Economic Growth and Foreign Direct Investment in Nigeria: An Empirical Investigation

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Abstract

Developing countries, Nigeria inclusive, face a shortage of investible funds and hence strive to attract foreign direct investment (FDI) because of its acknowledged potentials as a tool of economic development. This study investigated the empirical relationship between FDI and economic growth in Nigeria. Secondary data sourced mainly from CBN publications were used in the OLS and granger causality regression equations conducted for the period 1986 to 2010. Although FDI coefficient in the regression result showed that about 13% of variations in GDP are accounted for by a percent increase in FDI, their relationship is statistically insignificant. The regression result also showed that other variables in the model – gross fixed capital formation (GFCF), net exports (NXP), consumer price index (CPI), and exchange rate (EXR) – impacted on the GDP. The result of the granger causality test showed a bi-directional causality between FDI and GDP, that is, each granger cause the other. On the basis of these, it was recommended that more sectors of the economy be deregulated so as to encourage more investor participation in the productive sector of the economy.

Keywords: foreign direct investment, economic growth

1. Introduction

Developing economies, particularly Africa face a shortage of investible funds, and there is a strong preference for foreign investment and/or national savings to fill the gap (Ariyo 1998). According to Montfort (2002), the obvious preference for foreign investment, especially FDI, stems from its positive contribution to the economy by supplying a package of external resources - capital, technology, marketing and managerial know-how – that can contribute significantly to a country's productivity and hence boost economic growth.

Since the beginning of the debt crises in 1980s Nigeria has paid considerable attention to FDI and has given a prominent role to policies that attract foreign capital inflows. Deregulation, liberalization, commercialization, investment promotion and increased capital inflow were the core components of Structural Adjustment Programme (SAP) which was introduced in 1986 by the Nigerian government under the auspices of Bretton Woods Institution. There were other pro-SAP policies that were aimed to improve foreign investment such as the establishment of Industrial Development Coordinating Committee (IDCC) in 1988, the replacement of Nigeria Enterprises Promotion Decree (NEPD) (indigenization policy) with Nigerian Investment Promotion Commission (NIPC) Decree 16 of 1995, the promulgation of Foreign Exchange (monitoring and miscellaneous Provision) Decree 17 of 1995, and the adoption of Export Processing Zone (EPZ) scheme in 1999. With the enthronement of democratic governance in 1999, Nigerian government further privatized the communications sector in 2000 and introduced the Amnesty Programme in 2007, all aimed to improve corporate environment, encourage foreign investors sand boost economic growth.

Many related empirical studies have been conducted in Nigeria to ascertain FDI-economic growth relationship (Adofu 2010, Ekeh 2003, Osinubi and Amaghionyeodiwe 2010), but none tested for endogeneity problem which Bostworth and Collins (1999) assumed to be in existence in GDP-capital inflow regression. Thus, this paper aims to study the trend, pattern, short and long run causal relationship between economic growth and FDI in Nigeria. The time period is from 1986-2010 as major economic reforms began in 1986.

2. Review of Related Theoretical Literature

Several theories have offered valuable insight on why developing countries attract international capital flows. Solow (1956) cited in Zhang and Markunsen (1999) saw the crucial driving force of economic growth in accumulation of stock of capital. He believes that growth develops on the basis of investment and that the more capital is available and invested in an economy, the higher its recorded growth rate.

Blejer and Khan (1984), in their studies of foreign capital inflow to developing countries, indicated that changes in output are the most important determinants of private foreign capital inflow. However, Serven and

Salimano (1992), recognized how investment is sensitive to cyclical variations in output, suggesting that a short term recession may have long-term effects by causing a deep investment slump that permanently traps the economy in a low-growth, low-investment equilibrium.

In addition to these direct effects, foreign capital can have indirect impact on domestic investment through what Kose, et al (2006) call "collateral benefits". To attract foreign investors governments of developing countries have to implement sound macroeconomic policies, develop their institutions and improve governance. In addition to the "collateral benefits", FDI usually results in the transfer of managerial skills, and new technology, and consequently improve productivity.

Jerome and Ogunkola (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.

Feenstra and Markusch (1994) found that FDI as an important vehicle for transfer of technology and knowledge has a long-run effect on growth by generating increasing return to production via positive externalities and productive spillovers. Concluding their work, they argue that FDI can lead to higher growth by incorporating new inputs and techniques.

On the other hand, FDI may crowd out local enterprises and have a negative impact on economic growth. Hanson (2001) considers that positive effects are very few, and Greenaway and Georg (2002) argue that most effects would be negative. Lipsey (2002) concludes that there are positive effects, but there is not a consistent relationship between FDI stock and economic growth.

2.1 Empirical Literature Review

Obadan (1992) discovered a positive statistical significant relationship between economic growth and FDI inflow. In his study of Nigerian economy for the period 1973-1990, it was observed that the economy grows at an average rate of 1.85% per annum, and that the contribution from the index of foreign capital is in the region of 54%. Ayanwale and Bamire (2004) assessed the influence of FDI on firm level productivity in Nigeria and reported a positive spillover effect of foreign firms on domestic firm's productivity.

Campos and Kinoshita (2002) examined the effects of FDI on growth for the period 1990-1998 for 25 Central and Eastern Europe and former Soviet Union transition economies. In these countries, FDI was pure technology transfer. Their main results indicate that FDI had a significant positive effect on economic growth of each selected country. This result is consistent with the theory that equates FDI with technology transfer that benefits the host country. Similar results were found by La Follette (1990), Picou (1992).

Mileva (2008), in analyzing the impact of FDI, loans and portfolio flows on investment in 22 transition countries of former Soviet Union during the period 1995-2005 found that FDI has the strongest impact on host countries' domestic investment – each dollar of FDI results in 74 cents of domestic investment.

Eke (2003) in their study used causality test to analyze the impact of FDI on economic growth in Nigeria. They investigated the casual test from foreign private investment on GDP and causality test from GDP to FPI. The results show that causality runs in both directions. They concluded that FPI is significant in determining real development in Nigeria, however, foreign capital inflow is growth-path dependent.

Adofu (2010), employing OLS regression technique in his study of the role of FDI in accelerating the rate of economic growth in Nigeria in the period 1986-2004 found that about 28% increase in GDP is explained by FDI inflow.

Osinubi and Amaghionyeodiwe (2010) in their study for Nigeria found a positive relationship between foreign private investment and GDP growth rate in the short run. Their finding shows that a unit increase in FPI will bring about an increase of 0.00059 in the growth rate of GDP.

Bos, et al (1974) examined the effects of FDI by US companies on the host country's growth. Their results revealed a negative relationship between these two variables. The explanation offered was that the outflow of profit back to the US exceeded the level of new investment for each year for the period examined 1965-1969. In the new investment there were also included the reinvested earnings causing the outflow to exceed the inflows even more.

2.2 FDI Trends in Nigeria: 1986-2010

Table 2 presents trends in FDI inflow into Nigeria from 1986-2010. The introduction of SAP in 1986 initiated the process of termination of hostile government policies towards FDI. Hence, in 1987 FDI inflow increased from ₦432.5 million or 0.6% of GDP in 1985 to ₦2,456.2 or 2.3% of GDP. In 1989 it was ₦13,877.4 or 6.3% of GDP and almost 53 times the 1985 pre-SAP figure. The figure rose further to ₦75,940.6 and ₦115,952.2 or 3.9% and 2.4% of GDP in 1995 and 2000 respectively. 2008 and 2009 witnessed an inflow of ₦971,543.8 or

4.0% of GDP and ₦1,263,659.1 or 5.1% of GDP respectively.   On the whole, FDI inflow formed about 3.15% of GDP over the whole analysis period.

Table 2:   Nigeria: Foreign Direct Investment (FDI) and GDP 1986-2010 (₦ million)

YEAR	NOMINAL FDI	FDI % GDP	YEAR	NOMINAL FDI	FDI % GDP	YEAR	NOMINAL FDI	FDI % GDP
1986	735.8	1.0	1994	22,229.2	2.4	2002	225,972.0	2.3
1987	2,456.2	2.3	1995	75,940.6	3.9	2003	258,388.6	2.8
1988	1,718.2	1.2	1996	111,297.8	4.1	2004	248,225.6	2.1
1989	13,877.4	6.3	1997	110,456.2	3.9	2005	654,193.2	4.4
1990	4,686.0	1.8	1998	80,750.4	2.9	2006	624,520.7	3.4
1991	6,916.1	2.2	1999	92,792.5	2.9	2007	759,380.4	3.7
1992	14,463.1	2.7	2000	115,952.2	2.4	2008	971,543.8	4.0
1993	29,660.3	4.3	2001	132,433.7	2.2	2009	1,273,815.8	5.1
						2010	905,730.8	3.0

Source: CBN Statistical Bulletin 2010, CBN Annual Report and Statement of Accounts (various years)

3.   Methodology

The methodology for this study was adapted with some modifications from Osinubi and Amaghionyeodiwe, (2010).   Thus, assuming a linear relationship between our regressand and regressors, the relationship between FDI and economic growth in Nigeria is modeled:

$$Y_g = a_o + a_1 FDI + a_2 GFCF + a_3 NX + a_4 EXR + a_5 CPI + \mu \ldots\ldots\ldots\ldots. \quad 3.1$$

Where Y_g is Income Growth measured by GDP, FDI is Foreign Direct Investment, GFCF is Gross Fixed Capital Formation (a proxy for Investment), NX is Net Exports, EXR is Exchange Rate, and Consumer Price Index (CPI) (a proxy for Inflation Rate), while μ is the error term.

4.   Results and Discussion

Table 4.1 summarizes the correlation among the variables used.   As expected, there is a positive correlations between GDP and the regressors (FDI, GFCF, NXP and EXR), and a negative relationship between GDP and CPI.   The correlation matrix conforms to a pirori expectations as earlier indicated.

Table 4.1:   Correlation Results (*Sample; 1986 – 2010; Included Observations: 24)*

Correlation Probability	GDP	FDI	GFCF	NXP	CPI	EXR
GDP	1.000000					
FDI	0.966502	1.000000				
GFCF	0.956789	0.920619	1.000000			
NXP	0.901880	0.883067	0.754792	1.000000		
CPI	-0.314412	-0.327775	0.323944	-0.390898	1.000000	
EXR	0.787884	0.732595	0.693241	0.712020	0.183868	1.000000

Source: authors' computation

To examine the existence of stochastic non-stationarity in the series, the paper tests for order of integration of the individual time series through the unit root tests using the Augmented Dickey Fuller (ADF).   The variables tested are, GDP, FDI, GFCF, NXP, CPI and EXR.   The results presented in table 4.2 shows that, GDP, FDI, GFCF, NXP, and CPI are stationary at level form, which imply that they are I(0), while EXR is non-stationary at levels.   However, EXR variable became stationary after first difference, which imply that it has I(I) series.

Table 4.2: Results of ADF Unit Root Tests

Variables	ADF		Remarks
	LEVEL (PROBABILITY)	1ST DIFFERENCE	
GDP	-2.915733***		I(0)
FDI	-3.549145**		I(0)
GFCF	-4.279392*		I(0)
CPI	-2.68867***		I(0)
EXR	-0.681691	-3.681691**	I(I)

Mackinnon (1991) Critical Values : -3.7497(1%), -2.9969(5%), -2.6381(10%)

Note: *, **and *** indicates that the variables are significant at 1%, 5% and 10% level respectively.

Source: authors' computation

Given the unit root properties of the variables, we proceeded to establish whether or not there is a long-run co-integrating relationship among the variables in equation 3.1 by using the Johansen full information maximum likelihood method.   We test for the number of co-integrating vectors under the assumption that the series have a linear deterministic trend.

Table 4.3: Results from Johansen Co-integration Test (maximum Eigen value)

Eigen Value	Max. Eigen Value Likelihood Ratio (Statistics)	5% Critical Value	1% Critical Value	Hypothesized No. Of Co-integration Equation(s) (CE's)
0.870891	141.3372	94.15	103.18	None**
0.789786	94.25389	68.52	76.07	At most 1**
0.683831	58.38244	47.21	54.46	At most 2**
0.491997	31.89847	29.68	35.65	At most 3*
0.351841	16.32129	15.41	20.04	At most 4*
0.241188	6.348035	3.76	6.65	At most 5*

   **denotes rejection of the hypothesis at 5% and 1% significance levels, or   * denotes rejection of the hypothesis at 5% level of significance.

   Source: authors' computation

   Schwarz Information Criterion (SIC) gave a lag length of one as the appropriate lag structure.   The maximum Eigen value statistics of Johansen co-integration equations for the model is presented in table 4.3. The null hypothesis of the absence of a co-integration relation among the six variables is rejected at the 95% confidence level for the statistics, while the hypothesis of absence of co-integration relations among three variables is rejected at 99% confidence level for the statistics.   This is because the likelihood ratio was found to be higher than the critical value at 1% and 5% respectively.   The existence of co-integration is indicative of a long-run relationship between GDP (our proxy for economic growth) and the regressands, and is consistent with the FDI-favourable macroeconomic policy theories.

Table 4.4: Granger Causality Results

Pairwise Granger Causality Tests	Sample: 1986 2010		Lags: 2
Null Hypothesis:	Obs.	F-Statistics	Prob.
H$_o$2: FDI does not Granger Cause GDP	23	3.61477	0.04789
H$_o$3: GDP does not Granger Cause FDI		26.5070	4.3E-06
GFCF does not Granger Cause GDP	23	0.59301	0.56310
GDP does not Granger Cause GFCF		0.68597	0.51629

   Critical value for rejection of Null hypothesis at 5% and 1% level of significance for the above are 2.88 and 4.42 respectively.

   Source: authors' computation

F-Statistics obtained in H_{o2} and H_{o3} (FDI does not granger cause GDP and GDP does not granger cause FDI) are more than the critical values at 5% and hence the null hypotheses are rejected. The alternate hypotheses are accepted, meaning that FDI granger cause GDP and GDP granger cause FDI. F-Statistics obtained in H_{o2} (FDI does not granger cause GDP) at 1% level of significance is less than the critical value. This means acceptance of the null hypothesis that FDI does not granger cause GDP. Hence, at 5% level of significance, there is a bi-directional causality while it does not exist at 1% level of significance.

4.1 OLS Regression Results

After converting the data series on GDP, FDI, GFCF, NX, CPI variables into their logarithmic form, the following are the log linear regression results:

GDP = 3.650114 + 0.127380FDI + 0.573916GFCF + 0.129695NX − 0.063217CPI + 0.006658EXR

$$(1.839901) \quad (7.020329) \quad (2.857733) \quad (0.063217)$$

(4.302296)

R^2	=	0.967927	F-Statistics	=	1167.728
Adjusted R^2	=	0.955073	DW	=	1.876160

In the estimated regression of equation 3.2, a_o (the constant term) is 3.650114. This means that holding the value of FDI and all other variables used in the regression constant, the variation in GDP will be about 3.7%. The regression coefficient of FDI in the estimated regression line is 0.127380 which implies that about 13% of the increase in GDP within the analysis period was accounted for by a per cent increase in FDI inflow. The calculated t-statistics for the parameter estimates for FDI is 1.84. The tabulated t-statistics is 2.13. Since the value of the calculated t-statistics is less than the tabulated t-statistic, the relationship between FDI and GDP is not statistically significant.

The regression coefficient of GFCF is 0.573916 which implies that 57% of changes in GDP within the period is accounted for by a percent increase in gross capital formation our proxy for investment. The calculated t-statistics for GFCF is 7.02 while the tabulated t-statistics is 2.13. It shows that the relationship between GDP and GFCF is statistically significant since the calculated t-statistics is greater than the tabulated t-statistics.

The coefficient of net export (NX) is 0.129695 while the calculated t-statistics is 2.858. This results show that 13% of variations in GDP is accounted for by a percent increase in net export, while the relationship between the two variables GDP and NX is statistically significant.

The coefficient of Consumer Price Index (CPI) (our proxy for inflation) is consistent with a piriori expectation and indicates that a percent increase in CPI will bring about 6% decrease in GDP. Equally, the relationship is statistically significant since the calculated t-statistics is greater than the tabulated t-statistics of 2.13.

The coefficient of exchange rate, EXR, is 0.006658 while t-tabulated is 4.302296. It shows that a unit increase in EXR (depreciation) will bring about .0067 increase in GDP while a higher tabulated t-statistics of 4.3023 shows a significant relationship between EXR and GDP variable. The R^2 is 0.97 while the adjusted R^2 is 0.96. This means that the fitted model precisely explains about 96% of the variations in the dependent variable which is the GDP.

We reject the null hypothesis that the joint influence of our regressors is not statistically significant and accept the alternate hypothesis since the calculated f-statistics from our results is 1167.728 which is higher than the tabulated f-statistic figure of 2.07956. Hence, the joint influence of our regressors on the regressand is significant and cannot be ignored in explaining variations in growth of GDP in Nigeria. The DW statistics of 1.9 shows that there is no presence of autocorrelation in the regression equation, since the figure is close to 2

4.2 Discussion

The economic implications of the above findings are as follows:

With the positive relationship between FDI and economic growth, it shows that FDI inflow promotes/supports economic growth in Nigeria. This result is in tandem with the findings of Rekha (2008), Osinubi and Amagbionyeodiwe (2010), and Obadan (1992). The direct relationship between FDI and economic growth underscores the need to increase investor's confidence in the economy by further deregulating the economy and ensuring the sustenance of pro-FDI policies. However, the insignificant statistical relationship between FDI and economic growth as established in this result is in tandem with Adofu (2010) who got the same result and goes to show that FDI inflow is not significant in explaining growth of GDP. The nominal value of FDI figures used may be attributable to this, but still underscores the need for policies that will attract further FDI flows into Nigeria.

From the findings, net export has direct relationship with economic growth. This means that increase in

net export earnings will increase the growth of GDP.   This is consistent with the findings of Fosu (1990), Ekpo (1997).   This direct relationship between NX and GDP is indicative that the Export Processing Zone (EPZ) adopted in 1999 should be strengthened and made to encourage exports.   The potentials and prospects for growth of activities of EPZ adopted in 1999 can be explored further by increasing the degree and intensities of activities of the scheme through improved social amenities and institutional building measures.

5.   Recommendations and Conclusion

Following from the results, the following are recommended:

1.   To sustain and increase the current efforts towards liberalization and deregulation across a broad range of sectors.
2.   To encourage more investors participation in the economy by improving institutional reforms and improving security situation in the country.
3.   To increase the activities of Export Processing Zone activities to further encourage exports.
4.   Foreign Direct Investment should be tailored towards the productive sector of the economy and should be directed more to production of capital goods against the production of consumer goods in order to enhance more domestic capital formation.   Care must be taken not to allow FDI displace indigenous industrial development.

The study also suggests the need for proper management of macroeconomic environment so as to stabilize both the exchange rate and inflation rate.   Unstable macroeconomic environment also impact negatively on GDP growth.

This study has demonstrated that FDI has a positive and insignificant effect on economic growth.   Thus policy makers should strive to put in place the necessary policies and institutional framework and enabling environment for increased FDI inflows.   Efforts should also be made to encourage production for exports by implementing all export-incentive schemes since both net exports and FDI were found to positively influence economic growth.

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