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# The Impact of Foreign Direct Investment (FDI) on Nigeria's Economic Growth; (1975-2013)

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**Abstract**

*This research work is an inquiry which investigates the relationship between foreign direct investment (FDI) and Nigeria's economic growth between 1975-2013 by applying the Augmented Dickey Fuller (ADF) test, and Johansen cointegration technique. The Ordinary Least Squares (OLS) was also used in analyzing the data collected in which FDI was disaggregated into several components. Similarly, it examined the determinants of FDI in Nigeria. Findings show that there is a positive relationship between economic growth and FDI in Nigeria. FDI components such as Agriculture, Communications, transport and petroleum are statistically significant and are positive. The petroleum and communication sector have promising futures most especially in the long run. Past levels of infrastructure and human capital were found to be significant. But the former impacted negatively on economic growth while the later had a positive relationship with economic growth. Degree of openness, infrastructures, past level of human capital and lagged FDI are FDI enhancing. The study has shown that foreign direct investment has a positive impact on gross domestic product in Nigeria. More policies should be introduced so as to increase the enrolment of human capital as well as the integration and liberalization of the foreign sector. Barriers to cross-border trade should be reduced. If this is done, FDI would have a sustained positive impact on economic growth.*

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**Key words:** Domestic investment; Foreign direct investment; Capital formation and economic growth, liberalization, Multinational Enterprises (MNEs).

## Introduction

Foreign Direct Investment as argued by many scholars is said to be a stable form of capital flows. These flows take the form of investment from a parent organization to another organization in a different location. FDI comprises of a parent firm and an affiliate known as Multinational Enterprise (MNE). FDI components do not only include new investment and mergers and acquisition, but also reinvested earnings, intercompany debts and equity capital (Adelegan, 2000; Akinlo , 2004).

Thus FDI can be described as investment made with a view of acquiring a lasting management interest in an enterprise operating in a country which is different from that of the investor as defined by World Bank. According to Hymer (1976), the concept of control is important in distinguishing direct and portfolio investment, and also the idea behind the firm's investment control is usually defined as owning at least 10% or more of voting stocks.

The aim of this research work is to investigate the relationship that exists between foreign direct investment (FDI) in Nigeria and also examining the determinants of FDI under the study period, 1975-2013. The following research questions arose:

1. What impact does disaggregated FDI have on the economic growth in Nigeria?
2. What are the determinants of FDI in Nigeria under the review period?

Foreign direct investment is generally seen as a mixed bundle of technology and capital stock, which can be used to improve the already existing stock of knowledge in the host



country through acquiring skill and diffusion, labor training, and introducing new managerial practices and also organizational arrangements (De Mello 1997; De Propris et al, 2006). Economic growth plays an important role in containing and eradicating poverty which is experienced in most Less Developed Countries (LDC's) of the world. Economic growth can thus be achieved and promoted through increased FDI, this makes it a key factor to various developmental policies initiated by the Nigerian government and a host of developing economies that require sustainable growth and alleviation of poverty (De Mello, 1997; Carkovic et al, 2005).

Lots of literatures have used the endogenous as and neo classical growth models to empirically test the advantages or benefits of FDI. Under the neo classical growth model, economic growth is promoted by FDI by an increment in the efficiency or volume of investment; on the contrary the effect of FDI is only felt in the short run as a result of diminishing returns to capital in the long run. Long run growth in the neo classical model comes into being from exogenous technological progress and labour force. In this growth model, growth is raised by FDI through technological diffusion from countries that are developed to developing countries. This lasting transfer of know-how from FDI accounts for the diminishing returns that accrue in the long run growth. Endogenous growth literature identified country conditions which must be present for there to be a positive impact of FDI on growth such as correlation between foreign and domestic investment, open trade regimes, abundant levels of human capital and a well established financial market (Ferrett, 2004; Obadan, 2000).

In the work of De Mello (1999) who used a sample of OECD and non-OECD countries over the period 1970-90 found some evidence in favor of a long-run relationship. He discovered that, there was positive effect of FDI on economic growth in both developed and developing countries. Analogous

to Borensztein et al. (1998) concludes that the long-run growth in host countries is determined by the spillovers of technology and knowledge from the home countries to host countries, and the extent is determined by the correlation and substitution between domestic investment and FDI. Whereas in the non-OECD sample, there was no causation from FDI to growth based on fixed effects regressions and a negative short run impact of FDI on GDP, signifying that the benefits from growth may be restricted to countries with high income. Along this same theme, Blomstrom et al. (1994) in a cross-country analysis of 78 developing countries found a positive effect of FDI on growth rates for higher income developing countries, the contrary for lower income countries.

According to Caves (1996), it was noted that the motive for attracting more FDI stems from the conviction that there are positive benefits of FDI. Technological transfer, gains in productivity, managerial skills and know-how in the domestic market, training of employees and access to large market are some of the positive benefits.

Researchers have also looked at the role played by trade regime in transmitting positive growth effects from FDI. Analyzing the relationship existing between FDI and macroeconomic variables, Akpan (2005) reveals that world interest rate, credit rating, inflation rate, political dispensation, service of debt and real income per capita explains the discrepancy of FDI in Nigeria. From the result, it was suggested that policies should be put in place by the government to minimize inflation rate, increase per capita income, reduce debt servicing so as to attract FDI into the country. Employing the OLS regression technique, Adofu (2010) investigated FDI's impact on economic growth in Nigeria. The independent variables used were exchange rate, FDI and domestic savings. Based on the findings, there was need for the government to create enabling environment for FDI by implementing



appropriate monetary, fiscal and general economic policies and stable political atmosphere.

Ogunmuyiwa (2011) in his contribution explored the relation between FDI and GDP. He applied the validity of modernization or dependency hypothesis in both pre and post policy reform 'Structural Adjustment Programme' (SAP) dispensation in Nigeria. The result is in support of the dependency hypothesis, which translates to FDI's positive contribution to the economic growth in Nigeria, irrespective of the distortion in the inflow of FDI. These results are similar to the earlier findings of Ayanwale (2007) which investigated the relationship of non-extractive foreign direct investment and economic growth in Nigeria, thus asserting that FDI contributes positively to economic growth. The communication sector has great potentials of expanding the economy due to the inflow of FDI, whereas, in the manufacturing sector, a negative relationship exists between FDI with economic growth due to unfavorable business environment in the country which seems to be a stumbling block.

Imoudu (2012) investigated the relationship between FDI and economic growth. Johansen Cointegration technique methodology was used. His finding revealed that the impact of FDI disaggregated into several components namely: agriculture, mining, manufacturing, telecommunication and petroleum sectors are very little with the exception of the telecommunication sector which has a promising future for the economy especially in the long run. From his study, he discovered that Nigeria is yet to fully reap the benefits of FDI, as Ayadi (2009) similarly explored the link between FDI and economic growth in Nigeria. He concluded there was a weak link between FDI and economic growth in Nigeria. However, the study also found out that FDI serves as a major drive of economic growth by transferring technology, innovations and other externalities. This is because; the efficacy of FDI in generating the desired growth may be limited due to the level of

infrastructural development. FDI exerted some level of influence on exportation of goods and services, which signifies the beneficial impact of FDI on growth.

Analyzing the causality existing between FDI and economic growth in Nigeria for the years 1975 to 2013, Egbo (2011) found a positive relationship between FDI and GDP which is a strong indication that FDI leads to economic growth in Nigeria.

These reviews show that the debate on the effectiveness of FDI on economic growth in countries is far from being conclusive. FDI's role seems to be country specific, which is either positive or negative or insignificant, depending on institutional, technological and economic position in the various countries. Most studies on FDI and growth are cross-country evidences, while the role FDI plays in an economy is country specific. There are only a few of the country specific studies that actually take conscious note of the endogenous nature of the relationship between FDI and growth in their analyses, thus raising some questions on the validity of their findings. In addition, the relationship between FDI and economic growth depends on the macroeconomic dispensation in the country. As a matter of fact, Zhang (2001) asserts that "the degree to which FDI contributes to growth depends on the macroeconomic and social condition of the recipient country". Due to the fact that, the impact FDI has on the growth of any economy is period and country specific, there is need for country specific studies.

**Conceptual Framework**

Although different methods can be used in investigating the impact FDI inflow has on the economic growth in a country, FDI's contribution to growth depends on the condition in recipient countries. Certain host country conditions are essential in facilitating the spillover effects. The effect of FDI on



economic growth is analyzed in the standard growth accounting framework. To begin with, capital stock consists of two components which are domestic and foreign capital stock,

$$K_t = K_{dt} + K_{ft} \quad \ldots\ldots (1)$$

Where $K_t$ is capital stock
$K_{dt}$ is domestic capital stock and
$K_{ft}$ is foreign capital stock

The framework is similar to that of Ayanwale (2007); the augmented Solow production function was employed. In which output was made a function of human capital, labour, productivity and capital stock. The Cobb–Douglas production function requires domestic and foreign owned capital stocks to be separately specified

$$Y_{it} = A_{it} K^{\alpha}_{dit} K^{\lambda}_{fit} L^{\beta}_{it} H^{\gamma}_{it} \quad \ldots\ldots (2)$$

Where:
*Y* is the flow of output,
$K_{dt}$: domestic capital stock
$K_{ft}$: foreign capital stock
*L:* is the labour
**H:** is the human skills capital stock
**A:** is the total factor productivity which explains the output growth that is not accounted for by the growth in factors of production specified.

Taking logs and differentiating Equation 2 with respect to time, we obtain the familiar growth equation:

$$Y_{it} = a_{it} + \alpha k_{dit} + \lambda k_{fit} + \beta l_{it} + \gamma h_{it} \quad \ldots\ldots (3)$$

where lower case letters represent the growth rates of output, domestic capital stock, foreign capital stock, and labour and human capital, and *a*, *l*, *b* and *g* represent elasticity of output, domestic capital stock, foreign capital stock, labour and human capital skill respectively.

There has been recent surge in the flow of FDI to Africa during 2000-2007 followed from positive business environment in the region backed by reform framework for FDI. Many African countries have reformed their economic policy, investment laws and also improving their financial system. Foreign Direct Investment (FDI) is seen as an important source of Investment for African countries. FDI's share of Gross fixed capital formation over the last decade which stands at 20% is twice the global average and 8% above that of other developing countries (UNCTAD 2010b). Although it is of growing importance that FDI continues to be distributed unevenly around the World.

The UNCTAD (2007) stated that lower middle income (developing countries with per capita GNI ranging between US$755 and US$2,995) have greater chances of attracting FDI, whereas the low income countries (developing countries with per capital GNI less than US$755) are comparatively less likely in their quest of securing FDI. An analysis of UNCTAD (2010) report reveals that FDI in the World rose from US$1.3billion in 1970 to about US$1.8trillion in 2008 then later declined to US$1.2trillion in 2010 which is 15% below the pre crisis level. UNCTAD estimates that global FDI will recover to its pre crisis level in 2011, increasing to US$1.4–1.6 trillion, approaching its 2007 peak in 2013. This positive scenario holds, barring any unexpected global economic shocks that may arise from a number of risk factors still in play.

Nigeria is among the countries that receives the largest amount of Foreign Direct Investment (FDI) in Africa. Foreign Direct Investment has been growing enormously over the course of last decade. According to UNCTAD (2009) Nigeria was ranked as the fourth top net inflow recipient in Africa in 2008 behind South Africa, Egypt and Angola. Nigeria's share of FDI inflow into Africa was within 18% in 1970 and 2008. 51.9% in 1975 has been the highest till date. This went down to 35.3% in 1990 and further down to a low level in 2007.



**Methodology**

The models used in this study were estimate d using data on Direct Foreign Investment (DFI) and some macro-economic indicators, which includes: Gross Domestic Products (GDP), Inflation Rate (IR) and Export (Exp) for the period 1999 – 2013.The regression analysis of the ordinary least squares (OLS) is the estimation technique that is being employed in this study to determine the impact of the Direct Foreign Investment on economic growth proxy by Gross Domestic Product (GDP). In studying the impact of Foreign Direct investment on Economic growth in Nigeria, the use of Time Series was adopted. In this case, we are dealing with a multivariate time series analysis.

**Estimation of Time Series**

Time series data could either be stationary or non stationary with trends. Making use of non stationary series leads to spurious regression. In order to prevent the estimation of a spurious regression, the stochastic properties of the series will be tested. The Augmented Dickey Fuller (ADF) will be employed. The basic objective of the test is to examine the:
Null hypothesis (non-stationary):

$$H_o: \alpha = 1$$

Against an alternative hypothesis (stationary):

$$H_1: \alpha \neq 1$$

The general form of the ADF is:

$$\Delta Y_t = \alpha_0 + \alpha_1 Y_{t-1} + \Sigma_{i=0}^{n} \alpha \Delta Y_i + u_t \ldots\ldots\ldots\ldots 3.1$$

$$\Delta y_t = \alpha_0 + \alpha_1 Y_{t-1} + \Sigma_{i=0}^{n} \Delta Y_i + \delta_t + u_t \ldots\ldots\ldots\ldots 3.2$$

Where:
$Y_t$ is a linear time trend series,
$\Delta$ is first difference,
$\alpha_0$ is intercept/constant.

**Sources of Data**

There are various sources of data on FDI. In this research work, secondary data was used for the analysis. The two main sources used are the Central Bank of Nigeria's Statistical Bulletin (various years) and the World Bank's World Development Indicators. Variables such as Real Gross Domestic Product, Foreign Direct Investment, Human Capital, Gross Fixed Capital Formation and disaggregated FDI components were sourced from the Statistical Bulletin of Central Bank of Nigeria (2009, 2010 and 2014). While Total trade, Inflation rate and Domestic credit were sourced from World Bank's World Development Indicators.

In order to measure the linear relationship between measures of growth and that of FDI, two simplified procedures that comprised of crucial analytic and empirical analysis in providing for the aforementioned objectives of this research work were adopted. The general empirical models can be put forth as follows:

RGDP = F(FDIAG, FDIMIN, FDIMAN, FDICOM, FDIPET, HCPT, INFRA).

FDI = F(DOP, HCPT, INFRA, DOMCRDT, POLRISK, IR)

Where,

| | | |
|---|---|---|
| **RGDP** | = | Real Gross Domestic Product |
| **FDI** | = | Foreign Direct Investment |
| **FDIPET** | = | Foreign Direct Investment in the petroleum sector. |



| | | |
|---|---|---|
| **FDIAG** | = | Foreign Direct Investment in agricultural sector. |
| **FDIMIN** | = | Foreign Direct Investment in Mining and quarrying sector. |
| **FDIMAN** | = | Foreign Direct Investment in manufacturing and processing sector. |
| **FDICOM** | = | Foreign Direct Investment in communications and transport sector. |
| **IR** | = | Inflation Rate |
| **HCPT** | = | Human Capital, given as ratio of (Education Expenditure/GDP). |
| **INFRA** | = | Infrastructure, given as (gross fixed capital formation as a ratio of GDP) |
| **POLRISK** | = | Political Risk given as a probability of changes in government, political violence e. g coup d'état. This is a dummy variable. |
| **DOMCRDT** | = | Domestic credit which is provided by the banking sector as percentage of GDP. |
| **DOP** | = | Degree of openness (total trade as a percentage of GDP). |
| **FDIPET** | = | Foreign Direct Investment in the petroleum sector |

The log linear form of the equation can be written thus:

$$FDIt = \beta_0 + \beta_1 LogDOP + \beta_2 LogHCPT + \beta_3 LogINFRA + \beta_4 LogDOMCRDT + \beta_5 LogPOLRISK + \beta_6 LogIR + \varepsilon t \ldots (1)$$

$$\ln RGDP = \alpha_0 + \alpha_1 FDIPET + \alpha_2 FDIAG + \alpha_3 FDIMIN + \alpha_4 FDIMAN + \alpha_5 FDICOM + \alpha_6 HCPT + \alpha_7 INFRA + \varepsilon t \ldots (2)$$

Where $\varepsilon i$ is the error term.

## Results and Discussion

The objective of this research work is to examine the impact FDI has on economic growth in Nigeria, and to investigate the determinants through FDI. This chapter presents an analysis of the impact of FDI on economic growth in Nigeria and also presents the findings of the econometric regression. Starting with the descriptive statistics, a summary is given below:

**Table 1: Summary Statistics-Impact of FDI on Economic Growth**

| STATISTICS | RGDP | HCPT | INFRA | FDIAG | FDICOM | FDIMAN | FDIMIN | FDIPET |
|---|---|---|---|---|---|---|---|---|
| Mean | 243648.6 | 0.052 | 0.645 | 590.656 | 1265.803 | 31540.64 | 27991.40 | 100566.6 |
| Median | 674889.0 | 0.243 | 3.050 | 1999.200 | 10758.20 | 219512.0 | 132085.5 | 2479.000 |
| Maximum | 4219.000 | 0.001 | 0.040 | 7.900 | 11.600 | 224.800 | -810.000 | 705455.6 |
| Minimum | 4219.000 | 0.001 | 0.040 | 7.900 | 11.600 | 224.800 | -810.000 | -568.800 |
| Std. Dev. | 188203.3 | 0.0756 | 0.799 | 590.150 | 2570.046 | 56149.65 | 36478.94 | 194236.9 |
| Skewness | 0.542 | 1.313 | 1.866 | 0.491 | 2.477 | 2.314 | 1.038 | 2.164 |
| Kurtosis | 2.645 | 3.259 | 5.668 | 1.7146 | 8.101 | 7.387 | 3.066 | 6.370 |
| Jarque-Berra | 2.116 | 11.308 | 34.207 | 4.255 | 82.183 | 66.098 | 7.004 | 48.893 |
| Probalility | 0.347 | 0.004 | 0.000 | 0.119 | 0.000 | 0.000 | 0.030 | 0.000 |
| Sum | 9502297. | 2.038 | 25.150 | 23035.60 | 49366.30 | 1230085. | 1091665. | 3922098. |
| Sum Sq. Dev. | 1.35E-12 | 0.217 | 24.280 | 13234508 | 2.51E+08 | 1.20E+11 | 5.06E+10 | 1.43E+12 |
| Observations | 39 | 39 | 39 | 39 | 39 | 39 | 39 | 39 |

**Source:** Authors computation

Table 1 shows the basic statistics, this is important in the sense that it evaluates the scores for each variable used for more advanced statistical analysis. And also, this is good for policy makers. The mean and median in the table above shows high values, except for Infrastructure and human capital which are represented as fractions. The maximum and minimum values are same except for petroleum, which has a negative



value. The table below has different values for both statistics. This helps to know whether or not the scores lie within a given range. Degree of openness is the only variable with a negative value for skewness, indicating the mean leaning towards the left side of both median and mode. While, the other variables are positive this indicates having a long tail to the right. If the variables are more skewed, means the data is less likely to be reliable.

**Table 2: Summary Statistics - Determinants of FDI in Nigeria.**

| STATISTICS | FDI | DOP | DOMCRDT | HCPT | INFRA | IR | POLRISK |
|---|---|---|---|---|---|---|---|
| Mean | 82052.38 | 57.471 | 22.056 | 0.052 | 0.645 | 19.731 | 0.256 |
| Median | 10899.60 | 57.850 | 20.259 | 0.007 | 0.290 | 13.800 | 0.000 |
| Maximum | 397395.2 | 97.321 | 49.902 | 0.243 | 3.050 | 72.800 | 1.000 |
| Minimum | 1003.200 | 19.621 | -1.602 | 0.001 | 0.040 | 3.200 | 0.000 |
| Std. Dev. | 111076.8 | 21.653 | 12.780 | 0.0756 | 0.799 | 16.528 | 0.442 |
| Skewness | 1.341711 | -0.087 | 0.602 | 1.313 | 1.866 | 1.560 | 1.116 |
| Kurtosis | 3.844711 | 1.732 | 2.718 | 3.260 | 5.668 | 4.760 | 2.245 |
| Jarque-Bera | 12.86072 | 2.662 | 2.482 | 11.308 | 34.207 | 20.838 | 9.018 |
| Probability | 0.002 | 0.264 | 0.289 | 0.004 | 0.000 | 0.0000 | 0.011 |
| Sum | 3200043. | 2241.377 | 860.167 | 2.038 | 25.150 | 769.500 | 10.000 |
| Sum Sq. Dev. | 4.69E+11 | 17817.13 | 6206.786 | 0.217 | 24.280 | 10380.92 | 7.436 |
| Observations | 39 | 39 | 39 | 39 | 39 | 39 | 39 |

**Source:** Authors computation

**Table 3: OLS ESTIMATES FOR FDI & ITS DETERMINANTS.**

| VARIABLE | COEFFICIENT | STD.ERROR | T-ST. | PROB. |
|---|---|---|---|---|
| C | -2.018 | 0.473 | -4.271 | 0.000 |
| LFDI(-1) | 1.025 | 0.030 | 34.202 | 0.000 |
| LDOP | 0.271 | 0.116 | 2.337 | 0.026 |
| LINFRA | 0.195 | 0.047 | 4.172 | 0.000 |
| LIR | 0.067 | 0.038 | 1.769 | 0.086 |
| LHCPT(-1) | -0.193 | 0.036 | -5.329 | 0.000 |
| Number of Obs. | | | | 39 |
| R square | | | | 0.994 |
| Adjusted R square | | | | 0.994 |
| D W. Stat. | | | | 1.875 |

**Source: Author's Computation**

**Table 4: OLS ESTIMATES FOR GDP & DISAGGREGATED FDI COMPONENTS.**

| VARIABLE | COEFFICIENT | STD. ERROR | T. STATISTICS | PROB. |
|---|---|---|---|---|
| LRGDP(-1) | 0.649 | 0.123 | 5.277 | 0.000 |
| LRGDP(-2) | -0.272 | 0.106 | -2.560 | 0.017 |
| LINFRA | -0.985 | 0.122 | -8.049 | 0.000 |
| LFDIAG | 0.192 | 0.075 | 2.561 | 0.017 |
| LFDICOM | 0.305 | 0.093 | 3.265 | 0.003 |
| LFDIPET | 0.070 | 0.036 | 1.963 | 0.060 |
| LHCPT(-1) | 0.097 | 0.046 | 2.138 | 0.042 |
| LINFRA(-1) | 0.421 | 0.138 | 3.051 | 0.005 |
| | | | | |
| Number of Obs. | | | | 39 |
| R square | | | | 0.984 |
| Adj. R square | | | | 0.980 |
| D W. Stat. | | | | 2.104 |

**Source: Authors computation**



From table 3, FDI was discovered to have impact only after a considerable lag, and is seen to be FDI enhancing; positive and also highly significant. The degree of openness is found to be positive and also significant. This agrees with the result of Asiedu (2001) and is also consistent with similar studies. An open economy paves way for economic growth as investors are encouraged to invest in a country which is liberalized. The level of infrastructure was found to be significant and positively related with FDI, also consistent with previous studies, this implies that, this determinant will encourage the inflow of FDI into the country. Past level of human capital was found to have a negative relationship with FDI, yet highly significant. With a $R^2$ of 0.994, this means that about 99% of the variation in the dependent variable (FDI) is linearly explained by variations in the independent variable. The "goodness of fit" is valid. A Durbin Watson value of 1.875, this reveals absence of serial correlation.

A preliminary analysis for stationarity of the variables was done using the Augmented Dickey-Fuller (ADF) test, so as to test for the presence of unit roots in the model and to avoid spurious regressions. The test is conducted on the level and first differences of the variable. Non stationary variables would be made stationary by differencing. The result of the output is outlined below:

**Table 5: Summary of Unit Root Test for Stationarity, 1975-2013**

| VARIABLE | ADF LEVEL | CRITICAL VALUE 5% ADF | CRITICAL VALUE 1% ADF | ADF 1ST DIFFERENCE | CRITICAL VALUE 5% ADF | CRITICAL VALUE 1% ADF |
|---|---|---|---|---|---|---|
| UNIT ROOT TESTS FOR STATIONARITY WITH CONSTANT ONLY | | | | | | |
| RGDP | -2.277 | -2.941 | -3.616 | -5.680 | -2.943 | -3.621 |
| LFDI | -0.285 | -2.941 | -3.616 | -5.191 | -2.943 | -3.621 |
| LFDIAG | -1.310 | -2.941 | -3.616 | -5.915 | -2.943 | -3.621 |
| LFDICOM | 0.467 | -2.941 | -3.616 | -5.591 | -2.943 | -3.621 |
| LFDIMAN | -0.494 | -2.941 | -3.616 | -5.514 | -2.943 | -3.621 |
| LFDIMIN | 0.255 | -2.964 | -3.670 | -4.013 | -2.964 | -3.670 |
| LFDIPET | -0.667 | -2.948 | -3.633 | -4.607 | -2.960 | -3.662 |
| LDOP | -2.349 | -2.941 | -3.616 | -5.960 | -2.943 | -3.621 |
| LDOMCRDT | -3.020 | -2.946 | -3.627 | -4.105 | -2.991 | -3.738 |
| LHCPT | -0.950 | -2.941 | -3.616 | -7.618 | -2.943 | -3.621 |
| LINFRA | 0.163 | -2.941 | -3.616 | -5.315 | -2.943 | -3.621 |
| LIR | -2.349 | -2.941 | -3.616 | -5.960 | -2.943 | -3.621 |
| POLRISK | -6.538 | -2.941 | -3.616 | -5.512 | -2.968 | -3.679 |
| VARIABLE | ADF LEVEL | CRITICAL VALUE 5% ADF | CRITICAL VALUE 1% ADF | ADF 1ST DIFFERENCE | CRITICAL VALUE 5% ADF | CRITICAL VALUE 1% ADF |
| UNIT ROOT TESTS FOR STATIONARITY WITH CONSTANT AND TIME TREND | | | | | | |
| RGDP | -1.982 | -3.533 | -4.219 | -5.980 | -3.537 | -4.227 |
| LFDI | -1.770 | -3.533 | -4.219 | -5.123 | -3.537 | -4.227 |
| LFDIAG | -1.920 | -3.533 | -4.219 | -5.878 | -3.537 | -4.227 |
| LFDICOM | -2.359 | -3.533 | -4.219 | -5.507 | -3.537 | -4.227 |
| LFDIMAN | -3.734 | -3.540 | -4.235 | -5.444 | -3.537 | -4.227 |
| LFDIMIN | -0.816 | -3.580 | -4.324 | -1.974 | -3.691 | -4.572 |
| LFDIPET | -2.687 | -3.544 | -4.244 | -4.484 | -3.563 | -4.285 |
| LDOP | -2.210 | -3.533 | -4.219 | -6.020 | -3.537 | -4.227 |
| LDOMCRDT | -2.376 | -3.558 | -4.273 | -2.739 | -3.612 | -4.394 |
| LHCPT | -3.074 | -3.533 | -4.219 | -7.488 | -3.537 | -4.227 |
| LINFRA | -1.1481 | -3.533 | -4.219 | -5.686 | -3.537 | -4.227 |
| LIR | -3.651 | -3.533 | -4.219 | -6.952 | -3.540 | -4.235 |
| POLRISK | -6.486 | -3.533 | -4.219 | -5.365 | -3.574 | -4.310 |

**Source:** Authors computation



Table 5 above displays the result of the unit root test. Two of the variables namely FDI manufacturing and Inflation rate were stationary at their levels. While the remaining variables became stationary at integration of order one, i.e (I). After the test for unit roots has been done, we can proceed to the next pre-test, which is testing for cointegration.

Having established the stationarity of the variables, the next step is the test for co-integration. Co-integration is essential and a major requirement for models that employ time series analysis. It is a test for 'r' co-integrating vectors based on the maximum likelihood approach proposed by Johansen (1988). Co-integration exists when two or more variables are integrated of the same order. Due to the fact that two models were used for in this research, as a result of large number of variables. The first table shows the test analyzing the long run relationship that exists between real GDP and disaggregated FDI namely (agriculture, manufacturing, mining & quarrying, communication & transport, petroleum, human capital and infrastructure). While, the second shows the relationship that exists in the long run between FDI and its determinants, namely (degree of openness, domestic credit, human capital, infrastructure, inflation rate and political risk). The table below shows the results of the Johansen test.

**Table 6: Summary of Cointegration Results (Trace & Max Eigen Statistics)**

| Unrestricted Cointegration Rank Test (Trace)* | | | | |
|---|---|---|---|---|
| No. of CE(s) | Eigenvalue | Trace Statistic | 0.05 Critical Value | P value** |
| None * | 0.929 | 266.634 | 159.530 | 0.000 |
| At most 1 * | 0.810 | 187.332 | 125.615 | 0.000 |
| At most 2 * | 0.793 | 137.542 | 95.754 | 0.000 |
| At most 3 * | 0.692 | 90.325 | 69.818 | 0.001 |
| At most 4 * | 0.672 | 54.990 | 47.856 | 0.009 |
| At most 5 | 0.354 | 21.580 | 29.797 | 0.323 |
| At most 6 | 0.241 | 8.482 | 15.495 | 0.415 |
| At most 7 | 0.007 | 0.223 | 3.841 | 0.637 |
| Unrestricted Cointegration Rank Test (Maximum Eigenvalue)** | | | | |
| No. of CE(s) | Eigenvalue | Max-Eig. Statistic | 0.05 Critical Value | P value** |
| None * | 0.929 | 79.302 | 52.363 | 0.000 |
| At most 1 * | 0.810 | 49.789 | 46.231 | 0.020 |
| At most 2 * | 0.793 | 47.217 | 40.078 | 0.007 |
| At most 3 * | 0.692 | 35.335 | 33.877 | 0.033 |
| At most 4 * | 0.672 | 33.410 | 27.584 | 0.008 |
| At most 5 | 0.354 | 13.097 | 21.132 | 0.443 |
| At most 6 | 0.241 | 8.260 | 14.265 | 0.353 |
| At most 7 | 0.007 | 0.223 | 3.841 | 0.637 |

Both tests indicate 5 cointegrating eq uations at 0.05 levels.
* denotes rejection of the hypothesis at the 0.05 level.



**Table 7: Summary of Cointegration Results (Trace & Max Eigen Statistics)**

| Unrestricted Cointegration Rank Test (Trace)* | | | | |
|---|---|---|---|---|
| No. of CE(s) | Eigenvalue | Trace Statistic | 0.05 Critical Value | P value** |
| None * | 0.808 | 174.221 | 125.615 | 0.000 |
| At most 1 * | 0.713 | 118.049 | 95.754 | 0.001 |
| At most 2 * | 0.588 | 75.580 | 69.819 | 0.016 |
| At most 3 | 0.439 | 45.461 | 47.856 | 0.083 |
| At most 4 | 0.408 | 25.832 | 29.797 | 0.134 |
| At most 5 | 0.146 | 7.985 | 15.495 | 0.467 |
| At most 6 | 0.074 | 2.600 | 3.841 | 0.107 |
| Unrestricted Cointegration Rank Test (Maximum Eigenvalue)** | | | | |
| No. of CE(s) | Eigenvalue | Max Eig. Statistic | 0.05 Critical Value | P value** |
| None * | 0.808 | 56.172 | 46.231 | 0.003 |
| At most 1 * | 0.713 | 42.469 | 40.078 | 0.026 |
| At most 2 * | 0.588 | 30.119 | 33.877 | 0.132 |
| At most 3 | 0.439 | 19.630 | 27.584 | 0.367 |
| At most 4 | 0.408 | 17.847 | 21.132 | 0.136 |
| At most 5 | 0.146 | 5.385 | 14.265 | 0.693 |
| At most 6 | 0.074 | 2.600 | 3.841 | 0.107 |

Trace test indicates 3 co-integrating equations at 0.05 level, likewise the Max eigenvalue test which indicates 2 co-integrating eqns at the 0.05 level.

Source: Authors Computation

There are two methods in ascertaining the long run relationship between the variables. First is using the p-value, in which the null hypothesis states that there is no cointegration. When the p-value is less than 5%, we reject the null hypothesis, whereas, if the p-value is greater than the 5%, we cannot reject the null.

Secondly, using either the trace statistics or max eigenvalue Statistics we can determine if there is a long run relationship or not. If the trace statistics or max eigenvalue statistics is greater than the critical value; we reject the null hypothesis, whereas if both tests are less than critical value, we cannot reject the null hypothesis.

Based on the test conducted, from table 6, there are five cointegrating equation for both the trace and max eigenvalue test. This means there is a long run relationship between at most five of the variables tested. In addition, from the result from the second test in table 7, the trace test reveals that there are at most three cointegrating equations, while the max eigenvalue test reveals two cointegrating equations. From both test carried out, we reject the null hypothesis of no cointegration which indicates a unique cointegrating equation between disaggregated FDI and GDP in the long run, and also the determinants of FDI.

**Table 8: Co-integrating vectors of RGDP and Disaggregated FDI components.**

| One Cointegrating Equation. | | | Log Likelihood | | | 23.14480 | |
|---|---|---|---|---|---|---|---|
| LRGDP | LFDIAG | LFDICOM | LFDIMIN | LFDIMAN | LFDIPET | LHCPT | LINFRA |
| 1.00 | -0.443 | -1.033 | -0.511 | 0.292 | 0.303 | 0.006 | 0.933 |
| | (0.072) | (0.114) | (0.125) | (0.136) | (0.303) | (0.045) | (0.077) |

LRGDP = - 0.443(LFDIAG) - 1.033(LFDICOM) - 0.511(LFDIMIN) + 0.292 LFDIMAN + 0.303(LFDIPET) + 0.006(LHCPT) + 0.933(LINFRA).

The table above indicates a long run relationship. An increase of 1% in agriculture causes the level of real GDP to decrease by 0.443% which means there's a negative long run relationship. Secondly, a 1% increment causes communication & transport to reduce by 1.03%. Similarly an increase of 1% causes LFDIMIN to reduce by 0.510%. The three variables



have a negative association with real gross domestic product in the long run.

Increasing manufacturing & processing by 1% causes the level of real GDP to increase by 0.291%. Likewise increasing petroleum by 1%, it results in an increase of 0.303% in the dependent variable which is true as the government has done a lot in tapping from the abundant resources. An increase in 1% causes the associated variable 'human capital' 0.05% increase in real GDP. Increasing infrastructure by 1% causes the dependent variable to increase by 0.93%, the government has relaxed restrictions and as such, the sector has seen improvement. These last four variables have positive relationship with the dependent variable in the long run.

**Table 9: Cointegrating vectors of LFDI and its Determinants.**

| One Cointegrating Equation | | | Log Likelihood | | -53.38526 | |
|---|---|---|---|---|---|---|
| LFDI | LDOP | LDOMCRDT | LHCPT | LINFRA | LIR | POLRISK |
| 1.00 | -21.624 | -8.325 | 4.356 | -2.440 | 17.356 | 9.391 |
| | (5.285) | (3.539) | (2.518) | (3.925) | (1.970) | (4.261) |

LFDI = - 21.624(LDOP) – 8.325(LDOMCRDT) + 4.356(LHCPT) – 2.440(LINFRA) + 17.356(LIR) + 9.391(POLRISK).

The equation above suggests that if degree of openness increases by 1%, this leads to a decrease in the dependent variable by 21.62%. Similarly, increasing domestic credit by 1% causes FDI to reduce by 8.32%. An increase in human capital leads to a corresponding increase in FDI by 4.35%, as this is important in order to move up the chain of economic growth in the long run. By increasing infrastructures by 1% causes the dependent variable to decrease by 2.43%. In addition, a 1% increase in inflation rate leads to a 17.35% increment in the FDI. Lastly, political risk increment by 1% leads to a 9.39%

increase in LFDI. From the foregoing, we can see that the degree of openness, domestic credit and infrastructures have a negative association with foreign direct investment in the long run. The remaining determinants were found to have a positive relationship, and are attractive in the long run.

The stock of FDI in manufacturing sector was favorable in comparison to that of the mining and quarrying sector. It averaged to 33% between 1975 and 2013. FDI in trading and business services and other miscellaneous services with overall period averages of 16% and 13.5% respectively also received boost but not as the earlier mentioned two sectors.

Transportation and communications, Agriculture, building and construction remained the least attractive in hosting FDI in Nigeria. However if the report of the privatization programme (CBN 2004) is correct, the transport and communication sector seem to be attracting FDI most especially the telecommunications sector. Nigeria is described as the fastest growing mobile phone market in the world, as a result of the introduction of the Global System of Mobile Communication (GSM) since their introduction in 2001. The four operators namely MTN, Airtel, Glo and Etisalat are currently engaged in a stiff competition so as to provide efficient service delivery which has forced the rates down thereby fostering consumer satisfaction. Although there are minor problems encountered such as occasional network congestion as a result of promos offered by the service providers. The effect of this positive development in the telecommunication sector hasn't been fully felt by other sectors of the economy (Nwankwo et al, 2013).

## Conclusion and Recommendation

This research work applies economic analysis to establish the impact of foreign direct investment (FDI) on economic growth in Nigeria from 1975-2013. It also focuses on



the determinants of FDI which helps its attraction. The findings from this research work supports previous study and also that of Ayanwale (2007). FDI's impact on the economy is positive, but note, it is also dependent on some factors in the host country.

Results revealed that FDI leads to economic growth. Agriculture, communications and transport, and petroleum sectors are complementary to growth so also is past level of human capital. For the benefits of FDI to be fully reaped, these sectors need to be integrated into the economy. There is need for the adoption of National Investment Policy which is based on an FDI, which would lead to more dynamic investment. Restrictions on some of these sectors should be relaxed, so that private individuals can participate. This leads to creation of more job opportunities which will definitely have a multiplier effect on the economy.

Similarly, this research also examined the determinants of FDI and it was discovered that past level of human capital goes a long way in influencing the choice of investors to invest in the country. Trade liberalization policy should be intensified, an example is the structural adjustment programme (SAP) in 1986, and this is done to increase the openness of the economy in attracting FDI, as this was found to be significant in the result. Adequate levels of infrastructures needs to be in existence for the impact of FDI to be positive.

It is advised that the Nigerian government take measures, which should aim at: Improving regulatory framework, taking advantage of regional integration and revision of external tariffs, more investment in human capital, strengthening institutions which deal with investment issues. In other to reap these benefits, a consistent and coordinated approach to implementing the recommendations is very important. This requires the commitment of the Nigerian Government at the highest level, the involvement of the private

sector and the support of the international community.

In summary, policies that help in fostering a much closer integration of agriculture, communication and transport, petroleum, human capital, infrastructures and openness will lead to the attractiveness of the country and high economic growth.

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Long Run I
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**Abstract**

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