Nexus between Foreign Direct Investment, Non-Oil Exports and Economic Growth in Nigeria: Dynamic Ordinary Least Square (Dols) Approach

Aderemi Timothy Ayomitunde
Department of Economics, Olabisi Onabanjo University, Ago Iwoye, Ogun State, Nigeria

Abstract: Empirical studies have found divergent views on the effect of FDI and non-oil exports on economic growth in the country. However, in achieving the objective of this study, the authors employed the dynamic OLS modeling to analyze the relationship between FDI, non-oil exports and economic growth in Nigeria during the period of 1980 to 2016. In testing for the time series properties, the evidence from estimated economic models suggests that all the variables examined are stationary at first difference (I(1)) using the Augmented Dickey-Fuller (ADF) and Phillips-Perron. Also, Johansen Co-integration test reveals that the variables are not co-integrated. The study reveals that the impact of FDI on the economic growth was significant and as a unit change in FDI causes 64% impact on the productive capacity of goods and services in Nigeria during the period under consideration. Meanwhile, reverse is the case for non-oil exports. Therefore, the study recommends policy measures should be formulated and implemented with a view to attracting more of FDI inflows in the country. In the same vein, comatose state of non-oil sector of the Nigerian economy should be revamped as a matter of urgency.

Keywords: FDI, Non-Oil Exports, Economic Growth and Nigeria

Date of Submission: 20-10-2018 Date of acceptance: 05-11-2018

I. Introduction

In the last few decades, foreign direct investment has been reported to be growing at a pace far exceeding the volume of international trade. Available evidence, according to Barrell and Pain (1997) shows that between 1975 and 1995, the aggregate stock of FDI rose from 4.5% to 9.7% of world GDP, which sales of foreign affiliates of multinational companies greatly exceeding the value of world exports. The United Nations Conference on Trade and Development, UNCTAD (2007) reports that FDI flow to Africa has increased from $9.68 billion in 2000 to $1.3 trillion in 2006. In the same vein, current financial market integration in the global economy brought about as a result of advent digital technology, coupled with the continuous participation and largely global networking of multinational corporations and their activities in Sub Sahara Africa, foreign direct investment (FDI) has since 2005 become the main source of foreign capital inflows to Africa, overtaking overseas development assistance (ODA) in terms of size. FDI contributed 20% of fixed capital formation in Africa over the last decade, but this continued to be unevenly distributed across countries and sectors with 15 oil-rich countries accounting for 75% of FDI inflow (ADBetal, 2011).

However, the UNCTAD World Investment Report 2006 shows that FDI inflow to West Africa is mainly dominated by inflow to Nigeria who received 70% of the sub-regional total and 11% of Africa’s total. Out of this Nigeria’s oil sector alone receive 90% of the FDI inflow. Therefore, one can conclude that Nigeria has attracted FDI over time.

Similarly, as a result of rapid improvement in trade liberalization and concerted effort to diversify the productive base of the Nigerian economy, non-oil exports have registered a considerable increment over time. According to CBN (2007) the Gross Domestic Product (GDP) at the third quarter of 2007 rose by 0.32% from the second quarter. This observed growth was orchestrated mainly by the non-oil sector which was estimated at 9.47%. In the same manner, the Central Bank of Nigeria (CBN) has arrogated the growth of the Nigerian Gross Domestic Product (GDP) from 6.9% in the third quarter 2012 to 7.1% in the fourth quarter of the same year to the increase in the contribution of the non-oil sectors, particularly industrial sector (NBS, 2012). Also, the Economic Report of Fourth Quarter of CBN (2012) submits that non-oil receipts stood at N589.98 billion (24.4% of the total). In view of the above raised argument it is pertinent to empirically examine the impact of FDI and non-oil exports on economic growth in Nigeria. 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 in order to ameliorate the vulnerability of the Nigerian economy to global oil price shocks. Therefore, the main objective of the study is to critically examine the sustainability of Nigerian economy through FDI and non-oil export. The
study will cover the period of 1980 to 2016. This period is assumed to be long enough to investigate FDI, non-oil export and economic growth, especially after the oil boom and post civil war in Nigeria.

II. Literature Review

The following theories are reviewed as follows to substantiate the empirical literature.

2.1 Theory of Multinationals

The theory of multinational is traceable to doctoral dissertation of Stephen Hymer in 1959 which was later published posthumously in 1976. Hymer first pioneered the now widely acceptable school of thought that a firm whose operations spread beyond its national shores faces costs different from that of a firm whose activities are only in operation in one nation. Therefore, internal, firm-specific advantages over its rivals are a necessary condition that can make such a firm to be insulated from the assumed penalties brought by these extra-costs. He concluded that such advantages are majorly captured by economies of scale or of superior production technology.

Similarly, Dunning (1958), empirically examined manufacturing operations in the United Kingdom controlled by US-based firms to substantiate Hymer’s speculations, though Dunning’s work was done quite independently of Hymer’s work. He discovered that US-based firm paid higher wages, and such firms were characterized by higher rates of labour productivity and new product innovation than their UK-controlled rivals.

2.2 Empirical Literature Review

There have been catalogue of literatures that show the link between FDI, non-oil exports and economic growth in both developed and developing economies. It is therefore of great importance to critically review these literatures.

2.3 Empirical Evidence from Outside Africa

While contributing to the FDI debate in Jordan, Zakia and Ziad (2007) test the effect of FDI on the economic growth of Jordan, in connection with the testing of imports on the same dependent variable spanning from 1976 to 2003. The estimated results show the existence of bi-directional relationship between FDI and output, and between imports and output as well. Similarly, Zsofia and Migueł (2013) empirically investigate the causal relationship between foreign direct investment, exchange rate and economic growth in Hungarian economy between 1995 and 2012 employing unit root and cointegration analysis techniques, the study concludes that a stable long-run equilibrium relationship among the included variables exist, thus an error correction model is estimated to capture the adjustment of short-run and long-run behavior of the variables. In the long run, it was discovered that changes in real gross domestic product are directly associated with changes in the stock of foreign direct investment inflows, while changes in the real effective exchange have an inverse effect. Furthermore, the authors assert that in the short-run, a 1% deviation of FDI from its long-run relationship will be corrected by 0.48% per year. Therefore, the final conclusion of the authors is that the Vector Error Correction brings about short run mechanism of all the variables in the system.

2.4 Empirical Evidence from Africa

This section provides a brief review of the literature on major determinants of FDI inflows in Africa. As a matter of necessity in this paper, we need to report the empirical validation of some factors that derive FDI in African continent.

UNACA (2009) investigates the key determinants of net FDI inflows in Africa using a panel data of 31 countries for 26 years from 1984-2009. The study adopts both baseline static and dynamic panel data models, the study confirms the following determinants: share of oil in exports, size of market, past foreign direct investment inflows, level of corruption, domestic credit, and religious tension risk as the significant drivers of foreign direct investment inflows in Africa. The study submits that FDI inflows to Africa is market-seeking and follows oil rich economies.

Meanwhile, Chakarabarti (2001) empirically investigates the determinants of FDI in Africa with the aid of econometric techniques and a range of robustness/sensitivity analysis. 31 African economies were selected for the study, and consequently the findings of this work corroborate with the submission of existing evidence that says both natural resource and market factors are important determinants of FDI inflow to Africa.

Consequently, Akinlo (2003) considers the effect of FDI in Africa using pooled annual data from twelve countries. The results in this paper indicate that twice-lagged FDI has accumulation to be felt. Then, the author made an attempt to figure out the precise channel through which FDI impacts growth, and discovers that FDI primarily affects growth through capital accumulation, as opposed to increasing productivity.

Meanwhile, Ogun, Egwaikhide and Ogunleye (2012) examine the relationship between FDI and real exchange rate in some selected Sub-Saharan Africa (SSA) countries, employing the Granger causality and simultaneous estimation techniques, the causality tests suggest statistical dependence between real exchange rate...
movements and FDI for a few of the countries, the regression analysis shows a statistically significant relationship between the variables used, the general picture emerging is that FDI flows are sensitive to real exchange rate movements in Sub-Saharan Africa.

Similarly, Nyamrunda (2012) analyses the stochastic trends of the exchange rate and the net FDI inflows into less developed countries mainly Tanzania for the period 1960 to 2011. This study uses the Augmented Dickey Fuller test (ADF), Vector error Correction Model (ECM) and the Johansen’s cointegration test to estimate the time series properties of the variables used. The study finds that there is a significant long-run equilibrium relationship between the exchange rate of Tanzanian shilling and the net FDI inflow.

Furthermore, Saibu and Akinbobola (2014) investigate the relationship among globalization, FDI and economic growth in selected SSA countries, adopting vector error correction modeling (VECM) approach and find that although trade liberalization has not substantially impaired economic growth process of the SSA countries, the upsurge in the capital flows to African economies was insufficient to insulate the economies from the global economic shocks. They assert that fluctuations in real economic growth in the SSA countries might be beyond the external shocks from capital inflows and trade inflows.

However, Adams (2009) analyses the relationship among FDI, domestic investment and economic growth in SSA between the period of 1990 and 2003 using the OLS analytical framework. The study finds out among others that FDI is directly and significantly correlated with economic growth while reverse is the case when the country specific effects are controlled for.

Conversely, Gui-Diby (2014) critically examines the relationship between FDI and economic growth for 50 African countries for 1980-1994, employing GMM technique. He concludes that while the relationship was negative over the period 1980-1994, it was positive between 1995 and 2009. He arrogates the positive impact in the latter period to the improvement of the business environment and contribution of the resource-based sectors through exporting activities.

2.5 Empirical Evidence from Nigeria

Literature has shown existence of a number of studies on the FDI-growth nexus in Nigeria. For example, Adelekan (2000) examines the impact of FDI on economic growth in Nigeria embracing regression model and finds out that FDI is pro consumption and pro-import and negatively related to gross domestic investment.

Similarly, Ayonwale (2007) investigates the empirical relationship between non-extractive FDI and economic growth in Nigeria. Using OLS estimates, he discovers that FDI has a direct link with economic growth but asserts that the overall effect of FDI on economic growth may not be significant.

Consequently, Okodua (2009) who examines the sustainability of the FDI-growth relationship in Nigeria within the framework of Johansen cointegration and a multivariate VAR within a vector error correction model. He discovers the existence of a long-run equilibrium relationship between economic growth and FDI inflows and a unidirectional causality from FDI to economic growth concurrently.

Furthermore, Akinlo (2004) investigates the impact of FDI on economic growth in Nigeria spanning the period of 1970 to 2001. The results of his estimated error correction model (ECM) indicate that both private capital and lagged foreign capital have small and insignificant impact on economic growth.

Meanwhile, Aderemi and Aberu, (2018) examined causality between FDI, non-oil exports and economic growth in Nigeria between 1980 and 2016. The result of the study shows that a unidirectional causality runs from FDI to economic growth as well as non-oil exports in Nigeria.

Offiong and Atsu (2014) analyze the determinants of foreign direct investment in Nigeria using the multiple regression analysis in testing whether the set of independent variables explained the dependent variable. The study found that a significant relationship existed between GDP and inflow of FDI as well as real wage rates and inflow of FDI.

Meanwhile, Efohi and Osabuohien (2011) evaluate agricultural credit guarantee scheme fund and non-oil exports performance in Nigeria spanning from 1970 to 2007 using the Vector Auto-Regressive (VAR) technique. The study established that there exists a long-run relationship between the ACGSF and export, but the magnitude is minimal.

In the same vein, Onodugo, Ikpe and Anowor (2013) evaluate the specific impact of the non-oil exports to the growth using Nigerian data between 1981 and 2012. The study adopted the 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 results reveal a very weak and infinitesimal impact of non-oil export in influencing rate of change in level of economic growth in Nigeria.

While investigating the impact of non-oil export on economic growth in Nigeria between 1980 and 2010, Abogan, Akinola and Baruwa (2014) use OLS involving Error correction mechanism, over-parametization and parsimonious to confirm the existence of long-run equilibrium relationship between the variables.
However, Onayemi and Ishola (2009) argue that non-oil exports have performed below expectation under export promotion policy in Nigeria. This proposition corroborates the argument advanced by Subasat (2002) that export promotion does not have any significant impact on economic growth of low income countries.

However, the reviewed literature shows that there is an existence of relationship between FDI, non-oil exports and economic growth. Nevertheless, the argument and controversy surrounding the empirical studies show that literature is inconclusive about the nexus between FDI, non-oil exports and economic growth in Nigeria.

III. Methodology

3.1 Introduction

This section defines ‘the rule of the game’ to be adhered to in order to achieve the objectives of this study. In order words, the research methodology indicates the specification of the procedure employed by the researcher in putting together the raw data for processing and estimation.

This study makes use of secondary data. The data on GDP and non-oil export were sourced from Central Bank of Nigeria Statistical Bulletin. Meanwhile, data on FDI were extracted from UNCTAD database published by World Bank. The data employed cover the periods of 1980 to 2016. Similarly, descriptive statistics and dynamic OLS technique were employed to address the objective of this study.

3.2 Model Specification

In an attempt to examine the impact of FDI and non-oil exports on economic growth in Nigeria, model below can be estimated to achieve it.

\[ G_t = f(FDI_t, NOE_t, INF_t) \]  

Where \( G \) represents economic growth measured by real Gross Domestic Product (GDP), FDI is Foreign Direct Investment inflows, NOE is Non-Oil Exports, INFt is the inflation rate used to measure the stability of the economy and \( U_i \) is the error term used to denote other unobservable variables that may affect the model. Where subscript \( t \) represents the time period of scope of the study.

With a linear relationship which can be explicitly stated as follows.

\[ \ln G = B_0 + B_1 \ln FDI + B_2 \ln NOE + B_3 \ln INF + U_i \]  

It is worth noting that the coefficient of each of the variables in the model 2 gives us the information about the impact of FDI and non-oil exports on economic growth in Nigeria.

3.3 RESULTS AND DISCUSSION

Table 1: Descriptive Statistics of Annual Data Series (1980-2016)

<table>
<thead>
<tr>
<th>Descriptive Statistics</th>
<th>LFDI</th>
<th>LNN_OIL_EXP</th>
<th>LRGDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>2.5800</td>
<td>4.8200</td>
<td>9.9400</td>
</tr>
<tr>
<td>Median</td>
<td>2.2700</td>
<td>5.8500</td>
<td>5.7700</td>
</tr>
<tr>
<td>Maximum</td>
<td>8.9200</td>
<td>4.5100</td>
<td>5.2300</td>
</tr>
<tr>
<td>Minimum</td>
<td>1.8908</td>
<td>1.1300</td>
<td>3.7000</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>2.8099</td>
<td>1.0300</td>
<td>1.1311</td>
</tr>
<tr>
<td>Skewness</td>
<td>1.2454</td>
<td>1.7223</td>
<td>3.0379</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>3.1051</td>
<td>5.6232</td>
<td>11.831</td>
</tr>
<tr>
<td>Jarque-Bera</td>
<td>8.9275</td>
<td>27.150</td>
<td>164.03</td>
</tr>
<tr>
<td>Probability</td>
<td>0.0115</td>
<td>0.0000</td>
<td>0.0000</td>
</tr>
<tr>
<td>Sum</td>
<td>8.7600</td>
<td>3.4600</td>
<td>4.2022</td>
</tr>
<tr>
<td>Sum. Sq. Deviation</td>
<td>2.5900</td>
<td>3.5000</td>
<td>4.2022</td>
</tr>
<tr>
<td>Observation</td>
<td>36</td>
<td>36</td>
<td>36</td>
</tr>
</tbody>
</table>

Source: Authors’ Computation (2018)

3.4 Descriptive Statistics of Data Series

In carrying out this study, an attempt has been made to examine various descriptive statistics of the data. The descriptive statistics of the data series provide information about the sample series such as the mean, median, minimum and maximum values; and the distribution of the sample measured by the skewness, kurtosis and Jarque-Bera statistics. Table 1 below shows the descriptive statistics of the annual data series used in the analysis.

However, it is observed that the values of mean and median are very close. This is reinforced by the proposition of Karmel and Polasek (1980) that when a distribution is perfectly symmetrical, the mean, mode and median must converge; and in cases of near symmetry, the three measures are necessarily very close. It could rightly be deduced that the distribution of the series in the about the symmetrical nature of the probability distribution of various data series as well as the thickness of the tails of these distributions respectively. These
two statistics are particularly important as they are used in computing Jargue-Bera statistics, and also for testing the normality or asymptotic properties of a particular series.

Consequently, econometric analyses are often based on the assumptions of normality and asymptotic properties of data series. There is therefore the need to test for the existence or otherwise of these two properties because most probability distributions and test statistics like t, F, and X^2 are based on them. As table 1 suggests, all annual data series, save those that are seasonally generated, are normally distributed going by the null hypothesis that variables are normally distributed.

![Image](https://example.com/image)

**Table 2: Unit Root Test**

<table>
<thead>
<tr>
<th>Variables</th>
<th>ADF Test</th>
<th>PP Test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>@Level</td>
<td>@First Difference</td>
</tr>
<tr>
<td>LRGDP</td>
<td>-2.4615</td>
<td>-6.4510</td>
</tr>
<tr>
<td>LNN_OIL_EXP</td>
<td>-2.0814</td>
<td>-7.5909</td>
</tr>
<tr>
<td>LFDI</td>
<td>-0.2956</td>
<td>-10.8462</td>
</tr>
</tbody>
</table>

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

In order to establish the existence or otherwise of stationarity of time series data of the variable under consideration, the data were subjected to a unit root test using the standard Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests. As results were reported in table 2, it is clear that data on foreign direct investment, non-oil exports and economic growth were stationary after first differencing. This shows that the variables of interest possess a unit root.

However, the variables of interest are I(1) and there is high tendency they possess a long run equilibrium relationship. Therefore, a multivariate cointegration was estimated with the method put forward by Johansen and Juvelius (1990). The results of the multivariate cointegration analysis shows there is no existence of at least one cointegrating vector in the systems. From the trace statistics, it was observed that there is no existence of at least one cointegrating vectors in the model at a lag interval of 1 to 1. In the same vein, the maximal eigenvalue statistics indicated that there is no existence of at least one cointegrating vectors. This shows that these variables of interest do not have long run equilibrium relationship with one another which may not likely show some adjustment to short run disequilibrium through one channel. As result of this, the first differenced variables are estimated adopting dynamic ordinary least square

**Table 3: The Impact of FDI and Non-Oil Exports on Economic Growth in Nigeria**

<table>
<thead>
<tr>
<th>Dependent Variable: LRGDP</th>
<th>Coefficient</th>
<th>t-statistics</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LNN_OIL_EXP</td>
<td>-0.425844</td>
<td>-1.555813</td>
<td>0.1340</td>
</tr>
<tr>
<td>LFDI</td>
<td>0.638652</td>
<td>3.393087</td>
<td>0.0026</td>
</tr>
<tr>
<td>C</td>
<td>20.21378</td>
<td>6.987093</td>
<td>0.0000</td>
</tr>
<tr>
<td>R-Squared</td>
<td>0.647763</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted R-Squared</td>
<td>0.519677</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Long-run variance</td>
<td>0.200433</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prob(F-statistic)</td>
<td>0.000000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Durbin-Watson stat</td>
<td>1.384432</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

From table 3, it could be deduced that the variable of non-oil export had negative relationship with economic growth. This implies that the coefficient of -0.4258 revealed that one percent change in non-oil export will reduce economic growth by 42.58 percent, though statistically not significant at 5 percent level of significance. The reason for the insignificance and negative sign may be as a result of the fact that during the period in consideration attentions were almost shifted from non-oil sectors to the oil sector which reduced its contributions to total revenue in particular and gross domestic product in general in Nigeria. Thus, output from the non-oil sectors are disheartening and leading to the reduction in the export of non-oil outputs. Interestingly, the negative effect of non-oil exports on economic growth as observed in this study is supported by the work of Abogan et al. (2014) despite the variation in data and the methodology applied. However, the sign of the coefficient of FDI shows the existence of positive relationship between the variables and economic growth, one percent change in FDI will induce 63.86 percent increase in economic growth, its p-value shows that the variable is statistically significant at 5 percent level of significance. This implies that FDI inflow had contributed positively to Nigeria economic growth and this had been the sources of portfolio investment in the country. This finding is validated by Ayanwale (2007) and Okoduwa (2009) despite the fact that different methodologies were adopted. Also, the explanatory variables of the model which comprises of non-oil export and foreign direct investment jointly explain about 64.77% of the systematic variations in the dependent variable, GDP, leaving 35.23%...
unexplained due to random chance. Although after adjusting for the loss in the degree of freedom, the explanatory power reduces to 51.96%, thus, about 51.96 percent systematic variations in the explained variable is being accounted for by the explanatory variables in the model.

3.5 Conclusion and Recommendations
This paper has empirically investigated the impact of FDI and non-oil exports on economic growth in Nigeria over the period of 1980 to 2016. On the basis of the findings that emerged, the results could be summarized below:

The long-run effect shows that foreign direct investment has a positive relationship with economic growth at 5% level of significance in Nigeria. Meanwhile, the long-run effect confirms that non-oil exports have a negative relationship with economic growth in Nigeria. However, this effect is not significant at 5% level of significance. This means non-oil exports are not performing to the expectation in the country.

Moreover, from the findings that emerged in this study, this paper recommends that Nigerian government should see inflows of foreign capital as viable catalyst that propels the economic growth of the country and policy measures should be formulated and implemented with a view to attracting more of FDI inflows in the country. In the same vein, the current issues of security and corruption challenges confronting the country, which might create a bad image for the country in the global community, should be permanently addressed for any foreign investor to securely and boldly come to Nigeria.

Also, in order to rescue the current embark on explicit export comatose state of non-oil sector of the Nigerian economy, the government should as a matter of urgency promotion programme. Moreover, the government should create enabling business and economic environment for private investors, both local and foreign, via adequate provision of infrastructures to develop agricultural and manufacturing sectors which constitute the largest quantum of non-oil exports in Nigeria.

References

DOI: 10.9790/5933-0906012834 www.iosrjournals.org 33 | Page
Nexus Between Foreign Direct Investment, Non-Oil Exports And Economic Growth ...