



Nexus between Foreign Direct Investment and Oil Exports in Nigeria: An Empirical Perspective

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Abstract: This study examined the nexus between the inflows of FDI and exports of crude oil in Nigeria. Data were collected from 1990 to 2018 from UNCTAD Investment Reports and the Central Bank of Nigeria. Dynamic Ordinary Least Square (DOLS) and Granger causality were consequently adopted in estimating the objective of this study. It is imperative to summarize the major findings in this study: FDI inflows had a significant positive impact on oil exports in Nigeria. The relationship between FDI inflows and exchange rate was positive but insignificant. Meanwhile, FDI inflows and inflation rate have an insignificant negative relationship. In addition, these findings in this study motivated the following recommendation in Nigeria, that policy measures that would stabilize oil exports, exchange rate and inflation rate should be embarked upon by the policymakers in Nigeria to induce the inflows of FDI accordingly in the long run.

Keywords: FDI, oil exports, DOLS, granger causality, Nigeria

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INTRODUCTION

In the last few years, foreign direct investment inflows and outflows have been one of the most international capital flow integrating the global economy. The integration of the global economy through FDI has resulted to an increase in GDP growth, job creation and social development of many nations of the world. This has encouraged various policy makers to use various holistic approach to stimulate FDI inflows in their economies. Meanwhile, in Nigeria, the inflows of FDI is traceable to the era of the colonial masters. The critical needs to exploit the nation's natural resources motivated the foreign investors to find their way into the Nigerian economy. However, emergence of crude oil alongside oil boom witnessed in 1958 and 1970s respectively orchestrated a surge in FDI inflows in Nigeria (Anthony & Mustafa, 2011; Hor, 2016; Mizirak & Altıntaş, 2018).

Consequently, in the recent time, oil exports have been the back bone of the Nigerian economy to the extent that over 80% of the foreign earnings in the last four decades emanated from oil exports (Central Bank of Nigeria, 2018). This proposition is further reinforced by the submission of (Odularu, 2008) who asserted that estimated 80%

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of the Nigerian revenue came from only oil exports in 2000s. This points to the monocultural state of the Nigerian economy over time. The aftermath effect of this has been a continuous flows of FDI in the favour of the Nigerian oil and gas. For instance, oil and gas attracted 90% of FDI inflows in Nigeria in 2005 ([United Nations Conference on Trade and Development, 2018](#)). It has been observed from FDI historical data that oil and gas sector has received the lion share of FDI inflows in Nigeria in the last 3 decades. It is expected that FDI inflows should bring about a rise in oil exports in Nigeria in the recent time. Meanwhile, there is no substantial empirical studies to validate the above argument. This necessitates this study in order to examine the nature of the relationship that exists between FDI and oil exports in Nigeria over the period of 1990 to 2018. This study is arranged in such a way that critical review of relevant literature comes after the introductory aspect and model specification, estimation, discussion of results and policy recommendation thereby follow suit.

EMPIRICAL LITERATURE REVIEW

In this part of the paper, an attempt has been made to critically review past empirical studies relevant to the key variables in this study. This is summarized in the table below for easy assessment of the nature of the relationship that exists between FDI and exports in the literature over time.

Table 1 *LITERATURE SUMMARY*

Name	Methodology	Findings
Rogmans and Ebbers (2013)	Quantitative technique	The impact of trade openness on FDI inflows is a function of initially on FDI motives
Aderemi (2018)	Econometric technique such as DOLS	The study found that FDI contributed to Gross Domestic Product significantly whereas exports from non-oil showed was opposite.
Aderemi and Aberu (2018)	Granger causality technique	The authors discovered that FDI granger caused economic growth and non-oil exports in Nigeria between 1980 to 2016
Serven and Solimano (1992)	Quantitative technique	It was discovered that foreign direct investment inflows was a function of government fiscal deficit/surplus
Ogun, Egwaikhide, and Ogunleye (2012)	Granger causality and simultaneous estimation techniques	The study found that FDI inflows were sensitive to real exchange rate movements in SSA.
Aderemi, Olayemi, Emiola, and Ebere (2018)	Econometric technique	It was discovered from the study that the interactions among FDI, non-oil exports and economic growth appear very weak and do not follow a predictable pattern in Nigeria
Okodua (2009)	Econometric analysis	The author revealed FDI and economic growth converged in the long run. In the same vein, there is a one way feedback effect between FDI and GDP
Akinlo (2004)	Econometric analysis	The study found that both private capital and lagged foreign capital had an insignificant on GDP. Also, exports had an insignificant impact on the Nigerian economy.
Olumuyiwa (2003)	Econometric technique	The study argued that that a negative relationship existed between exchange rate and foreign direct investment in the Nigeria.

Table 1 CONTINUE

Name	Methodology	Findings
Akanni (2007)	Ordinary Least Squares regression	The finding from the study indicated both investment and oil rents were converged. Meanwhile, oil rents did stimulate growth in larger members of countries abundance of oil in Africa.
Odularu (2008)	Ordinary Least Square regression and Cobb-Douglas production function	The author submitted that economic growth was stimulated by crude oil insignificantly in Nigeria.

In addition, it could be inferred from the above table that literature regarding that past studies on the nexus between inflows of FDI exports of oil in Nigeria are very scanty in this contemporary era. Therefore, this study is of paramount important.

DATA AND METHODOLOGY

In this study, secondary data were utilized from various sources. To be explicit, FDI data were extracted from UNCTAD database of the World Bank. However, oil exports, exchange rate and inflation rate data were sourced from the Central bank of Nigeria Statistical Bulletin. The software employed in this study is Eview 9.0.

Model Specification

$$FDI = F(EXRT, OILEX, INFR) \quad (1)$$

There is a need to linearizing equation 1 so as to generate equation 2

$$\log FDI_t = \alpha_i + \beta_1 \text{LogOILEX}_t + \beta_2 \text{LogEXRT}_t + \beta_3 \text{INFR}_t + U_t \quad (2)$$

The Direction of Causality between FDI Inflows and Oil Exports in Nigeria

This study employed the technique of Granger causality in estimating the relationship between FDI inflows and oil exports. Therefore, a pairwise granger causality analysis within the framework of VAR model in equation 3-6 which is stated as follows;

$$OILEX_t = +\beta_0 + \sum_{i=0}^p \beta_1 OILEX_{t-1} + \sum_{i=0}^p \beta_2 FDI_{t-1} + \sum_{i=0}^p \beta_3 EXRT_{t-1} + \sum_{i=0}^p \beta_4 INFR_{t-1} + U_{1t} \quad (3)$$

$$FDI_t = \alpha_0 + \sum_{i=0}^p \alpha_1 FDI_{t-1} + \sum_{i=0}^p \alpha_2 OILEX_{t-1} + \sum_{i=0}^p \alpha_3 EXRT_{t-1} + \sum_{i=0}^p \alpha_4 INFR_{t-1} + U_{2t} \quad (4)$$

$$EXRT_t = \gamma_0 + \sum_{i=0}^p \gamma_1 EXRT_{t-1} + \sum_{i=0}^p \gamma_2 INFR_{t-1} + \sum_{i=0}^p \gamma_3 FDI_{t-1} + \sum_{i=0}^p \gamma_4 OILEX_{t-1} + U_{3t} \quad (5)$$

$$INFR_t = \gamma_0 + \sum_{i=0}^p \gamma_1 INFR_{t-1} + \sum_{i=0}^p \gamma_2 OILEX_{t-1} + \sum_{i=0}^p \gamma_3 EXRT_{t-1} + \sum_{i=0}^p \gamma_4 FDI_{t-1} + U_{4t} \quad (6)$$

It is worth of note that FDI is Foreign Direct Investment inflows in Nigeria. EXRT represents exchange rate. Meanwhile, OILEX is used to denote oil exports and INFR is inflation rate. Also, ∞ is an intercept. Then, β_1 , β_2 and β_3 are slope parameters to be estimated. U_t represents error term and the subscript, t stands for the periods of analysis, 1990 to 2018. Log is natural logarithm. The a priori expectations are as follows: β_1 and $\beta_2 > 0$, $\beta_3 < 0$

RESULTS AND DISCUSSION

Table 2 *DESCRIPTIVE STATISTICS OF ANNUAL DATA SERIES (1990-2018)*

Descriptive Statistics	LogFDI	Log EXRT	INFR	LogOILEX
Mean	4.69E+10	212.4322	17.65816	6364.482
Median	3.20E+10	231.1813	11.11222	3014.220
Maximum	9.13E+11	364.5134	61.73000	25434.26
Minimum	2.11E+10	9.1348908	4.270000	217.7376
Std. Deviation	3.69E+10	77.77367	16.64316	5092.526
Skewness	0.871671	0.133812	0.814663	0.665150
Kurtosis	3.251820	3.324580	4.313025	2.996417
Jargue-Bera	4.317579	0.709377	14.20106	3.654334
Probability	0.212489	0.806319	0.000010	0.359158
Sum	9.48E+11	3846.619	415.6700	232541.0
Sum. Sq. Deviation	1.74E+20	126651.8	9094.517	5.15E+03
Observation	29	29	29	29

In Table 2, the results of descriptive analysis of FDI inflows, exchange rate, inflation rate and oil exports were presented with a view to providing relevant information about the normal distribution of the data employed to estimate the relationship among the variables of interest. Considering FDI data in its log form, it has a mean value and a median value that are very close. The data is moderately dispersed from its mean value because the mean value is greater than its deviation. It is also positively skewed with Kurtosis value of 3.2. This shows that the data is in agreement with symmetrical assumption. However, exchange rate data show a moderate difference between its mean value and median value. It is positively skewed with a value of kurtosis 3.3. The data is moderately dispersed from its value as a result of mean value exceeding the value of the standard deviation.

Furthermore, oil exports and inflation rate data have the mean and the median values with a wide difference respectively. They have positive skewness with values of Kurtosis not far from 3. Therefore, the data for this study agree with normal distribution assumption. It could be utilized for further econometric analysis.

Table 3 *UNIT ROOT TEST*

Variables	ADF Test			PP Test		
	Level	1st Difference	Remarks	Level	1st Difference	Remarks
LogFDI	-2.9920***	-2.9962***	I (1)	-2.9110***	-2.9863***	I (1)
LogOILEx	-2.9920***	-2.9962***	I (1)	-2.9110***	-2.9863***	I (1)
EXRT	-2.9920***	-2.9962***	I (1)	-2.9110***	-2.9863***	I (1)
INFL	-2.9920***	-2.9962***	I(1)	-2.9110***	-2.9863***	I(1)

*** %5 level

Time series data should be treated with caution when it comes into analysis because, it has a unique problem of non-stationarity property (Granger, 1986). If analysis is based on non-stationary data, it could generate a spurious or nonsense results which might have a negative implication on the policy outcome of the study. In view of the above, this study took further step to ameliorate the problem of unit root by subjecting the data to a unit root test. The standard Augmented Dickey-Fuller (ADF) (Dickey & Fuller, 1979) and Phillips-Perron (PP) (Phillips & Perron, 1988) tests were simultaneously employed to test the stationarity properties of the various variables in this study. Meanwhile, it could be inferred from the results presented in the above table that all the data possess a unit root because they are stationary after first differencing.

Table 4 JOHANSEN COINTEGRATION TEST (TRACE STATISTICS) AND (MAXIMUM EIGENVALUE)

Null Hypothesis	Eigenvalue	Trace Statistics	<i>p</i> -value**	Maximum Eigenvalue	<i>p</i> -value**
$r = 0^*$	0.920161	71.11121	0.001	52.34318	0.000
$r = 1$	0.518011	20.17642	0.514	24.01929	0.518
$r = 2$	0.286913	7.337337	0.662	5.191212	0.843
$r = 3$	0.065262	2.416114	0.318	2.416014	0.367

The previous table attested to the fact that all the variables of interest were not stationary at level. This implies that divergence could occur among these variables in the short run. However, the variables could converge in the long run. Against this backdrop, the study investigated the existence or otherwise of the long run convergence among FDI inflows and other macroeconomic variables in this study within the framework of Johansen and Juselius (1990) multivariate cointegration technique. From Table 4, the results of the trace statistics and the maximal eigenvalue statistics indicated at most 3 cointegrating vectors in the systems. Hence, long run equilibrium relationship existed among the studied variables. It is therefore instructive to state that, this study examined a long run relationship among these variables within the framework of DOLS.

Table 5 REGRESSION ESTIMATES SHOWING RELATIONSHIP BETWEEN FDI INFLOWS AND OIL EXPORTS IN NIGERIA

Dependent Variable: LogFDI
Method: DOLS

Variable	Coefficient	<i>t</i> -statistics	<i>p</i> -value
LogOILEXP	21.10402**	3.4	0.0067
LogEXRT	1.1708865	1.6	0.09275
INFR	-6.871116	0.2	0.9019
C	1.89E+09	0.9	0.4709
<i>R</i> -Squared	0.78		
Adjusted <i>R</i> -Squared	0.73		

***Significant at 10%, **Significant at 5%, * Significant at 1%,

In estimating the regression analysis regarding the nexus between FDI and oil exports in Nigeria, all the coefficients had the expected signs. Meanwhile, 78% of the variation in the dependent variable was jointly explained by independent variables. While the remaining 22% was left unexplained due to random chance.

Consequently, FDI inflows had a significant positive relationship with oil exports in Nigeria. If oil exports change by a unit, FDI inflows increase by 21% in the country. This suggests that FDI inflows in Nigeria are motivated by oil exports. In the same vein, FDI inflows and exchange rate had an insignificant direct relationship. This shows that the Nigerian exchange rate encourages inflow of FDI into the country. This finding is in tandem with the submission of Ogun et al. (2012) in a related study in Nigeria. Moreover, FDI inflows and inflation rate have an insignificant inverse relationship.

Table 6 PAIRWISE GRANGER CAUSALITY TEST

Sample: 1990 2018

Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
OILEXP does not Granger Cause FDI	27	2.39377	0.1169
FDI does not Granger Cause OILEXP		4.83906	0.0193
OILEX does not Granger Cause EXRT	27	2.92121	0.0771
EXRT does not Granger Cause OILEXP		2.45403	0.1114
EXRT does not Granger Cause FDI	27	1.27099	0.3023
FDI does not Granger Cause EXRT		0.50924	0.6085

Granger causality between inflows of FDI and exports of oil in Nigeria was examined within the context of Pairwise Granger Causality Test. The estimated results indicated that one way feedback relationship runs from inflows of FDI to exports of oil in Nigeria. The implication of this is that oil exports caused the inflows of FDI in Nigeria. Whereas, no feedback relationship existed among FDI inflows, exchange rate and inflation rate.

CONCLUSION AND RECOMMENDATIONS

Investigation into the nexus between inflows of FDI and exports of oil in Nigeria has been carried out in this study over the period of 1990 to 2018. The study utilized econometric techniques for its analysis. It is imperative to summarize the major findings in this study as follows; FDI inflows had a significant positive relationship with exports of oil in Nigeria. The relationship between FDI inflows and exchange rate was positive but insignificant. Meanwhile, FDI inflows and inflation rate have insignificant negative relationship in Nigeria. Finally, the significant findings that emerged in this study motivated the following recommendation for the policy makers in Nigeria that policy measures that would stabilize oil exports, exchange rate and inflation rate should be embarked upon in order to induce the inflows of FDI accordingly in the long run.

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