

Impact of Foreign Direct Investment on Economic Growth in Nigeria

Tubo P. OKUMOKO, Ebierinyo A. AKARARA & Captain A. OPUOFONI

Department of Economics
Faculty of Social Sciences
Niger Delta University
Wilberforce Island
Baylesa State, Nigeria

Abstract

The paper investigated Foreign Direct investment impact on economic growth in Nigeria using annual data for 1981 to 2016, from CBN Statistical bulletin 2016. Augmented Dickey Fuller (ADF), Johansen Co integration, Error Correction Model (ECM) and Pairwise Granger causality tests were tools of analysis. ADF result showed that all the variables [gross domestic product (GDP), foreign direct investment (FDI), Gross Fixed Capital Formation (GFCF) and exchange rate (EXR)] became stationary after differencing once. The ECM showed FDI as having positive but insignificant impact on GDP, while GFCF is positive and significant. EXR shows insignificant inverse relationship with GDP. The model speed of adjustment is about 52%. There exist a one-way causality from FDI to GDP and a bi-directional causality between FDI and GFCF. Implying that building of durable world class infrastructure that boost's a country's capital sock is needed by government and private sector to enhance FDI inflow, hence economic growth.

Keywords: Foreign Direct Investment, Economic Growth, Gross Fixed Capital Formation, Nigeria

1. Introduction

Economies all over the world, in their pursuit for economic growth depend on both domestic and foreign investments. The above assertion is derived from the fact that different scholars have established the positive link between economic growth and investment. Economic growth is a continuous increase in a country's productive capacity measured as the percentage increase in Real Gross Domestic Product (Real GDP); whereas, investment is the placement of capital in anticipation of deriving income or profit from its use. Foreign Direct Investment (FDI) is a major component of investment, generally made to acquire lasting interest in an enterprise operating in an economy other than that of the investor, for the purpose being an effective voice in the management or control of that enterprise (IMF, 1977).

Achieving Economic growth is a major macroeconomic objective of Nigeria, but her economy faces the major challenge of low capital formation to finance the necessary investments for economic growth. This has made her continuously deficient in investable capital; as domestic investment is often lower than the required investment that can induce higher growth rates in the economy. This deficit overtime has culminated into a wide gap between the actual domestic investment fund and the required investment for accelerating economic growth.

Nigeria is massively blessed with abundance of natural and human resources. It is estimated that the country has about 61 mineral resources, each of which has the capacity to sustain the economy (Ejeogu, 2011). Unfortunately; these resources are lying latent and untapped with the exception of crude oil which is discriminatorily exploited and heavily depended upon. The co-existence of its vast wealth in natural resources and its extreme personal poverty referred to as the "Resource curse" or 'Dutch disease' appears to have bedeviled the country (Auty, 1993).

In this regard, Adelagan (2000); Akinmulegun (2012) and Hassen and Anis (2012) recommended that for a developing country such as Nigeria to escape this vicious circle of poverty and achieve rapid economic growth and development, it must massively go in for foreign funds to augment domestic savings. To this end, series of policy measures have been employed over the years by the Nigerian government aimed at attracting and providing a favourable investment climate for foreign investments in the form of FDI's into the country.

It is against this background that this paper investigated the impact of FDI on economic growth in Nigeria which has remain unclear and is still undergoing debate. On this premise, this paper seeks to achieve the following objectives;

1. To determine the nature and degree of the impact of FDI on economic growth in Nigeria.
2. To investigate the impact of gross fixed capital formation on economic growth in Nigeria
3. To analyse the role of exchange rate in the growth of the Nigerian economy.
4. To establish the causal relationship between FDI and Economic growth in Nigeria.

2. Theoretical Framework and Literature

2.1 Harrod-Domar Growth Model

This model sees growth as an outcome of the equilibrium between savings and investment. The fundamental variables in the model include capital (K) accumulation and the ratio of increase in output (Y) to increase in investment (I). The change in output is as result of change in capital stock ($\Delta Y = \Delta K$) and that the change in capital stock is due to investment, thus $\Delta K = I$.

Harrod and Domar assigned a key role to investment in the process of economic growth and laid emphasis on the dual character of investment. Firstly, it creates income, and secondly, it augments the productive capacity of the economy by increasing its capital stock. The former may be regarded as the “demand effect” and the latter the “supply effect” of investment.

Hence, so long as net investment is taking place, real income and output will continue to expand. However, for maintaining a full employment equilibrium level of income from year to year, it is necessary that both real income and output should expand at the same rate at which the productive capacity of the capital stock is expanding. Otherwise, any divergence between the two will lead to excess or idle capacity, thus forcing entrepreneurs to curtail their investment expenditures.

Empirically, Awe (2013) examined the impact of foreign direct investment on economic growth in Nigeria during the period 1976–2006. The study reveals a negative relationship between economic growth and Foreign Direct Investment (FDI) as a result of insufficient FDI flow into the Nigerian economy. In a similar study, Umeora (2013) using OLS regression on data period 1986 to 2011 opined that FDI did not have any significant effect on Nigeria's economic growth during the period in review.

In another study, Okumoko and Karimo (2015), analysed the endogenous effects of Foreign Direct investment and economic growth in Nigeria between 1981 and 2013. Their study adopted the structural vector autoregressive (SVAR) model and found FDI and economic growth not responding to nominal shocks in the short run. The study concluded that in the same period of time, growth is influenced by FDI, but growth itself does not attract FDI.

Adigwe, Ezeagba and Francis (2015), studied the effect of foreign direct investment on Nigerian economic growth between the periods 2008 to 2013. Using the Pearson Correlation, the study found a significant relationship between foreign direct investment, exchange rate and gross domestic product in Nigeria. It established that economic growth in Nigeria has a direct link to foreign direct investment.

Ibrahim and Onokosi-Alliyu (2008), using co-integration techniques; examined the determinants of Foreign Direct Investment (FDI) in Nigeria during 1970–2006, the results show that the major determinants of FDI were market size, real exchange rate and political factor.

Ndem, Okoronkwo and Nwamuo (2014) sought to ascertain the relationship between exchange rate, market size, infrastructural investment, openness, political risk and the flow of FDI. Adopting the cointegration and Error Correction Method (ECM), it was revealed that market size, openness and exchange rate impacted much on FDI inflow while political risk was unfavourable to it, infrastructural investment was favourable but marginal in attracting FDI. Ogunkola and Jerome (2004) assessed the magnitude, direction and prospects of FDI in Nigeria. They noted that while the FDI regime in Nigeria was generally improving some serious deficiencies remain. These deficiencies are mainly in the area of the corporate environment (such as corporate law, bankruptcy, labour law, etc.) and institutional uncertainty, as well as the rule of law. Izuchukwu and Huiping (2011) empirically analyzed the contribution of foreign direct investment to the Nigeria economy. The findings of the study showed that there exist a positive relationship between GDP and government expenditure, foreign direct investment and labour force between periods of 1980 to 2009.

Abu and Achegbulu (2011), in their investigation of the impact of Foreign Direct Investment on economic growth in Nigeria, using a linear regression model and the Granger causality test found that foreign direct investment has a positive impact on economic growth in Nigeria between 1986 and 2006. Their study further found causality running from GDP to FDI.

This study takes a different view in analysing the FDI – economic growth nexus in Nigeria as it captures the importance of domestic capital investment in the form of Gross Fixed Capital Formation (GFCF) in attracting FDI to the host country. Domestic investment is key in attracting FDI which should contribute positively to the growth of any economy, but all the studies reviewed failed to capture it. Also, the most recent studies of FDI and growth ended their analyses at the 2013 (see Okumoko and Karimo, 2015 and Adigwe et al, 2015), but a lot has happened in the Nigerian economy between 2013 and 2016, especially, with change of government to an opposition party, there is the need to investigate the contribution of FDI to the growth of the economy.

3. Methodology and Data

The study employed the Ordinary Least Square (OLS) method to estimate the relationship between selected variables. The variables used in this study are real Gross Domestic Product (GDP), gross fixed capital formation (GFCF), Foreign Direct Investment (FDI), and Exchange rate (EXR), of which GDP is the dependent variable while gross fixed capital formation (GFCF), Foreign Direct Investment (FDI), and Exchange rate are the independent variables. The data set used, which ranged from the periods 1981-2016 are sourced from the Central Bank of Nigeria Statistical Bulletin (2016). The Augmented Dickey-Fuller (ADF) Unit Root Test was employed to test the stationarity of the data while Johansen co-integration technique was used to check for the existence of a long-run relationship among the variables. The study also estimated the Error Correction Model to check the speed of adjustment of the parameters back to their equilibrium path if they deviate from their equilibrium path. The functional relationship of the impact of FDI on economic growth is expressed as:

$$GDP = f(FDI, GFCF, EXR) - - - - - 1$$

Econometrically, this can be stated thus;

$$GDP = a_0 + a_1FDI + a_2GFCF + a_3EXC + U - - - - - 2$$

Where;

GDP = Gross Domestic Product (proxy for economic growth)

FDI = Foreign Direct Investment

GFCF = Gross Fixed Capital Formation

EXR = Nominal Exchange Rate

U = Error term or Stochastic term

4. Results and Discussion

Table 1: Descriptive Statistics

	GDP	FDI	GFCF	EXR
Mean	10851.50	176313.8	947.3250	67.95677
Median	4110.775	140370.7	236.9600	21.96860
Maximum	43396.88	558145.1	4012.920	158.5530
Minimum	94.33000	3757.900	8.800000	0.610000
Std. Dev.	14068.99	175944.0	1343.340	63.76793
Skewness	1.236164	0.750936	1.290445	0.218282
Kurtosis	3.137300	2.261968	3.077706	1.242864
Jarque-Bera	8.685954	3.967106	9.444966	4.643995
Probability	0.012998	0.017580	0.008893	0.048077
Sum	368950.9	5994671.	32209.05	2310.530
Sum Sq. Dev.	6.53E+09	1.02E+12	59550523	134189.5

Source: Authors' Computation

Summarized descriptive statistics of Gross Domestic Product, Foreign Direct Investment, Gross Fixed Capital Formation and nominal exchange rate are reported in table 1 above. Normality test uses the null hypothesis of normality against the alternative hypothesis of non-normality.

If the probability value is less than the Jacque Bera chi-square at the 5% level of significance, the null hypothesis of the regression is accepted. Given the results in the Table above, it is apparent that the series employed for analysis in the study are normally distributed as their probability values are less than all their respective Jacque Bera statistics values.

The Unit Root Model

An augmented Dickey-Fuller Test (ADF) is a test for unit root in a time series sample. The annual data used for this study falls within this category. The study adopted the unit root model of Edoumiekumo and Opukiri (2013).

$$GDP_t = aGDP_{t-1} + \mu_t \quad - \quad - \quad - \quad - \quad - \quad - \quad - \quad - \quad - \quad 3$$

by subtracting INFL t-1 from both sides of equation 3, we have

$$\Delta GDP_{t-1} = (a - 1)GDP_{t-1} + \mu_{1t} \quad - \quad - \quad - \quad - \quad - \quad - \quad - \quad - \quad - \quad 4$$

$$FDI_t = bFDI_{t-1} + \mu_{2t}$$

$$\Delta FDI_{t-1} = (b - 1)FDI_{t-1} + \mu_{2t} \quad - \quad - \quad - \quad - \quad - \quad - \quad - \quad - \quad - \quad 5$$

$$GFCF_t = cGFCF_{t-1} + \mu_{3t}$$

$$\Delta GFCF_{t-1} = (c - 1)GFCF_{t-1} + \mu_{3t} \quad - \quad - \quad - \quad - \quad - \quad - \quad - \quad - \quad - \quad 6$$

$$EXR_t = dEXR_{t-1} + \mu_{4t}$$

$$\Delta EXR_{t-1} = (d - 1)EXR_{t-1} + \mu_{4t} \quad - \quad - \quad - \quad - \quad - \quad - \quad - \quad - \quad - \quad 7$$

Where; Δ = difference operator, t-1 = number of lag, μ = error term, $a, b, c,$ and d = parameters.

Equations 4, 5, 6 and 7 are the first difference ADF estimated equations. The result of equations 3 to 7 is presented in table 2 below.

Table 2: Augmented Dickey-Fuller Unit Root Test

Variables	Level	1 st Diff	Lag(s)	Model	Order of integration
GDP	-0.076882	-5.715399**	1	Trend & Drift	1(1)
FDI	-0.804991	-5.956511**	1	Trend & Drift	1(1)
GFCF	-0.471325	-4.734019**	1	Trend & Drift	1(1)
EXR	-2.145052	-5.316862**	1	Trend & Drift	1(1)
ECT(-1)	-6.207163		0	None	1(0)
Critical Value 5%	-3.552973	-3.557759			

Note: (*) (**) (***) denotes statistically significant at 1%; 5% and 10% level respectively.

Source: Authors' Computation

The unit root results in table 2 above indicates that gross domestic product (GDP), foreign direct investment (FDI), gross fixed capital formation (GFCF) and exchange rate (EXR) attain stationarity at first difference, but the Error Correction Term (ECT) obtained from the residual of the short run regression is stationary at level as expected. Thus, the need to test for the possible existence of a long-run relationship among the variables. This is done using the Johansen cointegration technique since all the variables are integrated of order I(1).

Table 3: Johansen Co-integration Rank Test

Unrestricted Cointegration Rank Test (Trace)				
Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.647900	64.74507	47.85613	0.0006
At most 1 *	0.476122	31.34217	29.79707	0.0329
At most 2	0.280457	10.65428	15.49471	0.2337
At most 3	0.003800	0.121840	3.841466	0.7270
Trace test indicates 2 cointegrating eqn(s) at the 0.05 level				
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesized		Max-Eigen	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.647900	33.40290	27.58434	0.0080
At most 1	0.476122	20.68788	21.13162	0.0576
At most 2	0.280457	10.53244	14.26460	0.1793
At most 3	0.003800	0.121840	3.841466	0.7270
Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				

Source: Author's Computation using E-Views 7.1

The Johansen cointegration results in table 3 above shows that the variables have a long run relationship. This is captured by both the trace test and the Max-eigenvalue test statistics indicating two co-integrating equation and one co-integrating equation at the 5% level respectively. This gives a leeway for the estimation of the Error Correction Model. The result is presented in Table 4 below.

Table 4: ECM Results

Dependent Variable: D(GDP)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	547.6876	364.3022	1.503388	0.1476
D(FDI)	0.005940	0.017209	0.345190	0.7389
D(FDI(-5))	-0.021802	0.015755	-1.383811	0.1809
D(GFCF)	2.941840	0.901823	3.262102	0.0037
D(GFCF(-5))	4.034173	1.265056	3.188928	0.0044
D(EXR)	-16.17701	20.60168	-0.785228	0.4549
D(EXR(-1))	40.01524	19.44976	2.057364	0.0523
D(EXR(-4))	25.45754	19.44207	1.309405	0.2045
ECM(-1)	-0.524988	0.138167	-3.799655	0.0010
R-squared	0.626383	Mean dependent var		1545.081
Adjusted R-squared	0.519635	S.D. dependent var		1957.529
S.E. of regression	1356.732	Akaike info criterion		17.47586
Sum squared resid	38655166	Schwarz criterion		17.80891
Log likelihood	-237.6621	Hannan-Quinn criter.		17.57768
F-statistic	5.867870	Durbin-Watson stat		1.710063
Prob(F-statistic)	0.001013			

Source: Authors' Computation

The ECM result in Table 4 indicates that about 0.52% disequilibrium errors accumulated in the previous period has been corrected in the current period. The error correction model tells us the speed in which the model returns to equilibrium; it shows that there is a significant tendency for GDP to oscillate to equilibrium if it deviates from its equilibrium path. The result also indicates that gross fixed capital formation (GFCF) has a positive and significant relationship with GDP in Nigeria over the observed period. This is an indication that for any 1% increase in GFCF, GDP will increase by 3.26%. Exchange Rate on the other hand has a negative and insignificant relationship with GDP. The economic implication is that a favourable exchange rate policy will bring about growth in the Nigerian economy. From Table 4, it is also visible that FDI does not have any significance on the GDP of Nigeria over the period reviewed as its probability value is far above 0.05%. The adjusted R-squared value of 0.519635 shows that about 52% of the changes in GDP are jointly explained by GFCF, FDI and EXR. While the R-squared value of 0.626383 shows that the model has a good fit. The Prob. (F-statistic) value of 0.001013 shows that the entire model is statistically significant and this implies that indeed there exist a linear relationship between GDP and each of the explanatory variables. It further indicates that the independent variables are useful in explaining changes in the dependent variable. The Durbin-Watson value of approximately 2 indicates that the model does not suffer autocorrelation.

Table 5: Pairwise Granger Causality Tests

Null Hypothesis:	Obs	F-Statistic	Prob.
FDI does not Granger Cause GDP	34	5.49965	0.0099
GDP does not Granger Cause FDI		0.38536	0.6839
GFCF does not Granger Cause GDP	34	8.65488	0.0012
GDP does not Granger Cause GFCF		4.91796	0.0151
EXR does not Granger Cause GDP	34	5.67929	0.0087
GDP does not Granger Cause EXR		0.03276	0.9678
GFCF does not Granger Cause FDI	34	3.38992	0.0486
FDI does not Granger Cause GFCF		7.44460	0.0027

Source: Authors' Computation

The result of the Pairwise Granger Causality test in table 5 gives a clear indication that FDI Granger Cause economic growth in Nigeria over the period reviewed. It shows a one-way causality running from FDI to GDP. The result also shows a bi-directional causality between GFCF and GDP; GFCF and FDI over the period reviewed.

Diagnostic Tests

Table 6: Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	0.024786	Prob. F(2,24)	0.8923
Obs*R-squared	0.052021	Prob. Chi-Square(2)	0.8737

Source: Authors' Computation

The Breusch-Godfrey Serial Correlation LM test result clearly shows that the estimated model is free from serial or auto correlation judging from the Prob. Chi-Square value of 0.9748 which is statistically not significant at the 5% level of significance. This point is further authenticated by the Cumulative Sum of Recursive Residual stability (CUSUM) test as shown in figure 1 below and also the descriptive statistic result (see Table 1).

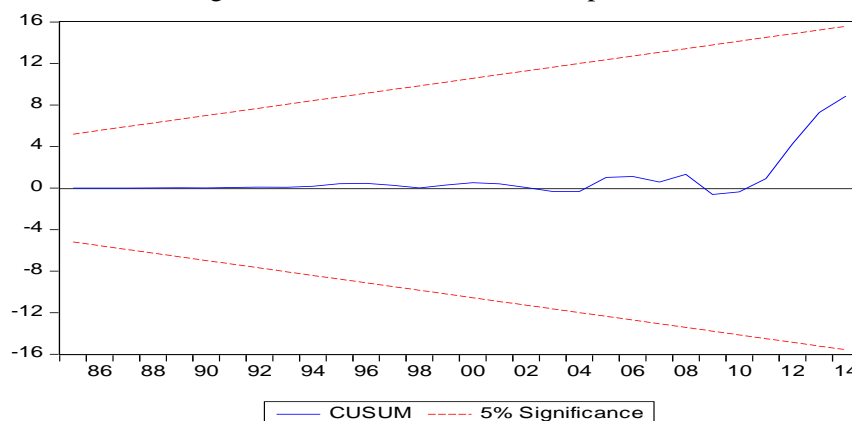


Figure 1: Cumulative Sum of Recursive Residual stability (CUSUM) test

5. Conclusion and Recommendations

The conclusion reached in this study is;

- a. Foreign direct investment has a positive but insignificant relationship with economic growth in Nigeria.
- b. Gross Fixed Capital Formation has a positive and significant relationship with economic growth in Nigeria.
- c. There is a bi-directional relationship between foreign direct investment and gross fixed capital formation in Nigeria
- d. Foreign direct investment granger causes economic growth in Nigeria.

Therefore, the following recommendation is made.

There is the need for government and the private sector to increase the capital stock of the country by way of building durable and world class infrastructure. This without doubt would attract more FDI into the country as well as enhancing growth of the economy.

References

- Abu M. and Achegbulu J. O (2011). An Investigation of the impact of Foreign Direct investment on Economic Growth in Nigeria. *International Business and Management* Vol. 3(1): pp 232 – 238.
- Adelegan, J.O. (2000). Foreign direct investment and economic growth in Nigeria: A seemingly unrelated model. *African Review of Money, Finance and Banking, Supplementary issue of Savings and Development*. pp. 5–25.
- Akinmulegun. S. O. (2012). Foreign direct investment (FDI) and Standard of Living in Nigeria *Journal of Applied Finance & Banking*, vol.2 (3): pp 295-309.
- Auty, R. M. (1993). *Sustaining Development in Mineral Economies: The Resource Curse Thesis*. London: Routledge.

- Awe, A. A (2013). The Impact of Foreign Direct Investment on Economic Growth in Nigeria. *Journal of Economics and Sustainable Development*, Vol.4 (2): pp 122-133.
- Edoumiekumo, S.G. and Opukiri, C.O. (2013). Economic Growth Factor in Nigeria: The Role of Global Trade. *American Journal of Humanities and Social Sciences*, Vol 1 (2): Pp 51-55.
- Ejeogu, S. (2011). Challenges and Implications of the New Democratic Dispensation for Business and Leadership in Nigeria. Unpublished speech at the investiture of Fellows, Institute of Natural Resources and Human Development, Port Harcourt.
- Hassen S & Anis O (2012). Foreign Direct Investment (FDI) and Economic Growth: an approach in terms of co-integration for the case of Tunisia. *Journal of Applied Finance & Banking*, vol.2, no.4, pp. 193-207.
- Ibrahim, W.O. and Onokosi-Alliyu, S.O. (2008). Determinants of Foreign Direct Investment in Nigeria: Political Factor Effect Revisited, SSRN Electronic Paper Collection-
http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1136083.
- IMF, (1977). World Economic Outlook, Washington: *International Monetary Fund* (IMF).
- Izuchukwu, O. and Huiping, H. (2010). An Empirical Analysis on the Contribution of Foreign Direct Investment on Nigeria Economy. Proceedings of the 8th International Conference on Innovation & Management.
- Ndem, S. E., Okoronkwo, O. & Nwamuo, C. U. (2014). The determinants of foreign direct investment and their implication on the Nigeria economy (1975-2010). *Journal of Integrative Humanism*, Vol. 3(2): pp. 74-84
- Okumoko, T. P and Karimo, T. M (2015). Foreign Direct Investment and Economic Growth in Nigeria: An analysis of the endogenous effects. *International Journal of Management and economics invention* Vol. 1(1): pp. 45-64
- Umeora, C. E. (2013). Effects of Foreign Direct Investment (FDI) on economic growth in Nigeria. SSRN Working Papers. Retrieved from <http://dx.doi.org/10.2139/ssrn.2285329>.