The Impact of Foreign Direct Investment on Nigeria's Economic Growth

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Abstract: This paper investigates the relationship between foreign direct investment (FDI) and economic growth in Nigeria between 1970-2011. The ordinal least square method is used to show the relationship between foreign direct investment and gross domestic product in Nigeria. Gross domestic product is taken as dependent variable while foreign direct investment, Government Size, Exchange Rate, Interest Rate, Political stability, Index of electricity consumption and Capital expenditure as independent variables. All the variables used are integrated of order one. The results suggest that there is a positive relation between foreign direct investment, exchange rate, Index of electricity consumption and gross domestic product in the country. In the light of the above, the paper recommends, among other things, the creation of enabling business environment in Nigeria through the improvement in power supply and political stability which will help in no small measure in boosting investors' confidence as instability scare way prospective investors.

Keywords: Foreign Direct Investment, Economic Growth, Unit root and ordinal least square

INTRODUCTION

Foreign direct investment has been classified as an investment made so as to acquire a lasting management interest (for example, 10 percent of voting stock) and at least 10 percent of equity shares in an enterprise operating in another country other than that of the investor's country [1]. It is a direct investment into production or business in a country by a company in another country, either by buying a company in the target country or by expanding operations of an existing business in that country. In a nutshell, FDI in an investment made by a company or entity based in one country, into a company or entity based in another country. It differs substantially from indirect investments such as portfolio flows, wherein overseas institutions invest in equities listed on a nation's stock exchange. Entities making direct investments typically have a significant degree of influence and control over the company into which the investment is made[2]. Policy makers believe that FDI produces positive effects on host economies. Some of these benefits are in the form of externalities and the adoption of foreign technology [3]. According to Tang et al multinational enterprises (MNEs) diffuse technology and management know-how to domestic firms. When FDI is undertaken in high risk areas or new industries, economic rents are created accruing to old technologies and additional management styles [4].

Foreign direct investment is considered as a growth enhancing component. International free trade has often been referred to as the "engine of growth" that propelled the development of today's economically advanced nations during the nineteenth and twentieth century. Rapidly expanding trade especially the export sector provides an additional stimulus to growing local demands that led to establishment of large scale industries. Exports have tended to grow fastest in these countries with more liberal trade regime and these countries have experienced the fastest growth of GDP.

Extensive literatures show the relationship between FDI and economic growth, focusing on both developed and developing countries. Neoclassical models of growth as well as endogenous growth models provide the basis for most of the empirical work on the association between FDI and growth. According to The relationship has been studied by explaining four main channels: i. determinants of growth, ii. determinants of FDI, iii. role of multinational firms in host countries and iv. direction of causality between the two variables. It is observable that some studies have found no causal relationship between FDI, while others found unidirectional relationship. In contrast, Chow has identified bidirectional association between FDI and economic growth [5]. Dauda argues that FDI is generally believed to propel economic growth in developing countries as it makes significant contributions to the host country's development process especially through easing of the constraints of low levels of domestic savings and investment as well as foreign exchange shortages. He further argues that FDI increases the GDP and generates a stream of real incomes in the host country [6]. The increased productivity benefits local income groups through higher wages and expanded employment, lower product

prices paid by consumers, rent to local resource owners, and high tax revenue or royalties to the government.

Ayashagba and Abachi explore the relationship between FDI and economic growth in Nigeria during the periods 1980 -1997 and find that FDI had significant impact on economic growth [7]. In a study on the impact of FDI on economic growth in Nigeria, for the periods 1970 – 2001, Akinlo (2004) through his ECM results shows that both private capital and lagged foreign capital have little and not statistically significant effect on the economic growth. The results seem to support the argument that extractive FDI might not be growth enhancing as much as manufacturing FDI. Ayanwale and Bamire report a positive and significant effect of FDI on the productivity of both domestic and foreign firms in the Nigerian Agro/agro Allied sector [8]. Abu examines the relationship between foreign direct investment and economic growth in Nigeria over the period 1970-2008 [9]. He employed the co-integration and Granger causality techniques to analyze the relationship between FDI and economic growth. The results of his findings suggest that they are co-integrated and there is a positive relation between foreign direct investment and economic growth in Nigeria[9].

Also looking at some studies carried out in countries with large population like Nigeria. Iqbal says that foreign direct investment in Pakistan plays a vital role in the development of a country [10]. For the support of this theory as reported by Najid et al he takes FDI as dependent variable and democracy, manufacturing products, real exchange rate, real exports, import duty and enrollment at secondary schooling as independent variables [11]. The results suggest that democracy, population, enrollment at secondary schooling have positive relation with foreign direct investment and other variables are negatively related with foreign direct investment while Abu Abdul Khaliq tries to investigates the impact of foreign direct investment on economic growth in Indonesia from 1997 to 2006 [12]. In aggregate level FDI have positive impact on economic growth while at average level FDI shows positive impact on some sectors and at some there is no significant relation. Even mining and quarrying show negative effect on FDI.

This paper is also closely related to Imoudu [13] paper that used Johansen's cointegration approach to investigate the impact of foreign direct investment on Nigeria's economic growth. He took GDP as dependent variable and foreign direct investment in the agricultural, mining petroleum sector, manufacturing and telecom sectors of the economy. He also included degree of openness (export + import) to GDP, labour force proxied by population and Ratio of Gross Domestic Fixed Capital Formation to GDP. The data was taken from 1980 to 2009. The results suggest that capital formation and especially labour and/or employment in Nigeria are growth inducing, FDI in mining and quarrying and manufacturing and processing sectors are not growth enhancing. FDI in mining and quarrying is barely significant in explaining economic growth in Nigeria.

In order to carry out this study, the paper will use the model by Imoudu [13] but will include variables like return on capital which connotes the interest rate paid on deposits by banks in the country, index of electricity consumption and Exchange Rate. The relationship between FDI and economic growth in Nigeria will be investigated. The data will be taken from 1970 to 2011 covering the pre and post SAP periods.

The paper is divided into four chapters. First chapter is the introduction. The second chapter is aimed at the relevant literature overview. A model used and data are specified in the third chapter. The fourth chapter deals with the findings, discussions and conclusions.

**An Overview of FDI in Nigeria**
Nigeria is a relatively big country with a total land area of 924,000km square. Its location is strategic within West Africa and has a population of approximately 160 million people. During the past ten years, Nigeria's economy has expanded at an annual average rate of over 6.5 per cent. This is well above the South Saharan Africa's average of 5.6 per cent from 2001 to 2011. From 2009 to 2011, Nigeria has had an average growth of 7.5 per cent compared to the World growth of 2.8 per cent. "Nigeria is an emerging market and for the past decade, 2000 to 2011, Nigeria's average growth rate has been the third fastest among the ten emerging market countries behind only China and India [14]. The country is one of the economies with great demand for goods and services given her natural resource base and large market size, qualifies to be a major recipient of FDI in Africa, and indeed is one of the top three leading African countries that consistently received FDI in the past decades.

In 1970, one year before Nigeria joined the Organization for the Petroleum Exporting Countries (OPEC), FDI inflow stood at US$205.00 million and by 1975, it had reached US$470 million. As figure 1 show, FDI inflow also reached US$738,870 million in 1980, and fell to US$485,581 million in 1985. The figure rose again to US$587,882 million in 1990, US$1,140.138 billion in 2000, US$5.31 billion in 2004 and US$8,841,953 in 2011 (IMF, 2013). According to the 2012 World Investment Report, Nigeria emerged Africa's biggest destination for Foreign Direct Investment in 2011 with $8.92bn. The report noted that FDI inflows to sub-Saharan Africa soared from $29.5bn in 2010 to $36.9bn in 2011. This level, it said, was comparable to the peak of $37.3bn achieved in 2008, prior to the onset of the global financial crisis. According to the report, Nigeria received $8.92bn in

FDI, placing it as first in Africa. South Africa was ranked next with $5.81bn during the period under review. The report stated that Ghana received $3.22bn; Congo, $2.93bn; and Algeria, $2.57bn worth of FDI. The countries were ranked as the top five African FDI destinations by the UNCTAD, which said that the other countries, aside South Africa, topped the chart because they were oil and gas producing nations.

The Nigerian Government adopted several policies to attract FDI in this globalization era. Particularly, the government implemented IMF monitored liberalization of its economy, welcomes foreign investors in the manufacturing sector, offers incentives for ownership of equity in all industries except key industries like military equipment. The incentives like tax relief are available to investors and

concessions for local raw material development. In line with its economic reforms, starting from the 1980s, Nigeria undertook a far reaching privatization programme. This change started in 1989 and onwards due to several policies (like introduction of Structural Adjustment Programme in 1986, Export Processing Zones Decree in 1991, Investment Promotion Commission in 1995) adopted by the Nigerian government. FDI inflow was low in pre- 1990's but post 1990's it remarkably changes especially in the 21st century. The question that comes to mind is, do these FDIs actually contribute to economic growth in Nigeria? If FDI actually contributes to growth, then the sustainability of FDI is a worthwhile activity, and a way of achieving its sustainability is by identifying the factors contributing to its growth with a view to ensuring its enhancement.
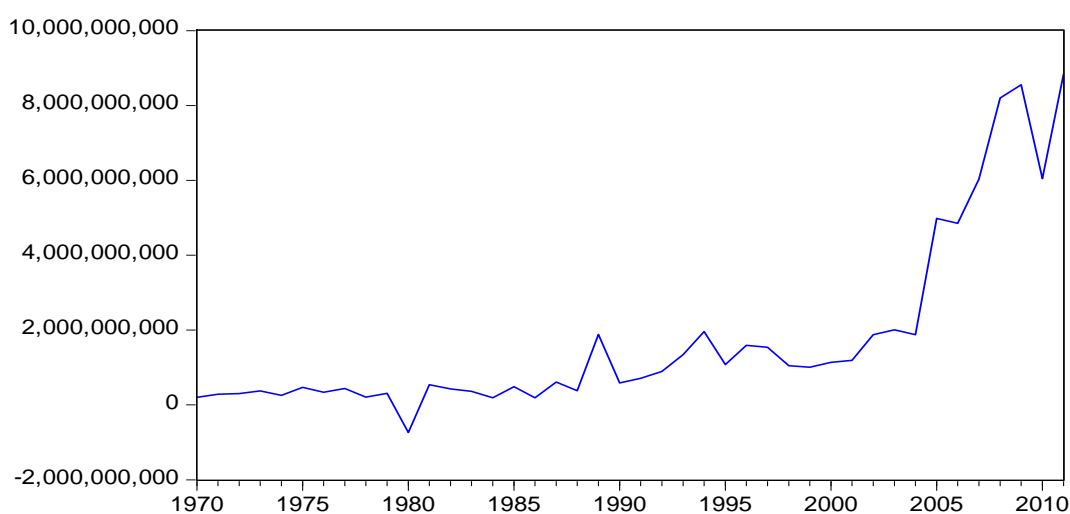
Fig-1: Foreign direct investment, Net inflows (1970-2011)
(Source: International Monetary Fund, Balance of Payments database, supplemented by data from the United Nations Conference on Trade and Development and official national sources, http://www.indexmundi.com/facts/nigeria/foreign-direct-investment.)

METHODOLOGY AND MODEL
Variables Description
Data analyzed for this study were those significant in the attraction of FDI into the host countries, as well as those relating to the measurement of the impact of FDI in the host countries in the short and long run period. The data and their relationships are defined as follows:

1. Gross Domestic Product (GDP): This is usually employed to denote market size, which is indicative of the level of economic activity. A large market size is suggestive of a prosperous business climate and hence serves as a factor attracting foreign investors in one hand, and a means of measuring the impact of foreign investment in the host countries on the other hand.

2. Foreign Direct Investment in (FDI): Capital investment (other than portfolio investment) made in the various sectors to acquire a long term controlling interest in a firm operating in

another country other than that of investors' country[15].

3. Government size (GOVSIZ): This is measured as the ratio of government consumption to GDP. It is expected to bear a direct relationship to economic growth and FDI because a higher level of government consumption should translate into provision of social infrastructure that should encourage production, growth and FDI. Past studies related to this study used data on government expenditure to represent government [16].

4. Return on Capital (INTR): In this study, this connotes the interest rate paid on deposits by banks in Nigeria. FDI will get to countries that pay a higher return on capital, which is indicative of a higher level of productivity and economic growth.

5. Exchange Rate (EXR): This measures the price of one currency in terms of another currency. In this study, the exchange rate of Nigeria (Naira) to USA (Dollar) is adopted. A

weak/depreciated exchange rate makes import expensive and export cheap and hence may likely impact positively on FDI.

6. Index of electricity consumption: This measures the change in electricity consumption. If consumption increases, it will attract foreign firms to come and do business at a cheaper rate.

7. Political stability (PS): This represents the dummy variable used to capture the investment climate in Nigeria. Years of military rule and civil unrest imply instability and are represented by (0), while years of civil rule that indicate stability are represented by (1).

The study made use of annual time-series data on a number of macroeconomic variables between 1970 and 2011 inclusive both local and foreign sources are used. The main local sources include publication of the Central Bank of Nigeria such as the statistical bulletin and annual reports and statement of accounts. Some foreign data are from the International Monetary Fund, World Bank and UNCTAD

Table 1: A priori signs of the variables

Explanatory Variables	Abbreviations	Expected Sign
Foreign Direct Investment	FDI	Positive
Government Size	GOVSIZ	Positive
Exchange Rate	EXR	Negative
Interest Rate	INTR	Positive
Political stability	PS	Positive
Capital expenditure	CAPEXP	Positive
Index of energy consumption	IDENRG	Positive

Hypothesis

Based on the literature, we hypothesize that there is a significant relationship between Real GDP Government Size, Exchange Rate, Interest Rate, Political stability and Capital expenditure.

Methodology
Models Specification

We specify the model based on the hypothesis as:

$$RGDP = f(FDI, GOVSIZ, EXR, INTR, PS, CAPEXP, IDENRG) \dots\dots\dots\dots\dots\dots (1)$$

Where:

RGDP = Real Gross Domestic Product
FDI= Foreign Direct Investment
GOVSIZ = Government Size
EXR= Exchange Rate
INTR= Interest Rate
PS= Political stability
CAPEXP= Capital expenditure
IDENRG= Index of energy consumption

All the data are in logarithmic values except exchange rate and interest rate while political stability is a dummy variable. In log stochastic form, this can be rewritten as:

$$LogGDP_t = c0 + c1 LogFDI_t + c2 GOVSIZ_t + c3 EXR_t + c64 INTR_t +$$
$$c5 PS_t + c6 LogCAPEXP_t + c7 IDENRG_t + e_t \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (2)$$

Where:

RGDP = Real Gross Domestic Product at time t
FDI= Foreign Direct Investment at time t
GOVSIZ = Government Size at time t
EXR= Exchange Rate at time t
INTR= Interest Rate at time t
PS= Political stability at time t
CAPEXP= Capital expenditure on the economic sector at time t

IDENRG= Index of energy consumption at time t
c0 = intercept
c1-c9 = Intercept
e = Error term

Data Analysis Techniques
(i) Unit root Test

In order to avoid estimating spurious regression, the stochastic properties of the series were tested. This we did by testing for unit root which involved testing the order of integration of the individual series under consideration. Several procedures for the test of order of integration have been developed in which the most popular one is the Augmented Dickey-Fuller (ADF). The ADF test relies on rejecting a null hypothesis of unit root in favour of the alternative hypothesis of stationarity. The tests were conducted with or without a deterministic trend for each of the series in order to ascertain the level of their stationarity. The general form of the ADF is estimated by the following regression.

$$\Delta y_t = ao + a_1 y_{t-1} + \sum_{i=1}^{n} a \Delta y_1 + e_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(3)$$

$$\Delta y_t = ao + a_1 y_{t-1} + \sum_{i=1}^{n} a_1 \Delta y_1 + \vartheta_t + e_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(4)$$

Where:

y_t = time series, it is a linear time trend,

Δ = first difference operator,

ao = constant

n = optimum number of lags in dependent variable

e_t = random error term.

Table 2 ADF unit root test result

Variables	Test For Unit Root	Deterministic Terms	ADF Test	Critical Value			Result
				1%	5%	10%	
LNRGDP	Level	Constant	0.478035	-3.600987	-2.935001	-2.605836	$I(0)$
	1st Difference	Constant	-5.873208	-3.605593	-2.936942	-2.606857	$I(1)$
LNFDI	Level	Constant, Trend	-1.957202	-4.205004	-3.526609	-3.194611	$I(0)$
	1st Difference	Constant	-13.07365	-3.605593	-2.936942	-2.606857	$I(1)$
GOVSZ	Level	Constant	-1.501491	-3.600987	-2.935001	-2.605836	$I(0)$
	1st Difference	Constant	-6.658998	-3.605593	-2.936942	-2.606857	$I(1)$
EXR	Level	Constant, Trend	0.566777	-3.600987	-2.935001	-2.605836	$I(0)$
	1st Difference	Constant	-5.874630	-3.605593	-2.936942	-2.606857	$I(1)$
INTR	Level	Constant	-1.578111	-3.600987	-2.935001	-2.605836	$I(0)$
	1st Difference	Constant	-6.440224	-3.610453	-2.938987	-2.607932	$I(1)$
CAPEXP	Level	Constant	-2.203553	-3.600987	-2.935001	-2.605836	$I(0)$
	1st Difference	Constant	-6.157056	-3.605593	-2.936942	-2.606857	$I(1)$
DIDENRG	Level	Constant	-1.271926	-3.600987	-2.935001	-2.605836	$I(0)$
	1st Difference	Constant	-5.666284	-3.610453	-2.938987	-2.607932	$I(1)$

Note: $I(0)$ is at level while $I(1)$ is at 1st difference

Table 2 reveals that all variables are nonstationary at level except but are stationary at their first-difference. Political stability is a dummy variable, so it was not differenced. In short, all variables are integrated of order one (i.e. they are I *(1)* processes) which sets the stage for Ordinary Least Squares test. Below is the Ordinary Least Squarestest result.

Table 3: The Impact of Foreign Direct Investment on Nigeria's Economic Growth 1970–2011 (Ordinary Least Squares Technique)

Dependent Variable	Explanatory Variables	Coefficients	Standard Error	t-Statistic	(Prob)
DLNGDP	DEXR	0.006907	0.001435	4.814408	0.0000
	DGOVSZ	-0.007311	0.006576	-1.111618	0.2741
	DINTR	0.005243	0.010446	0.501943	0.6189
	DLNCAPEXP	-0.080169	0.075338	-1.064116	0.2948
	DLNFDI	0.063851	0.034352	1.858712	0.0717
	DIDENRG	1.98E-05	0.001046	0.018886	0.9850
	PS	-0.048924	0.039123	-1.250499	0.2197

R-Squared = 0.46: DW = 2.06: F = 0.002239

DISCUSSION

The results show an R-square of about 46.0 percent, indicating that about 46.0 percent change in dependent variable (DLGDP) is jointly explained by the explanatory variables (DLNCAPEXP, DEXR, DGOVSIZ, DINTR, DLNFDI, DIDENRG and PS); On the test of individual significance, only Exchange Rate (DEXR) and Foreign Direct Investment (LNFDI) performed well while the remaining did not perform well. They remaining five failed the t–test of significance at 1 percent, 5 percent and 10 percent levels of significance as reflected in table 3 above. This reveals the presence of multi–colinearity among the variables in the estimated model. A Durbin Watson (DW) statistic of 2.06 which falls into the acceptable zone of 1.59 and 2.41 shows the absence of serial correlation.

Meanwhile, one percent changes in capital expenditures will bring about a negative change of -0.08 percent in GDP. A change in Government size will bring a negative change of -0.007% in GDP. Increase in FDI by one percent will increase GDP by 0.06%; this is in line with Althukorala [16] that FDI provides much needed resources to developing countries such as capital, technology, managerial skills, entrepreneurial ability, brand and access to markets which are essential for developing countries to industrialize, develop, create jobs and attack the poverty situation in their countries. The findings is not in line with Ayadi [17] who investigated the relationship between FDI and economic growth in Nigeria (1980 – 2007) and finds a very weak correlation and causality between the variables and recommends that infrastructural development, human capital building and strategic policies towards attracting FDI should be intensified. This is line with our findings on the relationship between GDP, GOVSZ and CAPEXP. There is a positive relationship between energy consumption and GDP, a percent increase in energy consumption will increase GDP by 1.9%. The government should come up with good strategies that will improve electricity in the country. Today in the country, most automobile companies have left the country as a result of high cost of doing business. Peugeot Automobile of Nigeria (PAN) is the only car manufacturing company that is still active in operation, and from capacity utilization of 90% in 1981, it now records a mere 10%. Staff strength has whittled down from 5,000 to a couple of hundreds as a result of power supply[18]. Interest rate one percent increase will lead to 0.005% increase in GDP. The results also show that political instability has a serious negative influence on growth which should be carefully watched and monitored. The positive sign of the exchange rate variable on its part does not show the fulfillment of the Marshall – Lerner condition in the Nigerian economy.

CONCLUSION

The study set out to investigate the impact of FDI on the economic growth of Nigeria. Earlier contributions by scholars and various schools of thought showed supportive and contrary views that FDI has positive impact on economic growth. Thus, in order to authenticate the earlier stand that FDI favourably impacts on growth in the Nigerian economy; Government Size , Exchange Rate , Interest Rate , Political stability , Capital expenditure on the economic sector , while GDP growth rate was used as the dependent variable in an ordinary least squares regression process. Three of the regressors, FDI, IDENRG and EXR, were correctly signed while the other four, CAPEXP, GOVSZ, INTR and PS were wrongly signed and so did not fulfill the a priori expectations.

Foreign direct investment has positive relation with gross domestic product in short and long run in Nigeria. If we want to increase our GDP or make economic progress then there is a need to invite foreign investors because foreign investment increase gross domestic product that is economic growth. So government of Nigeria should try to increase the weight

of foreign direct investment in order to promote economic growth of Nigeria. The positive sign of the FDI variable could be explained by technological transfer, cutting-edge management practices and other benefits FDI bring to a host nation. In short, the above findings suggest that Nigerian's capacity to progress on economic development will depend on her performance in attracting FDI. Nigerian's outward looking development strategy should include FDI as an essential part in addition to export promotion strategy. Government should provide more incentive and facilities to foreign investors for the promotion of FDI in the country.

The Nigerian government should create the necessary environment that will regulate macroeconomic policy (exchange rate inflation, interest rate, trade openness) which is highly essential for the attraction of FDI inflows into the economy. Most importantly, as an import-dependent economy, the Nigerian government should also formulate export led fiscal and monetary policies that will stabilize and balance Nigeria trade relationship with other economies of the world. Political instability is also an element that harms the foreign direct investment. In other words we can say that there is a positive relation between FDI and political stability. Democratic ideals should be encouraged so as to reduce the spate of instability in the general body polity.

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ANEX