generated by an economy. Gross Domestic Product (GDP), according to Pritzker et al. (2015), is the economic indicator that gauges the value of goods and services generated in an economy over a time period. They claimed that GDP serves as an indicator of the size of the economy and that it measures current production, not sales. GDP, which measures the performance of an economy, is the market worth of all products produced in a nation over a specific time period (economic growth). A nominal GDP is one that is

calculated using the current market prices, while a real GDP is one that is calculated using a specific base year.

## EMPIRICAL REVIEW

Between the years 1986 and 2017, Ndugbu et al. (2021) probed at the connection between foreign portfolio investment and economic growth in Nigeria. Granger causality and the Vector Error Correction model (ECM) were used in the investigation. Results showed that market capitalization and trade openness were significant factors that foster economic growth in Nigeria; and foreign portfolio investment is unimportant and negative. In a related study, Giwa et al. (2020) examined how FDI into Nigeria affected real gross domestic product (RGDP) growth and how these foreign investments can help achieve Goal-17.3, which calls for mobilizing more financial resources for developing countries from a variety of sources. The robust GMM estimation method was used to estimate the model, which addressed the endogeneity and autocorrelation issues that arise with ordinary least squares. According to the study's findings, labor quality significantly and favorably affects RGDP. Additionally, it was discovered that capital intensity in Nigeria significantly adversely affected RGDP.

The dynamic character of the relationship between foreign investment and economic growth in Nigeria from 1980 to 2018 was examined by Toyin and Oludayol (2020). The effectiveness and dependability of the autoregressive distributed lag model are supported by the employment of the lag selection approach, which made it possible to identify the ideal lag for estimating the autoregressive distributed model. The Central Bank of Nigeria's statistical bulletin served as the study's informational foundation. Short-term empirical estimates revealed that domestic savings had a considerable, unfavorable effect on the gross domestic product. The study experimentally confirms and conceptually establishes that market capitalization, domestic savings, foreign investment, and government spending all affect long-term trends in the growth of Nigeria's gross domestic product.

The impact of FDI on Nigeria's non-oil industry was examined by Alabi (2019). The World Development Indicator published in 2019 and the Central Bank of Nigeria Statistical Bulletin (2017) were the secondary sources of data used in this study, which covered the period from 1986 to 2017. The estimating methods included descriptive and regression analyses. The study's conclusions showed that foreign direct investment was favorable and significant for Nigeria's non-oil economy, whereas domestic investment was favorable but not significant at the 5% alpha level. In addition, Okoye and Nwisiyenyi (2019) used quarterly time series data for the years 2008q1 to 2018q4 to study the impact of foreign direct investment on the performance of the non-oil industry. Analysis using the Vector Error Correction Model and Johansen co-integration were used in the investigation. According to estimates, FDI is statistically significant over the long term and has a positive causal association with the non-oil sector (0.1327), but it is statistically insignificant over the short term.

## THEORETICAL FRAMEWORK

### International Trade Theory

Adam Smith (1776) developed the classical theory of commerce in his seminal work, *The Wealth of Nations*, which argued that countries benefit more from trade when they buy products that they could not produce effectively and limit their own production to those that they could do so. The idea of "absolute advantage" stated that a country will only generate things by making the best use of its acquired and natural (land and environmental circumstances) resources (skilled labor force, capital resources, and technological advances). The absolute benefit of trade, however, raised several important issues. For instance, if a nation produces two or more goods cheaper than a possible trading partner, it has no desire to engage in trade. With a two-country and two-commodity model, (Ricardo, 1913) developed the idea of comparative advantages in the 1910s. This model took into account the

nation's relative production efficiency when they relate to international trade. According to him, the exporting nation should assess the relative production efficiencies of the two commodities and produce just those things that it can do so effectively. As a result, each nation focuses on manufacturing items in which it has a comparative advantage and trades its excess for goods that would be less efficient if produced local.

### **International Production Theory**

Essentially, there are two main literary groups that make up the international production theory, also known as FDI theory. One school of thought was founded by (Hymer, 1976) and (Caves, 1974), who saw FDI as an aggressive attempt to extract economic rent from a foreign market and proposed that enterprises with some sort of intangible asset engage in FDI. These businesses make investments abroad in order to take advantage of unique ownership advantage provided by intangible asset. The opposing group, represented by Vernon (1966), viewed FDI as a defensive measure taken by businesses to safeguard their export market, which is either threatened by rivals in the local market or harmed by unfavorable changes in domestic macroeconomic conditions, such as wage increases or currency appreciation. While aggressive FDI may be conducted in any country where local production is viewed as the best approach to join the market, defensive FDI is frequently made in low-wage countries because affordable labor costs enable investors cut production costs to maintain international competitiveness. Actually, it can be challenging to tell one from the other because FDI can be carried out for a variety of motives, including market- and cost-seeking objectives (Nayak, 2014).

### **Theory of Comparative Advantage**

According to Ricardo's theory of comparative advantage, there is still a basis for advantageous trade even when a country has an absolute cost disadvantage in producing both items. The nation that is less efficient should focus on producing and exporting the good in which it is relatively less inefficient (where its absolute disadvantage is least), whereas the nation that is more efficient should focus on producing and exporting the good in which it is relatively more efficient. Its greatest absolute advantage is there (Adenugba & Dipo, 2013). Nigeria is endowed with a variety of non-oil exportable items over which she has both absolute and relative advantages. For instance, we have a large amount of land that may be used to grow a variety of export products, including cocoa, coffee, groundnuts, cotton, rubber, palm kernels, and beniseed. The nation is also endowed with an abundance of natural resources, including uranium, gold, graphite, columbite, iron ore, coal, and iron ore. These are all items that Nigeria exports and where it has both absolute and relative advantages over other nations. Therefore, these trade ideas describe how Nigeria should diversify its exports away from oil.

## **METHODOLOGY**

The two main goals of macroeconomic modeling are forecasting and policy analysis. In order to achieve these goals, any model should ideally meet four requirements. It must first fit inside a theoretical framework, and then the model's specification must show a good understanding of the conceptual context in which policies are developed and carried out, as well as an anticipated process of adjustment. Finally, the estimated structural model must effectively apply the rigors and sophistication of econometric methods. The model must be based on a solid and comprehensive data basis.

### **Model Specification**

The model of this study is designed in accordance with Alabi's (2019) work, which employed the following model:

$$RGDP = f(FDI, RINTR, DINV, EXR) \dots \dots \dots (i)$$

To investigate the response of macroeconomic variables to asymmetric and innovations in FDI

inflows, an unrestricted Vector Autoregressive model (VAR) is adopted. The VAR model provides a multivariate framework where changes in a particular variable (FDI Inflows) are related to changes in its own lags and to changes in other variables and the lags of those variables. The VAR treats all variables as endogenous and does not impose a priori restrictions on structural relationships. Since the VAR expresses the dependent variables in terms of predetermined lagged variables, it is a reduced-form model. Once the VAR has been estimated, the relative importance of a variable in generating variations in its own value and in the value of other variables can be assessed by the Forecast Error Variance Decomposition (FEVDC).

$$\ln \text{GNI}_t = \alpha_1 + \sum_{i=1}^n \phi_j \ln \text{GNI}_{t-i} + \sum_{i=1}^n \phi_j \ln \text{FDII}_{t-j} + \sum_{i=1}^n \phi_j \ln \text{NOEXP}_{t-k} + \sum_{i=1}^n \phi_j \text{INFR}_{t-l} + \sum_{i=1}^n \phi_j \text{RINTR}_{t-m} + \sum_{i=1}^n \phi_j \text{OEXCR}_{t-n} + U_{1t}$$

$$\ln \text{NOEXP}_t = \alpha_2 + \sum_{i=1}^n \phi_j \ln \text{NOEXP}_{t-i} + \sum_{i=1}^n \phi_j \ln \text{GNI}_{t-j} + \sum_{i=1}^n \phi_j \text{INFR}_{t-k} + \sum_{i=1}^n \phi_j \text{RINTR}_{t-l} + \sum_{i=1}^n \phi_j \ln \text{FDII}_{t-m} + \sum_{i=1}^n \phi_j \text{OEXCR}_{t-n} + U_{2t}$$

$$\text{RINTR}_t = \alpha_3 + \sum_{i=1}^n \phi_j \text{RINTR}_{t-i} + \sum_{i=1}^n \phi_j \ln \text{NOEXP}_{t-j} + \sum_{i=1}^n \phi_j \ln \text{GNI}_{t-k} + \sum_{i=1}^n \phi_j \ln \text{FDII}_{t-l} + \sum_{i=1}^n \phi_j \text{INFR}_{t-m} + \sum_{i=1}^n \phi_j \text{OEXCR}_{t-n} + U_{3t}$$

$$\ln \text{FDII}_t = \alpha_4 + \sum_{i=1}^n \phi_j \ln \text{FDII}_{t-i} + \sum_{i=1}^n \phi_j \text{RINTR}_{t-j} + \sum_{i=1}^n \phi_j \ln \text{GNI}_{t-k} + \sum_{i=1}^n \phi_j \ln \text{NOEXP}_{t-l} + \sum_{i=1}^n \phi_j \text{INFR}_{t-m} + \sum_{i=1}^n \phi_j \text{OEXCR}_{t-n} + U_{4t}$$

$$\text{INFR}_t = \alpha_5 + \sum_{i=1}^n \phi_j \text{INFR}_{t-i} + \sum_{i=1}^n \phi_j \ln \text{GNI}_{t-j} + \sum_{i=1}^n \phi_j \ln \text{FDII}_{t-k} + \sum_{i=1}^n \phi_j \ln \text{NOEXP}_{t-l} + \sum_{i=1}^n \phi_j \text{RINTR}_{t-m} + \sum_{i=1}^n \phi_j \text{OEXCR}_{t-n} + U_{5t}$$

$$\text{OEXCR}_t = \alpha_6 + \sum_{i=1}^n \phi_j \text{OEXCR}_{t-i} + \sum_{i=1}^n \phi_j \ln \text{GNI}_{t-j} + \sum_{i=1}^n \phi_j \ln \text{FDII}_{t-k} + \sum_{i=1}^n \phi_j \ln \text{NOEXP}_{t-l} + \sum_{i=1}^n \phi_j \text{RINTR}_{t-m} + \sum_{i=1}^n \phi_j \text{INFR}_{t-n} + U_{6t}$$

Where:

$\ln \text{GNI}$  = Natural logarithm of Gross National Income as a proxy for Economic Growth

$\ln \text{NOEXP}$  = Natural logarithm of Non-Oil Exports

$\ln \text{FDII}$  = Natural logarithm of Foreign Direct Investment Inflows

$\text{OEXCR}$  = Official Exchange rate

$\text{INTR}$  = Interest rate

$\text{INFR}$  = Inflation rate

$\alpha_0$  = Constant Variable or Intercept

$\Phi$  = Short Run Dynamic Coefficients of the Model's Convergence to Equilibrium

$\epsilon$  = Error Term

## RESULTS

### Pre-Estimation Test

The data's normality, measures of central tendency, and measures of dispersion were all the subject of preliminary examination. The mean and median are measures of central tendency that show the sample's average value. Variance's positive square root is standard deviation. It serves as a dispersion measure by displaying the magnitude of the variance from the mean. The distribution is considered to be normal according to the Jarque-Bera test's null hypothesis. We reject the null thus if the probability is less than 0.05.

**Table 1: Common Sample Descriptive Statistics**

	lnGNI	lnNOEXP	lnFDII	OEXCR	RINTR	INFR
Mean	31.04542	10.43366	21.06754	94.14346	0.307633	19.14646
Median	30.79354	10.28067	21.01993	101.6973	4.310292	12.55496
Maximum	31.88339	15.14736	22.90267	306.9210	18.18000	72.83550
Minimum	30.40566	5.314191	19.05813	0.617708	-65.85715	5.388008
Std. Dev.	0.514808	2.889226	1.145217	92.82186	14.60655	17.06283
Skewness	0.433179	-0.220967	0.036423	0.810180	-2.633592	1.783591
Kurtosis	1.633150	1.869037	1.810878	2.854578	12.25136	4.997667
Jarque-Bera	4.255640	2.395874	2.306391	4.300915	184.1628	27.16262
Probability	0.119097	0.301816	0.315627	0.116431	0.000000	0.000001
Observations	39	39	39	39	39	39

Source: Researcher's Extract from Eviews 12.

Descriptive statistics from Table 1 revealed that standard deviation calculated for Official Exchange Rate (OEXCR), Inflation Rate (INFR) and Real Interest Rate (RINTR) were the most volatile in the series with values of 92.82186, 17.06283 and 14.60655 respectively while Gross National Income (lnGNI), Non-Oil Exports (lnNOEXP) and Foreign Direct Investment Inflows (lnFDII) were the least volatile variables with values of 0.514808, 2.889226, and 1.145217 respectively. The calculated values for the skewness statistics values of lnNOEXP and RINTR were negatively skewed, suggesting that their distributions have a long-left tail while the skewness statistics values for lnGNI, lnFDII, OEXCR and INFR variables were positively skewed, suggesting that their distributions have a long right tail. Based on these observations, it therefore means that there is unit root (non-stationarity) in the series. Thus, unit root was necessary because estimating these variables at level might not produce reliable results.

### Unit Root Test

A unit root test was performed on the chosen time series data to assess whether they are stationary or non-stationary in level form, which helped to confirm the validity of the time series data utilized for this research. The Augmented Dickey Fuller unit root test will be used as the unit root test in this work. The ADF Test's results are shown below:

**Table 2. Summary of Stationarity Test Using Augmented Dickey Fuller**

Variable	ADF Stat (levels)	5% Critical Value	Prob. Value	ADF. Statistic. 1 <sup>st</sup> Difference	5% Critical Value	Prob. Value	General Remark
lnGNI	-1.608275	-3.544284	0.7305	-5.639131*	-2.951125	0.0000	@I(1)
lnNOEXP	-0.950271*	-2.941145	0.9332	-7.319598	-2.941145	0.0000	@I(0)
OEXCR	-0.765364	-2.941145	0.8174	-7.78895*	-2.941145	0.0000	@I(1)
lnFDII	-2.846115	-2.948404	0.0622	-2.667881*	-1.950687	0.0091	@I(1)
RINTR	-0.765364	-2.941145	0.8174	-7.78895*	-2.941145	0.0000	@I(0)
INFR	-2.846115	-2.948404	0.0622	-2.667881*	-1.950687	0.0091	@I(0)

The asterisks(\*) sign is used to indicate stationarity at the 5% significance level

Source: Researcher's Compilation from Eviews 12 Regression Output

According to the stationarity test results in table 2 above, the variables lnGNI, OEXCR, and lnFDII were all stationary at first difference, while lnNOEXP, RINTR, and INFR achieved stationarity status at level I(0) because their ADF test statistic was greater than their tabulated ADF values at the 5% level of significance. This will allow us to test for a long-term relationship between the variables.

### Co-Integration Test

**Table 3: Johansen Co-Integration Test**

Trend assumption: Linear deterministic trend				
Series: LNGNI LNNOEXP LNFDII OEXCR RINTR INFR				
Hypothesized		Trace		0.05
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.625811	115.3892	95.75366	0.0012
At most 1 *	0.584360	79.01845	69.81889	0.0077
At most 2	0.426221	46.53480	47.85613	0.0662
At most 3	0.356408	25.98091	29.79707	0.1293
At most 4	0.209421	9.675383	15.49471	0.3065
At most 5	0.026159	0.980782	3.841465	0.3220

Source: Researcher's Compilation from Eviews 12

Based on the above johansen cointegration test in table 3, trace test indicated two cointegrating equations at the 0.05 level of significance implying rejection of the null hypothesis of no cointegration at the 0.05 level of significance and we conclude that there exist a long relationship among the dependent and explanatory variables.

**Table 4: Vector Autoregressive Estimates for FDI and Non-Oil Exports Performance in Nigeria**

	lnGNI	lnNOEXP	lnFDII	OEXCR	RINTR	INFR
lnGNI(-1)	0.797446 (0.05312) [ 15.0131]	-0.551012 (0.55637) [-0.99038]	0.276664 (0.85551) [ 0.32339]	42.57666 (21.7187) [ 1.96037]	1.544421 (11.4604) [ 0.13476]	-2.714296 (18.8480) [-0.14401]
lnNOEXP(-1)	0.024122 (0.00750) [ 3.21584]	0.868609 (0.07857) [ 11.0553]	0.171777 (0.12081) [ 1.42184]	1.268084 (3.06708) [ 0.41345]	2.433233 (1.61842) [ 1.50346]	-2.024179 (2.66168) [-0.76049]
lnFDII(-1)	0.024770 (0.01021) [ 2.42600]	0.115375 (0.10695) [ 1.07882]	0.513238 (0.16445) [ 3.12100]	-9.143437 (4.17480) [-2.19015]	-1.389666 (2.20294) [-0.63082]	3.061244 (3.62299) [ 0.84495]
OEXCR(-1)	0.000278 (0.00021) [ 1.30790]	0.005722 (0.00223) [ 2.56712]	-0.002818 (0.00343) [-0.82231]	0.848371 (0.08701) [ 9.74997]	-0.039562 (0.04591) [-0.86164]	0.008462 (0.07551) [ 0.11207]
RINTR(-1)	0.000553 (0.00059) [ 0.94514]	0.013401 (0.00613) [ 2.18665]	0.002724 (0.00942) [ 0.28907]	0.195455 (0.23923) [ 0.81701]	0.005198 (0.12624) [ 0.04117]	0.167115 (0.20761) [ 0.80495]
INFR(-1)	-0.000190 (0.00049) [-0.39139]	0.006999 (0.00508) [ 1.37713]	-0.002493 (0.00781) [-0.31904]	-0.023389 (0.19838) [-0.11790]	-0.226492 (0.10468) [-2.16363]	0.631009 (0.17216) [ 3.66523]
C	5.526376 (1.52475) [ 3.62445]	15.61996 (15.9708) [ 0.97803]	0.229936 (24.5578) [ 0.00936]	-1119.532 (623.449) [-1.79571]	-33.80645 (328.978) [-0.10276]	46.73195 (541.043) [ 0.08637]

Source: Researcher's Extract from Eviews 12

**Gross National Income (lnGNI):** From the VAR result in table 4, the past realization of Gross National Income (lnGNI) is associated with 79% increase on itself on the average, ceteris paribus, implying a strong influence coming LNGNI on its self-going by the t-statistics of 15.0131.

**Non-Oil Exports (lnNOEXP):** The percentage increase in Non-Oil Exports (lnNOEXP) accounts for 2% increase in Gross National Income (lnGNI) on the average, ceteris paribus, implying a strong influence coming from lnNOEXP to lnGNI going by the t-statistics of 3.21584 > 2.05 of the t-tabulated at 5% level of significance.



**Foreign Direct Investment Inflows (lnFDII):** The percentage increase in Foreign Direct Investment Inflows (lnFDII) accounts for 2% increase in Gross National Income (lnGNI) on the average ceteris paribus, implying a strong influence coming from lnFDII to lnGNI going by the t-statistics of  $2.42600 > 2.05$  of the t-tabulated at 5% level of significance.

### Variance Decomposition Test

The amount of information that each variable in the autoregression contributes to the other variables is shown by the forecast error variance decomposition. It establishes the percentage of each variable's forecast error variation that exogenous shocks to other variables can account for. The researcher will make a five-year projection for this study. The researcher will choose period 1 of the five-year period as the short run period and period 5 as the long run.

**Table 5: VAR Variance Decomposition Test for FDI Inflows and Oil non-Export in Nigeria**

Variance Decomposition of lnGNI:							
Period	S.E.	lnGNI	lnNOEXP	lnFDII	OEXCR	RINTR	INFR
1	0.040418	100.0000	0.000000	0.000000	0.000000	0.000000	0.000000
2	0.057512	89.38278	1.768279	7.139963	0.513068	1.077372	0.118534
3	0.071503	78.41824	5.629380	11.87447	1.437983	2.376994	0.262934
4	0.083498	69.20306	10.43893	13.64415	2.920485	3.489178	0.304200
5	0.094122	61.45215	15.25668	13.57961	5.106949	4.332983	0.271625
Variance Decomposition of lnNOEXP:							
Period	S.E.	lnGNI	lnNOEXP	lnFDII	OEXCR	RINTR	INFR
1	0.423350	2.064966	97.93503	0.000000	0.000000	0.000000	0.000000
2	0.551014	1.579570	91.63901	1.284668	3.161063	0.581756	1.753932
3	0.639974	1.255490	85.89284	1.550794	7.710493	0.935677	2.654707
4	0.709552	1.052540	80.44899	1.319567	12.90838	1.194384	3.076140
5	0.768964	0.919152	74.94058	1.170936	18.33328	1.398460	3.237590
Variance Decomposition of lnFDII:							
Period	S.E.	lnGNI	lnNOEXP	lnFDII	OEXCR	RINTR	INFR
1	0.650972	0.677205	0.286554	99.03624	0.000000	0.000000	0.000000
2	0.740769	1.377305	1.586579	96.14719	0.425882	0.339898	0.123148
3	0.779074	1.783852	3.551395	93.07015	0.788271	0.603979	0.202351
4	0.801364	1.947467	5.622990	90.53967	0.915851	0.764613	0.209409
5	0.816039	1.983073	7.491181	88.55690	0.908000	0.858710	0.202136

Source: Researcher's Extract from Eview 12

**Table 6: Variance Decomposition Test for Gross National Income**

Variance Decomposition of lnGNI:							
Period	S.E.	lnGNI	lnNOEXP	lnFDII	OEXCR	RINTR	INFR
1	0.040418	100.0000	0.000000	0.000000	0.000000	0.000000	0.000000
2	0.057512	89.38278	1.768279	7.139963	0.513068	1.077372	0.118534
3	0.071503	78.41824	5.629380	11.87447	1.437983	2.376994	0.262934
4	0.083498	69.20306	10.43893	13.64415	2.920485	3.489178	0.304200
5	0.094122	61.45215	15.25668	13.57961	5.106949	4.332983	0.271625

Source: Researcher's Compilation, 2022

The variance decomposition test for lnGNI reveals that in the short run, lnGNI alone in period 1 accounts for 100 percent of the forecast error variance, whereas the contributions from lnNOEXP, lnFDII, OEXCR, RINTR, and INFR are strongly exogenous, i.e. they have very little impact on

predicting LNGNI in the short run. In the long run, or period 5, the influence of lnGNI on itself began to decrease the further into the future we look, whereas influences from lnNOEXP and lnFDII, with 15% and 13% of their forecast variance were increasing as we look further into the future, and also exhibited strong endogenous influence on lnGNI in the long run.

**Table 7: Variance Decomposition Test for Non-Oil Exports in Nigeria**

Variance Decomposition of LNNOEXP:							
Period	S.E.	lnGNI	lnNOEXP	lnFDII	OEXCR	RINTR	INFR
1	0.423350	2.064966	97.93503	0.000000	0.000000	0.000000	0.000000
2	0.551014	1.579570	91.63901	1.284668	3.161063	0.581756	1.753932
3	0.639974	1.255490	85.89284	1.550794	7.710493	0.935677	2.654707
4	0.709552	1.052540	80.44899	1.319567	12.90838	1.194384	3.076140
5	0.768964	0.919152	74.94058	1.170936	18.33328	1.398460	3.237590

Source: Researcher's Compilation, 2022

The variance decomposition test for lnNOEXP reveals that in the short run, lnNOEXP alone accounts for 97% of the forecast error variance in period 1, while the contributions from lnGNI, lnFDII, OEXCR, RINTR, and INFR are strongly exogenous, meaning they have very little impact on predicting lnNOEXP. In the long run, or period 5, the influence of the official exchange rate (OEXCR) and inflation rate (INFR), with 18 percent and 3 percent of their forecast variance, respectively are increasing as we move farther into the future. This suggests that the only two variables that exhibit strong endogenous influence on lnNOEXP as we move on in the future are OEXCR and INFR.

**Table 8: Variance Decomposition Test for FDI Inflows**

Variance Decomposition of LNFDII:							
Period	S.E.	lnGNI	lnNOEXP	lnFDII	OEXCR	RINTR	INFR
1	0.650972	0.677205	0.286554	99.03624	0.000000	0.000000	0.000000
2	0.740769	1.377305	1.586579	96.14719	0.425882	0.339898	0.123148
3	0.779074	1.783852	3.551395	93.07015	0.788271	0.603979	0.202351
4	0.801364	1.947467	5.622990	90.53967	0.915851	0.764613	0.209409
5	0.816039	1.983073	7.491181	88.55690	0.908000	0.858710	0.202136

Source: Researcher's Compilation, 2022

The variance decomposition test for lnFDII revealed that in the short run, lnFDII alone accounts for 99 percent of the forecast error variance in period 1, while the contributions from lnGNI, lnNOEXP, OEXCR, RINTR, and INFR are strongly exogenous, meaning they have very little impact on predicting lnFDII. In the long run, or period 5, the influence of lnFDII on itself started to decline the further into the future we look, whereas influences from Non-Oil Exports (lnNOEXP) and Gross National Income (lnGNI) are increasing as we look further into the future, with 18 percent and 2 percent respectively of their forecast variance. This suggests that the only variables that exhibits strong endogenous influence on lnFDII as we look further into the future was lnNOEXP.

### Diagnostic Test/Post Estimation Test

#### Breusch-Godfrey Serial Correlation LM Test

Serial correlation in the error term affects the standard errors and variances of the variables estimated in the model, confusing inference. To avoid this issue, the study utilized a serial correlation LM check for autocorrelation in the error term entering the model. The table below displays the test's results.

**Table 9: Result Breusch-Godfrey Serial Correlation LM Test**

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.272757	Prob. F(2,13)	0.7655
Obs*R-squared	1.409018	Prob. Chi-Square(2)	0.4944

Source: Researcher’s Extract from Eviews 12.

From Breusch-Godfrey Serial Correlation LM Test table, the null hypothesis of no serial correlation cannot be rejected as the p-value from the LM serial correlation test is  $0.4944 > 0.05$  level of significance indicating an acceptance of the null hypothesis.

**Breusch-Pagan-Godfrey Heteroskedasticity Test**

When the conventional least squares rule is violated, it is called heteroscedasticity. The regression assumption states that the error terms' variance is homoscedastic, which denotes that it is constant. Simply put, heteroskedasticity happens when the variance of the error terms does not remain constant over all X values. To avoid this problem, the study applied a Breusch-Pagan-Godfrey Heteroskedasticity Test in the error term entering the model. The table below displays the test's results.

**Table 10: Result of Breusch-Pagan-Godfrey Heteroskedasticity Test**

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.193015	Prob. F(20,14)	0.9995
Obs*R-squared	7.564865	Prob. Chi-Square(20)	0.9944

Source: Researcher’s Extract from Eviews 12.

Based on the Breusch-Pagan-Godfrey Heteroskedasticity result, the null hypothesis of no serial correlation cannot be rejected as the p-value from the Heteroskedasticity Test is  $0.9944 > 0.05$  level of significance indicating an acceptance of the null hypothesis.

**Stability Test**

**Cumulative and Cumulative Squares Test**

The cusum and cusum of squares for model stability was employed to check for the stability of the parameters in the model. The result of the stability test is shown below:

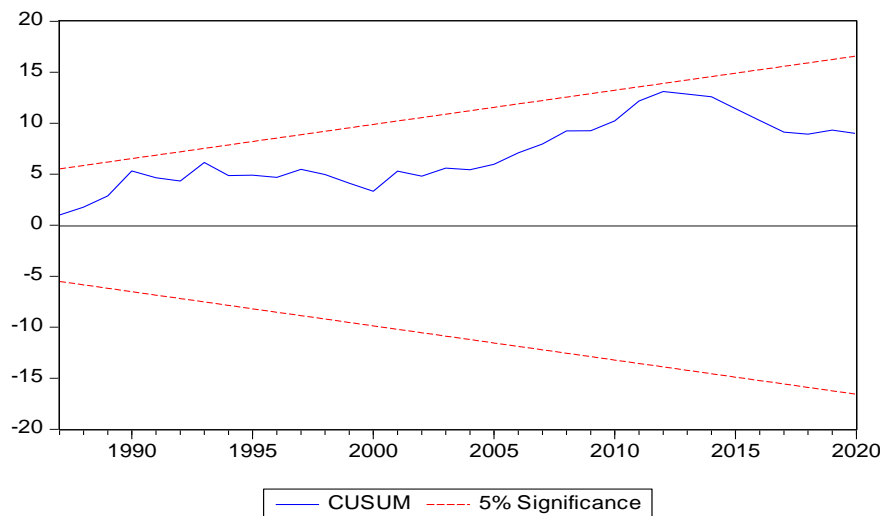


Fig. 3: Cusum test for model Stability

Source: Researcher’s Extract from Eviews 12.

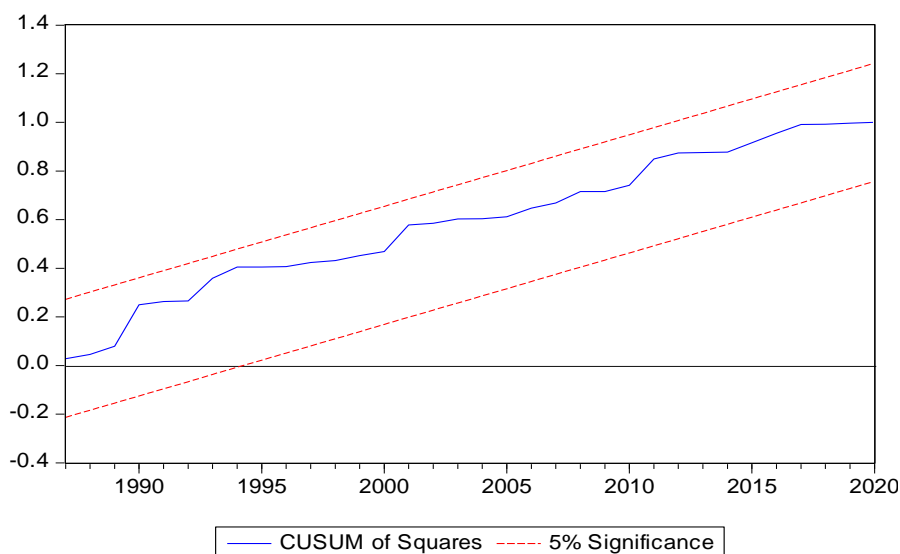


Fig. 4: Cusum of Squares for model stability

Source: Researcher's Extract from Eviews 12.

The cusum and cusum squares diagrams shows that the model is stable as the cusum line lies in between the 5% boundary.

## DISCUSSION OF FINDINGS

### Effect of Non-Oil Export on Economic Growth of Nigeria

In the short run, Non-Oil Exports (lnNOEXP) endogenously influenced Gross National Income (lnGNI). However, NOEXP exogenously explained the changes in GNI in the short run, i.e., demonstrating a weak influence, but endogenously contributed to and influenced GNI in the long run according to the forecast error variance decomposition test. Nigeria has implemented a number of trade protection measures throughout the years in an effort to strengthen her trading position. Soon after gaining independence, Nigeria developed an import substitution and export promotion strategy. Later, as part of the structural adjustment program strategy was introduced. Nigeria can manage its resources to generate enough wealth, increase the quality of the economy relative to living standards, and also raise her global economic standing through, for example, the development of non-oil exports.

An evaluation of Nigeria's export promotion strategy reveals the necessity to address non-oil export-related issues in order to fully leverage the enormous potential that has been mostly untapped in that crucial area (Ezike and Ogege 2012). Additionally, a strong export industry will create job opportunities for the populace, lowering the social cost of unemployment. The strains on the balance of payment position will be lessened by non-oil export revenue, and even improved. A successful export push can transform a previously underdeveloped economy into a thriving one. Through its multiplier effects on the level of national income, exports aid in raising the level of overall economic activity. (Usman 2010). The amount of demand inside the economy will rise thanks to revenue from non-oil exports.

### Effect Foreign Direct Investment Inflows on Economic Growth of Nigeria

In the short run, Foreign Direct Investment Inflows (lnFDII) endogenously influenced Gross National Income (lnGNI). However, according to the forecast error variance decomposition test, in the short run, or period one, lnFDII had an exogenous influence on lnGNI, however in the long run, or period five, lnFDII had an endogenous influence and contributed to GNI. This result is not unexpected given that foreign direct investment promotes growth in all nations. A target country's economic

development can be boosted by FDI, which can also improve business conditions, attract investors, and boost the local economy and community. As investors establish new businesses abroad, FDI expands employment prospects. This may raise locals' income and spending power, which will help the targeted economies grow more broadly. One of the main benefits of FDI is the growth of human capital resources. The workforce's increased skill set contributes to a nation's overall improvement in human capital and education. Countries that receive FDI gain from the development of their human resources while keeping ownership.

### CONCLUSION AND RECOMMENDATIONS

The study investigated the relative effectiveness of foreign direct investment and non-oil exports in Nigerian economy for the period 1981-2020 with specific objectives namely: to determine the effect foreign direct investment inflows on economic growth of Nigeria and to determine the effect of non-oil exports on economic growth of Nigeria. The specified model was estimated using the VAR model to determine the level of impact that one variable has on each other. While E-views 12 statistical software was employed in computing the result, time series data were obtained from World Development Indicator (WDI) and the study establishes that Nigeria's non-oil exports (lnNOEXP) endogenously influenced Gross National Income (LNGNI) in the short run and endogenously contributed and influenced GNI in the long run based on the forecast error variance decomposition test. The study also showed that inflow of FDI (lnFDII) endogenously influenced Gross National Income (LNGNI) in the short run and endogenously influenced and contributed to GNI in the long run based on the forecast error variance decomposition test.

This study used the VAR model to investigate the relative effectiveness of foreign direct investment and non-oil export in Nigeria for the period 1981-2020. From our findings, non-oil export and foreign direct investment inflows endogenously influences Gross National Income (lnGNI) for the period under review. The conclusion to be drawn from this study is that Foreign Direct Investment Inflows (lnFDII) and Non- Oil Exports are strong determinants and contributors to the Nigerian economy in the presence of other internal and external macro-economic shocks. To achieve a high and sustainable growth, we make the following policy recommendations which when properly implemented will stimulate greater growth.

- a) In order to maintain export competitiveness, the non-oil export of the country should be well packaged for international acceptance. The exchange rate, interest rate and inflation policy of the government should also be properly managed by monetary authorities. This is because of the chain relationship existing between these monetary variables with the non-oil sector, which together impact on the growth of the economy. A favorable interest rate would reduce the cost of production for producers in the non-oil sector likewise a favorable exchange rate would make their products compete favorably in the international market. Thus, leading to a growth in the economy.
- b) Investment bottle-necks such as: high lending rates by banks, poor infrastructural facilities, and the attendant problems of insecurity which is gradually pervading every part of the country; thereby discouraging potential local and international investors in the sector should be addressed or drastically reduced. This would help guarantee investors' returns either in the short or long run on investment.

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