

# Foreign Direct Investment, Non-Oil Exports and Economic Growth in Nigeria: Granger Causality Approach

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**Abstract-** This paper critically examined the relationship between FDI, non-oil exports and economic growth in Nigeria using granger causality approach. The study utilized data from CBN Statistical Bulletin and UNCTAD investment report from 1980-2016. Consequently, various diagnostic tests such as unit roots, co-integration and Pairwise Granger Causality Tests were estimated. The results of the finding show that unidirectional causality runs from FDI to economic growth as well as non-oil exports. Hence, the study concludes that FDI has potential to propel the expansion of non-oil exports in particular and economic growth in general in Nigeria. Therefore, it is recommended in this paper that all hands must be on deck by the policy makers to create friendly economic policies and business environment that will boost further attraction of FDI into non-oil sector of the Nigerian economy.

**Index Terms-** FDI, Non-oil Exports, Economic Growth and Granger Causality

## I. INTRODUCTION

In the last three decades, various attempts have been made by scholars and policy makers to classify foreign direct investment (FDI) in both developed and developing economies. For instance, World Bank, 2005 classified FDI as investment incurred in order to acquire a lasting management interest of 10 % of voting stocks and at least of equity shares in an enterprise operating in another country(ies) other than that of investors` country(ies)

Meanwhile, It has been established in the literature that the advent of oil in 1958 and the oil boom of 1970s sparked off rapid inflows of FDI in Nigeria, as a result of this scenario Nigerian economy has been tagged a mono-cultural economy depending heavily on crude oil products as her only major source of getting foreign earnings. This has made the economy to be very volatile to external shocks over the time. (Enoma and Mustafa, 2011).

It is worth of note that the recent catastrophic aftermath effects caused by the over dependency of the economy on a single products for revenues have necessitated the advocacy in some quarters by academics and researchers for diversification of the economy towards the direction of non-oil exports trade. One

of the popular arguments put forward by these scholars is that the non-oil exports have great potentials to propel Nigerian economy to the desired growth and development. (Onwualu, 2012).

However, over the last two decades, the persistent rise in financial market integration in the global economy orchestrated by the continuous participation and cross border distribution of multinational corporations and their activities as served a veritable factor that catalyzed foreign direct investment (FDI) to become the main source of foreign capital inflows to Africa, which has overridden overseas development assistance (ODA) in terms of size. Similarly, FDI contributed 20% of fixed capital formation in Africa over the last decade. However, this distribution has been observed to be unevenly distributed across African countries in general and sectors in particular, in which 15 oil-rich countries accumulated about 75% of FDI inflows (ADBetal, 2011).

Consequently, Nigeria being the highest oil exporter in Africa has attracted substantial FDI over time as part of its investment policy for economic development. The UNCTAD World Investment Report 2006 shows that FDI inflows to West Africa is mainly dominated by inflows to Nigeria, who attracts 70% of the sub-regional total and 11% of Africa`s total. Out of this Nigeria`s oil sector alone receives 90% of the FDI inflow.

The current issues of globalization triggered by the cross-border investments, amalgamation of capital, mobility of knowledge, and advent of information and digital technologies has been identified as a veritable factor that stimulates FDI inflows into Africa in general and in Nigeria in particular. The paramount reason for this study lies in the compelling need to discover other feasible and profitable sectors of the economy in which oil and gas can be diversified to in order to ensure balanced sectoral, industrial and geographical development, which may serve as a catalyst for achieving sustainable economic growth in the years spanning up to 2030.

In view of the above scenario, it is therefore of great importance in this paper to examine the relationship between FDI, non oil exports and economic growth using granger causality approach. The scope of the study ranges between the periods of 1980 to 2016. It is assumed that 36 years are long enough for multiplier effects of FDI and non oil exports to transmit to growth of the economy.

## II. LITERATURE REVIEW

### Introduction

This chapter of the study reviewed related theoretical literature, then empirical literature from Africa and Nigeria on FDI, non-oil exports and economic growth.

### 2.1 Review of Theoretical Literature

The theoretical foundation for this study lies on the following theories which are reviewed as follows.

### 2.2 Theory of Multinationals

The theory of multinational was first put forward by Hymer in 1959 in his doctoral seminar published posthumously in 1976. He articulates that a firm whose operations cross national and cultural boundaries and a firm whose operations are only limited to one nation face different costs of production. In order for a firm to survive the presumed cost disadvantage orchestrated by the extra-costs, it must have internal firm-specific advantages over its rivals in the market. Such advantages are mainly captured by economies of scale or of superior production technology.

### 2.3 Traditional Neoclassical Growth Theory

Traditional neoclassical models of growth have been conceptualized as a direct outgrowth of the Harrod-Domar and Solow growth models, which both emphasize the importance of investment in an economy. The Solow neoclassical growth model in particular expanded the Harrod-Domar model by including a second factor input, labour and introducing a third independent variable technology, to the growth equation. Harrod-Domar model has a fixed coefficient, constant returns to scale, but the assumption of the Solow's neoclassical growth model exhibits diminishing returns to labour and capital independently and constant returns to both factors concurrently.

### Empirical Literature Review

The following empirical studies show a number of ways through which trade flows, FDI and economic growth can be linked. Goldberg and Klein (1998) assert that FDI may encourage export promotion, import substitution, or greater trade in intermediate inputs which often exist between parent and affiliate producers. The compelling reason why most multinational firms invest is geared towards exports and this may most likely serve as a catalyst for the integration of the FDI host economy to the rest of the world.

Author(s)	Year	Study&Countries	Methodology	Results&Conclusion
Borensztein, De Gregorio and Lee	(1998)	FDI, Technology transfer and economic growth in developing countries.	Endogenous growth of technology transmission.	Technological advancement propelled long-run growth.
Akinlo.	(2003)	Effect of FDI in Africa	Pooled annual data from twelve African countries	FDI primarily affects economic growth via capital accumulation, as opposed to increasing productivity
Offiong and Atsu	2014	The determinants of FDI in Nigeria	Multiple regression analysis	The significant determinants of FDI are GDP and real wage rates
Zakia and Ziad	2007	FDI and economic growth of Jordan	VAR Modelling	Bi-directional causality exists between FDI and output, and between imports and output as well.
Saibu and Akinbobola	(2014)	Relationship among globalization, FDI and economic growth in selected SSA countries	Error correction modeling (VECM) approach	Study conclude that external shocks from capital inflows and trade inflows could be as a result of fluctuations in real economic growth in the SSA countries.
UNACA	2009	Key determinants of net FDI inflows in Africa	Panel data of 31 African countries, adopting both baseline static and dynamic panel data models	Study confirms that significant drivers of inward FDI in Africa are market size, past levels of inward FDI, corruption, domestic credit, share of oil in exports and religious

				tension risk.
Oyinlola	1995	The relationship between foreign capital to include foreign loans, direct foreign investments and export earnings in Nigeria	Using Chenery and Stout's two-gap model Chenery and Stout, (1966),	The study concludes that FDI has a negative effect on economic development in Nigeria.
Adelegan	2000	The impact of FDI on economic growth in Nigeria	The seemingly unrelated regression model	The study finds out that FDI is pro consumption and pro-import and inversely related to gross domestic investment
Ayanwale.	2007	The relationship between non-extractive FDI and economic growth in Nigeria	Using OLS estimates,	The paper discovers that FDI has a positive link with economic growth but cautioned that the overall effect of FDI on economic growth may not be significant
Efobi and Osabuohien.	2011	Agricultural credit guarantees scheme fund and non-oil exports performance in Nigeria spanning from 1970 to 2007	using the Vector Auto-Regressive (VAR) technique	The study establishes that there exists a long-run relationship between the ACGSF and export, but the magnitude is minimal.
Onodugo, Ikpe and Anowor..	2013	The specific impact of the non-oil exports to the growth of Nigerian economy between 1981 and 2012	Using Augmented Production Function (APF), and the Endogenous Growth Model (EGM) in its analysis. The conventional tests for mean reversion and co-integration were employed	The findings of the paper reveal a very weak and infinitesimal impact of non-oil export in influencing rate of change in level of economic growth in Nigeria.
Abogan, Akinola and Baruwa.	2014	investigate the impact of non-oil export on economic growth in Nigeria between 1980 and 2010	Ordinary Least Square Methods involving Error correction mechanism, over-parametization and parsimonious were adopted	The study shows that non-oil exports and economic growth are co integrated

Source: Authors` compilation, 2018

However, from the reviewed empirical studies above, virtually all the studies are in agreement that there is a relationship between FDI, non-oil exports and economic growth. But, there are a lot of augments and controversies in the type and kind of relationship that exists among these economic variables in Nigeria. This shows that literatures are still inconclusive about the way FDI and non-exports affect economic growth.

### III. METHODOLOGY

#### Introduction

This study makes use of secondary data from 1980 to 2016. The data on GDP and non-oil exports are sourced from Central Bank of Nigeria Statistical Bulletin. Meanwhile, data on FDI are sourced from UNCTAD database published by World Bank. VAR modeling was estimated using E-Views software.

#### 3.1 Model Specification

In analyzing the Granger causality between FDI, non-oil exports and economic growth, this work employed pairwise granger causality analysis in estimating the VAR model in equation (1-3) which stated thus; following Anoruo and Ahmad (2001), the model can be specified thus:

$$\begin{aligned}
 GDP_t &= \alpha_0 + \sum_{i=0}^p \alpha_1 FDI_{t-1} + \sum_{i=0}^p \alpha_2 NOIL_{t-1} + \sum_{i=0}^p \alpha_3 GDP_{t-1} + \varepsilon_{1t} \\
 &\text{----- 1} \\
 FDI_t &= \beta_0 + \sum_{i=0}^p \beta_1 FDI_{t-1} + \sum_{i=0}^p \beta_2 NOIL_{t-1} + \sum_{i=0}^p \beta_3 GDP_{t-1} + \varepsilon_{2t} \\
 &\text{----- 2} \\
 NOIL_t &= \gamma_0 + \sum_{i=0}^p \gamma_1 FDI_{t-1} + \sum_{i=0}^p \gamma_2 NOIL_{t-1} + \sum_{i=0}^p \gamma_3 GDP_{t-1} + \varepsilon_{3t} \\
 &\text{----- 3}
 \end{aligned}$$

### 3.2 The Direction of Causality between FDI, Non-Exports and Economic Growth in Nigeria.

This section addresses the objective of this paper which is to investigate the causal relationship among foreign direct

investment, non-oil exports and economic growth in Nigeria. Although regression analysis deals with the dependence of one variable on another variable with a view to estimating or predicting the value of the former variable in term of fixed value of the latter, this does not necessarily imply causality. In other words, the existence of a relationship between variables does not prove causality or direction of influence. However, in a regression analysis which includes time series data, the situation may be somewhat different. This is because time does not run backward. That is, if event A happens before event B, then it is possible that event A is causing event B. in other words, events in the past can cause events to happen in the present but future events cannot.

To provide the desired empirical basis for investigating the existence of causal relationship among foreign direct investment, non-oil exports and economic growth, this section adopts Pairwise Granger Causality Test

## IV. RESULTS AND DISCUSSION

**Table 1; Unit Root Test**

Variables	Augmented Dickey-Fuller Test			Phillip Perron Test		
	Level	1 <sup>st</sup> Difference	Remarks	Level	1 <sup>st</sup> Difference	Remarks
LRGDP	-2.4613	-6.4450*	I (1)	-2.3141	-11.8522*	I (1)
LNN_OIL_EXP	-2.0804	-7.5905*	I (1)	-2.0438	-9.7350*	I (1)
LFDI	-0.2958	-10.8467*	I (1)	-0.9494	-10.7761*	I (1)

**Source; Authors` computation (2018)**, note: \*/ \*\*/ \*\*\* represent stationary at 1, 5 and 10 percent level respectively.

Due to the significance of the unit root in determining the cointegration and causality analyses, the variables in this study was tested for unit roots via the standard Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests. The standard ADF test was conducted for unit roots in the levels (for constant without trend) and first difference (for constant without trend); the result is reported in Table 1. Although, the test was started with level, the result showed a consistent results by rejecting the null (Ho: a unit root) hypothesis of a unit root at first difference, against the one-sided alternative whenever the ADF statistic is less than the critical value, at a statistically significant values of 1%, 5% and 10%. Hence, the variables of LRGDP, LNN\_OIL\_EXP and LFDI are stationary. Similar to the ADF test, PP test, for the country's LRGDP, LNN\_OIL\_EXP and LFDI, was conducted for unit roots in the levels (for constant without trend) and first difference (for constant without trend). The results, as reported in Table 1, presumed a rejection of null (Ho: a unit root) hypothesis of a unit root at first difference, against the one-sided alternative whenever the PP test statistic is less than the test critical values at a statistically significant values of 1%, 5% and 10%. This furthered confirm the result of ADF test.

### 3.3: Johansen Cointegration Test

**TABLE 2: Johansen Cointegration Test (Trace Statistics)**

Null Hypothesis	Eigenvalue	Trace Statistics	P-value
r=0	0.490363	32.30326	0.0252
r≤1	0.279550	10.73346	0.2284
r≤2	0.007512	0.241304	0.6233

**Source; Authors` computation (2018)**

**TABLE 3: Johansen Cointegration Test (Maximum Eigenvalue)**

Null Hypothesis	Eigenvalue	Maximum Eigenvalue	P-value
r=0	0.490363	21.56980	0.0434
r≤1	0.279550	10.49215	0.1816
r≤2	0.007512	0.241304	0.6233

**Source; Authors` computation (2018)**

The multivariate cointegration technique developed by Johansen & Juselius (1990) was employed to determine the long run relationships between the variable of LRGDP, LNON-OIL EXPORT and LFDI, since the variables in the systems was I(1), and may possess some kind of long run relationship. The test results are reported in Tables 2 and 3. The results of the

multivariate cointegration analysis reported in Table 2 and 3 indicated the existence of one cointegrating vectors in the systems. Based on the trace statistics, we observed from the results that there is one cointegrating vectors in the model (at a lag interval of 1 to 1. Similarly, the maximal eigenvalue statistics

in the table indicated the existence of one cointegrating vectors. This implies that the variables have long run relationship with one another may likely adjust to short run disequilibrium via one channels.

**Table 4: Pairwise Granger Causality Test**

Null Hypothesis:	Obs	F-Statistic	Prob.
LNN_OIL_EXP does not Granger Cause LRGDP	32	0.86591	0.4320
LRGDP does not Granger Cause LNN_OIL_EXP		5.53951	0.0096
LFDI does not Granger Cause LRGDP	32	5.89856	0.0075
LRGDP does not Granger Cause LFDI		0.25464	0.7770
LFDI does not Granger Cause LNN_OIL_EXP	32	4.85823	0.0158
LNN_OIL_EXP does not Granger Cause LFDI		0.27018	0.7653

**Source: Authors` computation (2018)**

The Granger causality test was conducted to determine the direction of causality among FDI, non-export and economic growth in Nigeria, the table reveals that causality runs from economic growth to non oil export, with F-statistic value of 5.5395 and p-value of 0.0096, thus the null hypothesis of no causality was rejected, while non oil export does not granger cause economic growth, This implies the existence of unidirectional causality from economic growth to non oil export. FDI does Granger cause economic growth at 5 percent level of significance, while economic growth does not Granger cause FDI, this implies the existence of one way causality flows from FDI to economic growth. Thus, the study confirmed the Harrod-Domar and Solow growth models, which both emphasized the impact of investment in an economy as a veritable factor that precedes economic growth. FDI Granger causes non-oil exports but non-oil exports Granger cause not FDI. In fact, the causality test illustrates a unidirectional causal relationship that runs from FDI to non-oil exports.

**3.4 Conclusion and Recommendation**

Attempt has been made in this study to examine relationship between FDI, non-oil exports and economic growth in Nigeria over the period of 1980 to 2016 using Granger causality approach. The study sets out to establish among others, the causal relationship that exists among FDI, non-oil exports and economic in the country within the studied period. To achieve the stated objective, the study follows this pattern: in the introductory chapter, the necessary background is laid; the problems are identified and justified accordingly. In chapter two, a critical review of the selected and relevant literature was done with a view to identifying research gap in the existing knowledge. The review shows that empirical studies have generated mixed results in the literature regarding the impact of FDI and non-oil exports on economic growth in Nigeria. Also, the direction of causality between FDI, non-oil exports and economic growth has not been adequately explored in Nigeria. Furthermore, while chapter three presents the model specification and estimates the series data based on the variables presented in

the model, by first examining the unit root test before the long-run relationship of the variables was investigated. Also, in order to empirically examine the causal relationship existing among FDI, non-oil exports and economic growth, Pairwise Granger Causality Test was conducted. It was discovered that unidirectional causality runs from FDI to economic growth as well as non-oil exports. This finding is line with the work of Olayiwola and Okodua, (2010). Similarly, one way causality runs from economic growth to non-oil exports. From the findings that emerged in this study, it is paramount that the following vital policy implications are drawn. FDI has facilitated the expansion of non oil exports in particular and economic growth in general in Nigeria over time. Therefore, the study thereby recommends that all hands must be on deck by the policy makers to create friendly economic policies and business environment that will boost further attraction of FDI into all sectors of the economy. Promotion of a stable political and macroeconomic environment that encourages investment, particularly foreign direct investment should not be overemphasized

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