How important is Foreign Direct Investment to Economic Growth? New Evidence from Nigeria

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Abstract

This study investigates the impact that Foreign Direct Investment (FDI) has on economic growth in Nigeria through the use of annual secondary data from 1981 to 2013 collected from the World Bank's Africa Development Indicators. The econometric methodologies used in this research were Ordinary Least Squares (OLS), ADF unit root and the Granger Causality tests. The OLS results shows that FDI positively contributes to economic growth in Nigeria, but not statistically significant at the 5% level of significance. However, Gross Fixed Capital Formation (GFCF) has a positive and statistically significant contribution to Nigeria's economic growth. The unit root test shows that the variables were stationary and the Granger Causality test connotes a unidirectionary causation running from FDI to GDP but not vice-versa. But no mutual correlation is found between GFCF and GDP. This study recommends that policymakers in Nigeria should increase capital formation (GFCF) in order to present an attractive platform that will stimulate and encourage FDI inflow which will in whole, facilitate the increase and sustenance of economic growth.

Keywords:

Economic Growth, FDI inflows, GDP, Gross Fixed Capital Formation and Nigeria.

Introduction

Every country around the world strives to attain a certain degree of economic growth. This is because it is a sign of improved standard of living and increased economic productivity. The economic growth of a given country is not only orchestrated by domestic production but also internationally through Foreign Direct Investment (FDI). Indeed FDI is a major catalyst for economic growth and development. FDI connotes the fusion of investment by an individual or company into an economy with the aim of acquiring a perennial management interest in a business or expanding the operation of an existing company in the specific country (Adeleke 2014, Worldbank 2014). Through FDI, new technology and new market niche for expansion of investment opportunities are created (Bashir &Shakir, 2012). This in whole, results to the creation of employment opportunities, improvement of business efficiency and enhancing the quality of human capital, particularly in the host country.

Over the years, FDI has been a major contributor to Nigeria's economic

growth. According to the World Bank (2013), Nigeria's FDI inflow increased significantly from 542 million US$ to 1.9 billion US$ between 1981 and 1989. This rapid increase could be attributed to the various economic reforms during this period such as the financial deregulation in 1987 that was geared towards increasing the efficiency of the banking sector (Omankhanlen, 2012). Furthermore, it also increased markedly from 1.2 billion US$ in 2001 to 8.2 billion US$ in 2008. This increase can be attributed to the transition from military rule to civil rule (Democracy) in 1999 as well as the technology boom after the introduction of Global System for Mobile Communication (GSM) in Nigeria in 2001, which singlehandedly increased output growth by 17 percent (Stephen, 2010). Similarly, various structural reforms in the country such as privatization of state-owned business corporations and the recapitalization reform in the banking sector attracted foreign investment which stimulated Nigeria's economic growth.

However, a decline in FDI inflow was experienced after 2008 from 8.5 billion US$ to approximately 6 billion US$ in 2010. This was due to the Global Financial Crises (GFC). Meanwhile, after the GFC, it picked up again in 2011 to 8.8 billion US$ but again dropped significantly in 2013 to 5.6 billion US$, owing to the civil unrest in the nation which resulted in the destruction of both the physical and the human capital, thus detracting potential foreign investors.

Despite the decline in the quantity of FDI inflow in Nigeria caused by the aforementioned factors, the country has benefited immensely from the spillover effect of FDI. This is due to its large population which creates a large attractive market for foreign investors. However, it can be argued that more needs to be done in the area of infrastructure and basic amenities such as roads, electricity (Gross Fixed Capital Formation) and security if the economy intends to achieve sporadic economic growth and development though FDI inflow.

Research Problem

Over the years, there have been a plethora of empirical studies investigating the relationship between FDI and economic growth in Nigeria. However, there is yet a consensus reached (see Oyinlola, 1995, Adelegan, 2000, Akinlo, 2004,Onu 2012.). This study intends to contribute to the existing literature by utilizing more resent data that captures the periods before, during and after the GFC in 2008, as well as periods enveloped by the ongoing civil/political unrest in Nigeria, which unarguably is a major cause of the fluctuation of both FDI in the country. By so doing, this study will seek to investigate the contribution of FDI to the economic growth in Nigeria.

Research questions

- Is there a relationship between FDI and economic growth in Nigeria?
- Does FDI contribute to Nigeria's Economic Growth?
- Is there a causal relationship between FDI and Economic growth in Nigeria?

Objectives of the Study

The objectives of this study are:

- To explore the impact FDI has on Nigeria's Economic growth.
- To identify the determinants of FDI in Nigeria.
- To explore the causal relationship between FDI and economic growth in Nigeria.

Literature Review

The relationship between FDI and economic growth has been highly debated in mainstream economics. However, despite several attempt to present a clear explanation to FDI and economic growth nexus, there is yet to be a concurrence reached to date. Some researchers opine that FDI is a potent catalyst to economic growth, while other researchers state otherwise. Ayanwale (2007) using OLS to investigate the relationship between both variables in Nigeria between periods 1970- 2002 found a positive relationship between FDI and economic growth. Likewise, Ndambendia and Njoupouognigni (2010) in a research conducted on the long-run relationship between foreign aid, foreign direct investment and economic growth in 36 Sub-Saharan African countries between 1980-2007 using Pooled Mean Group Estimator found a positive relationship between FDI and economic growth. Also, Borensztein et al. (1998) conducted a study on the effect that FDI has on economic growth among 69 developing countries between 1970 and 1980. Their result suggests that FDI contributes more to economic growth compared to domestic investment. The reason as explained by these researchers was that FDI instigates increased transfer of technology particularly in developing countries. Another study by Ahmed et al. (2007) which investigated the Causal links between Export, FDI and Output on five Sub-Saharan African countries which includes Nigeria between 1988 and 2003 found a unidirectional causation running from FDI to economic growth, but not vice-versa. Another study that depicts that FDI contributes to economic growth was carried out by Antwi et al. (2013). The study used the Cointegration Methodology to evaluate the relationship between FDI and economic growth in Ghana between 1980-2010. Furthermore, Olusanya (2013)also investigates the impact of FDI on economic growth using a Granger Causality test with data spanning from 1970-2010. The result finds a bidirectional causal relationship between both variables in

Nigeria. In the same period, Abdu (2013) also found a significant relationship between both variables in Nigeria. In another study conducted by Onu (2012), using multiple regression models on data from 1986 to 2007 found that FDI has a positive but not significant impact on economic growth in Nigeria just as the findings of Akinlo (2004).

There are also several other findings that have found a negative impact that FDI has on Economic Growth. Falki (2009) investigated the impact of FDI on economic growth in Pakistan on data using the production function based on the endogenous growth theory on data spanning from 1980 to 2006. The results show a negative and statistical insignificant relationship between both variables in the observed country. Also, in a study conducted by Lensink and Morrissey (2006) on 80 observed countries using panel data from 1975 to 1997, finds that the volatility of FDI has a negative impact on economic growth. In an earlier study, Blomstrom et al. (1992), despite finding that FDI impacts positively on economic growth of developed countries, the same could not be said about developing countries because the findings suggest no linkage between both variables. More importantly to this study, in Nigeria, Oyinlola (1995) through the use of Chenery and Stout's two-gap model concluded that FDI has a negative impact on economic development. Similarly, Adelegan (2000)using the Seemingly Unrelated Model which is more advanced than the Chenery and Stout's two-gap model, investigates the impact of FDI on Economic growth in Nigeria using a twenty-five year period spanning between 1970 to 1995. The results suggest a negative relationship between FDI and gross domestic investment. In a more recent study, Umeora (2013) using OLS regression on data period 1986 to 2011 opined that FDI did not have any effect on Nigeria's economic growth during the period in review. Finally, the findings of Olokoyo (2012), using data spanning between 1970 to 2007 did not sufficiently support the link between both variables in Nigeria.

Given the aforementioned studies and their findings, there have been none found to have includeda major determinant of GDP, particularly in Nigeria. This study intends to mitigate this shortcoming by introducing Gross Fixed Capital Formation as an explanatory variable. Also, the extension of the observed period till 2013 enables the capture of the effect of the civil unrest which as earlier mentioned resulted in the drastic decline of FDI in Nigeria.

Methodology

This study employs the Ordinary Least Squares (OLS) to depict the trend as well as determine the impact that FDI has on Economic growth in Nigeria. Also, the Granger Causality test will be used to determine the causal relationship between both variables. The secondary time series data spanning from 1981-2013 was extracted from the World Bank's Africa Development Indicators. The dependent variable used in this study is Gross Domestic Product (GDP), while the explanatory variables include macro-economic indicators such as Foreign Direct Investment and Gross Fixed Capital Formation (GFCF).

3.1. Statement of Hypotheses

The key hypotheses that this study are:

H_1 : Foreign Direct Investment impacts significantly of Nigeria's economic growth.

H_2 : A Causal Relationship exists between FDI and Economic Growth in Nigeria

H_3 : Gross Fixed Capital Formation stimulates economic growth in Nigeria.

3.2 Model Specification

The Multiple linear regressions used for this study in examining the relationship between FDI and economic growth in Nigeriais given by equation (1):

$$\text{LnGDP} = \beta_0 + \beta_1 \text{LnFDI} + \beta_2 \text{LnGFCF} + \varepsilon_t \quad (1)$$

where,

LnGDP= Gross Domestic Product (Current U.S dollars),

LnFDI = Foreign Direct Investment inflow (Current U.S dollars),

LnGFCF= Gross Fixed Capital Formation (Current U.S dollars),

b_0= Intercept,

b_1 to b_2= the coefficient of the explanatory variables,

e_t= Stochastic error term.

3.3 OLS Regression Results

Table 1: Summary of OLS Results

Variable	Coefficient	Std.Error	T-Value	P-Value
FDI inflow	0.023961	0.035643	0.672237	0.5068
GFCF	0.509499	0.070824	7.193898	0.0000
Constant	0.508449	0.100319	5.068312	0.0000
R^2:0.640911 Adj. R^2:0.616146 F – value:25.87997 Durbin-Watson stat:2.262394 Probability:0.000000				

Source: Computed by the author using Eviews 8.0

The OLS regression test is conducted to determine whether an increment in FDI inflow leads to an increase in GDP in Nigeria. The results are presented in Table 1 is quite reveling. The statistics of the regression results exhibits that over 64 percent of the systematic variations in Nigeria's GDP are accounted for by the explanatory variables (FDI and GFCF). The adjusted R^2 (61 percent) which is a better measure of goodness fit also complements this stance. The Durbin-Watson stat of 2.26also indicates that there is an absence of autocorrelation and hence, the estimated model is reliable for making predictions and inferences.

The coefficient of FDI is approximately 0.024. This means that, ceteris paribus, an increase in FDI by one percentage point is associated with a 0.024 increase in GDP. It should be noted that the contribution of FDI to Nigeria's economic growth in the period under review is not statistically significant; this finding is in agreement with that of Akinlo (2004) andOnu (2012). The other explanatory variable GFCF has a coefficient of 0.51. This means that a one percent point increase in GFCF results to GDP increasing by 0.51 percent, which is statistically significant at the 1% level of significance. Based on the analysis of the results, GFCF is the more potent catalyst to economic growth in Nigeria. The explanation to this stems from the fact that increasing capital formation (GFCF) in terms of machinery, equipment, construction of roads and railways will increase economic efficiency and productivity as well as create an attractive niche for potential foreign investors and hence resulting to economic growth in Nigeria.

Unit Root Test Result

The reason for applying the unit root test is to avoid the estimation of spurious regression. In other words, it tests the stochastic properties of the series variable whether they are stationary or otherwise. In this study, the Augmented Dickey-Fuller (ADF) test is used. If the absolute value of the ADF test is greater than each of the absolute MacKinnon values, then the variable is regarded as stationary. If otherwise, the variable is considered as non-stationary. The null hypothesis in this regard is that GDP, FDI and GFCF have unit root while the alternative hypothesis is that the variables do not have unit root. However based on the result from Table 2, the null hypothesis is rejected. The ADF is estimated with the equations (2) and (3).

$$\Delta y_t = a_0 + a_1 y_{t-1} + \sum_{i=1}^{n} a\Delta y_j + e_t \ldots\ldots\ldots\ldots\ldots (2)$$

$$\Delta y_t = a_0 + a_1 y_{t-1} + \sum_{n=1}^{n} a_1 \Delta y_i + \delta_t + e_t \ldots\ldots\ldots\ldots (3)$$

where,

yt : represents the time series,

Δ: represents the first difference operator,

do: is a constant,

n; represents the number of lags in the explained variable; and

et: is the random error term.

Table 2:Summary of the Unit Root Test

Variable	ADF test Statistic	1% Critical Value	5% Critical Value	10% Critical Value	p-value	Decision
GDP	-5.206983	-3.661661	-2.960411	-2.619160	0.0002	Reject null
FDI	-11.09301	-3.661661	-2.960411	-2.619160	0.0000	Reject null
GFCF	-3.902149	-3.661661	-2.960411	-2.619160	0.0055	Reject null

Source: Computed by the author using Eviews 8.0

From Table 2, the results clearly indicate that all three variables GDP, FDI and GFCF are stationary and are integrated in order one, I (1). This is because the ADF test statistics is less than the 5% the critical value.

Granger Causality Test

After conducting the unit root test to determine if the series variables are stationary or otherwise, the Granger Causality test is carried out to examine the causal link between GDP

and FDI. The Granger causality test takes the basic specification of equations (4) and (5).

$$GDP_t = \sum_{i=1}^{n} \alpha_1 FDI_t + \sum_{j=1}^{n} \alpha_2 GDP_{t-1} + U_{1t-1} \quad (4)$$

$$FDI_t = \sum_{i=1}^{n} \alpha_3 GDP_t + \sum_{j=1}^{n} \alpha_4 FDI_{t-1} + U_{2t-1} \quad (5)$$

Where, GDPtand GDPt-1 are the present and lagged values of the explained variables, while FDItandFDIt-1represent the present and lagged values for the independent variables. The null hypothesis in this regard is that GDP does not Granger-cause FDI and FDI does not Granger-cause GDP.

Table 3. Pair Wise Granger Causality Tests

Null Hypothesis:	F-Statistic	Probability	Decision
FDI does not Granger Cause GDP	2.93291	0.0480	Reject Null
GDP does not Granger Cause FDI	0.41291	0.7972	Fail to Reject Null
GFCF does not Granger Cause GDP	1.24426	0.3259	Fail to Reject Null
GDP does not Granger Cause GFCF	0.50962	0.7293	Fail to Reject Null

Source: Computed by the author using Eviews 8.0

The result emanating from table 3 indicates that there is a uni-directionary causation running from FDI to GDP. This is because, FDI is found to Granger cause GDP, meanwhile GDP does not Granger cause FDI at the 5% level of significance. This result agrees with the study of Ahmed et al. (2007). However, the null hypothesis that GFCF does not Granger Cause GDP and GDP does not Granger Cause GFCF cannot be rejected. This means that, there is no mutual correlation between both variables.

Conclusions and Recommendation

This study empirically investigates the relationship that exists between foreign direct investment inflow and economic growth in Nigeria using OLS, Unit Root and Granger Causality tests on annual data spanning between 1981 to 2013. Based on the results obtained from this study, there was a positive but non-statistically significant relationship existing between FDI and economic growth in Nigeria. However, the contribution of Gross Fixed Capital Formation to Nigeria's economic growth was positive and statistically significant.

The result from the ADF unit root test indicated that GDP, FDI and GFCF are stationary and the result from the Granger Causality test shows the presence of a unidirectional causal relationship running from FDI to economic growth but not vice-versa.

Overall, the study indicates that FDI contributes positively to economic growth in Nigeria. However, GFCF has a more significant contributory impact on Nigeria's economic growth. In other words, Nigeria's economic growth depends more on GFCF rather than FDI.

Based on the findings of this study, it is paramount that the policymakers in Nigeria improve extensively of capital formation (GFCF) such providing basic infrastructural facilities such as: machinery, equipment, construction of roads and railways, building of schools etcetera. This will help improve economic efficiency as well as attract foreign investment which will overall result to increased economic growth.

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