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**FOREIGN DIRECT INVESTMENT AND NIGERIA'S ECONOMIC GROWTH: AN EMPIRICAL INVESTIGATION**

**Celina Chinyere Udude, Douglas N. Nnachi and Kenneth Chukwuemeka Ogbaga**

Department of Economics, Ebonyi State University Abakaliki, Nigeria.

Email: [celinaudude@yahoo.com](mailto:celinaudude@yahoo.com); [nnachi.douglas@gmail.com](mailto:nnachi.douglas@gmail.com); [mescana4luv@yahoo.com](mailto:mescana4luv@yahoo.com)

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**ABSTRACT**

The role of investment, especially foreign direct investment (FDI) in driving economic growth and development has been a contested one ever since the UN development decade of the 1960s. There have always been views in favour of FDI and against it. Some argue that FDI leads to economic growth and productivity increases in the economy as a whole and hence contributes to differences in economic growth and development performances across countries, while others stress the risk of FDI destroying local capabilities and extracting natural resources without adequately compensating poor countries. This research work investigated the impact of foreign direct investment (FDI) on Nigerian economic growth. Secondary data on gross domestic product (GDP), used as a proxy for economic growth; foreign direct investment (FDI), government expenditure (GEX), openness (OPEN) and financial development (DF) which represented the explanatory variables, and sourced mainly from CBN publications were first tested for the presence of unit root using the Augmented Dickey-Fuller test while Johansen cointegration test was used to test for long run relationship between the dependent and independent variables. The ADF test indicated that all the variables were stationary at first difference at 5% level of significance and the Johansen cointegration test revealed the presence of a long run relationship among the variables while the granger causality test showed evidence of a unidirectional causality running from foreign direct investment (FDI) to economic growth (RGDP) in Nigeria within the period of study. Vector error correction model (VECM) was employed to estimate the individual parameters and the result indicated that changes in FDI do not significantly explain the increased variations in RGDP which have been witnessed in the past years. The study therefore concluded that the link between FDI and economic growth in Nigeria is very weak and recommended among others that government should provide conducive environment that will give rise to increased foreign direct investment in Nigeria as it will help to boost economic growth.

**Keywords:** investment, economic growth, development, productivity, natural resources.

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**INTRODUCTION**

Foreign Direct Investment is viewed as a major stimulus to economic growth in developing countries. It is a perceived ability to deal with major obstacles such as shortages of financial resources, technology, and skills. This has made it the center of attention for policy makers in most developing countries such as Africa. Developing economies, particularly Africans face a shortage of investible funds, and there is a strong preference for foreign investment and national savings to fill the gap [1]. Various

classifications have been made of Foreign Direct Investment (FDI). For instance, FDI has been described as investment made so as to acquire a lasting management interest (for instance, 10% of voting stocks) and at least 10% of equity shares in an enterprise operating in another country other than that of investors' country [2, 3, 4]. It can take the form of either "Greenfield" investment also called "mortar and brick" investment or merger and acquisition (M and A), depending on whether the investment involves mainly newly created assets or just a transfer from local to foreign firms. Most investments have taken the form of acquisition of existing assets rather than investment in new assets ("Greenfield"). Mergers and acquisitions have become a popular mode of investment of companies wanting to protect, consolidate and advance their positions by acquiring other companies that will enhance their competitiveness. Mergers and acquisitions are defined as the acquisition of more than 10 percent equity share, involving transfer of ownership from domestic to foreign hands, and do not create new productive facilities. Based on this definition, Mergers and acquisitions raise particular concern for developing countries, such as the extent to which they bring new resources to the economy, the denationalization of domestic firms, employment reduction, loss of technological assets and increased market concentration with implications for the restriction of competition [4].

Foreign Direct Investment can also be defined as the investment of resources in business activities outside a firm's home country [5, 6], and [7] in his own view define Foreign Direct Investment as the long term investment that reflects the objective of a lasting interest and control by a resident entity of one economy (the direct investor) in an enterprise that is resident in another economy (the direct investment enterprise). The lasting interest reflects the continuation of a long-term relationship between the direct investor and the enterprise and a considerable level of influence on the management of the enterprise. According to the above definition, the terms "control" or "influence" and "long term" are used to make a distinction between FDI and international portfolio investment. Because FDI is about both ownership and control and such investments tend to be long term in their focus hence they are different from international portfolio investment (IPF) which is a short term investment where the investor does not seek to control the firm [7]. The OECD's benchmark definition of FDI identifies that FDI's objective is to obtain a lasting interest by a resident entity (direct investor) in one economy other than that of the investor (direct investment enterprise). The lasting interest implies the existence of a long-term relationship between the direct investor and the enterprise and a significant degree of influence on the management of the enterprise. Direct investment involves both the initial transaction between the two entities and all subsequent capital transactions between them and among affiliated enterprise both incorporated and unincorporated [8]. Thus, foreign direct investment

flows represent the expansion of the international activities of Multinational Corporations. [9], defines economic growth as “the process whereby the real per capital income of a country increases over a long period of time”. He states that economic growth is measured by increase in the amount of goods and services in each successive time period. Thus, growth occurs when an economy’s productive capacity increases which in turn is used to produce more goods and services. It is in view of this that foreign direct investment (FDI) has been seen as being potent for growth [10]. According to [11], Economic growth is defined as long-term change in an economy’s productive capacity. The productive capacity of the economy is the output that could be produced if all of the economy’s resources were fully and efficiently employed. The definition links economic growth to rate of growth of potential output which is related to the rate of growth of labour force and of productivity. GDP as a measure of the economic growth like any other economic quantities must be expressed in the real terms. That is, it must have been adjusted for the effects of inflation in order to provide a meaningful measure of growth overtime. The rationale for encouraging or attracting foreign investors to invest in developing countries is to fill the domestic capital formation gap to speed up economic growth which requires certain minimum level of foreign capital [12]. In spite of this, the flow of foreign direct investment (FDI) to developing countries is subject to controls exercised by the host country over the condition of entry of foreign capital, regulations of the operations of foreign capital, restrictions placed on the remittance of profits and the repatriation of capital [13].

In Nigeria, the ability to sustain growth and meet its external obligations depends on adequate inflow of foreign investment resources, given low level of per capital real income, high average and marginal consumption propensities, low savings and restricted new productive capital formation, it is discovered that there exists a gap between the domestically available supply of savings, foreign exchange, government revenue and skills, and planned level of these resources necessary to achieve growth targets [14]. The belief that attracting FDI is the key to bridging the resource gap of low-income countries and avoiding further buildup of debt while directly tackling the causes of poverty has been strengthened by the experiences of a small number of fast-growing East Asian newly industrialized economies (NIEs), and recently China [15]. While our enquiry is about the contribution of FDI inflows to aggregate investment, it should be noted that augmenting investment is not the only way FDI inflows could contribute to economic growth in developing countries. This contribution could come through at least two other channels. First, FDI inflows are generally associated with transfers of technology and managerial skills, and could generate externalities in the form of positive productivity spillovers to domestic enterprises in recipient developing countries. Secondly, FDI inflows could improve the recipient developing countries’

access to global markets and could thus help promote export orientation, which in turn could lead to an acceleration of economic growth, thus relating to the concept of technological and productivity spillover". Some empirical literatures have observed weak support for an exogenous positive relationship between FDI and economic growth because a country's capacity to take advantage of Foreign Direct Investments' externalities might be limited by local conditions such as the development of the local financial markets or the educational level of the country. [16, 17] show that foreign direct investment brings technology which translates into higher growth only when the host country has a minimum threshold of stock of human capital i.e. absorption capacities, just as [18,19] provide evidence that only countries with well-developed financial markets gain significantly from FDI in terms of their growth rates. Also according to the [20], countries that usually attract large amounts of FDI are those with good economic conditions, a certain high level of education, a high level of macroeconomic and political stability, favourable growth prospects and favourable investment environments.

However, in both theoretical and practical terms, there are still divergent views on role of foreign direct investment inflows in enhancing economic growth in a country. Whether FDI inflows are beneficial or otherwise to economic growth, and what governments should do to attract and use FDI inflows effectively are still a subject of controversy among economists [21]. Foreign direct investment FDI is thought to be growth-enhancing mainly through the capital, technology and know-how that it brings into the recipient country. By transferring knowledge, FDI will increase the existing stock of knowledge in the host country through labour training, transfer of skills, and the transfer of new managerial and organisational practice. FDI is also said to promote the use of more advance technologies by domestic firms through capital accumulation in the domestic country [22]. Finally, FDI is thought to open up export markets and to promote domestic investments through the technological Spill-over and the resulting productivity increase. Overall, FDI is thought to be more productive than domestic investments). The question then is whether FDI has a positive effect on the Nigerian economy, and if so, what the governments can do to attract more. Thus, this paper seeks to analyze FDI inflows into Nigeria and to investigate their effect on economic growth. It examines the arguments put forward by both the neoclassical, dependence and the endogenous growth, classical and FDI theories about the effects of FDI inflows on economic growth. This study therefore seek to shed light on the motivations for direct investment in Nigeria and the extent to which FDI contributes to growth, possible policies to pursue in order to encourage higher volumes of FDI and their likely implications for economic growth.

This study has the central objective of exploring issues relating to how FDI can influence Nigeria's economic performance by facilitating the transfer of technology and other associated benefits, while in specific terms; the study is set "to":

- Establish the degree of causality existing between foreign direct investment and economic growth in Nigeria.
- Determine the long-run state relationship between foreign direct investment and economic growth in Nigeria.
- Ascertain if foreign direct investment inflows can contribute significantly to Nigeria's economic growth.

### **Theoretical Literature Review**

The growth effect of foreign direct investment from the theoretical perspective is discussed under the dependency theory, classical theory and the Intervention theory. The Solow growth theory is equally discussed

### **The Dependency Theory**

Early theories on the impact of foreign capital and multinational corporations (MNCs) on host countries can be found in the writings of the dependency school. The influential work of this school of thought includes the ontology of dependency; Karl Marx on development and underdevelopment; Paul Baran's analysis of economic backwardness and economic growth; Andre Gunder Frank's analysis of the development of underdevelopment; and Samir Amin on unequal development [23]. In the words of [24], the dependency theory views foreign direct investment (FDI) from the developed countries, at the center of the world economic system, as harmful to the long-term economic growth of developing nations in the periphery. It believes that the infiltration of peripheral economies by large companies allows them to control resources that would have otherwise been used for national development. It affirms that developed nations become wealthy by extracting labor and material resources from the underdeveloped ones. This kind of capitalism perpetuates a global division of labor that causes distortion, hinders growth, and increases income inequality in developing economies. Dependency theorists are of the view that developing countries are inadequately compensated for their exploited natural resources and are thus subjected to conditions of enduring poverty. In effect, it is difficult for the underdeveloped/developing countries to attain the status of developed countries so long as they remain in the capitalist world system. Hence, for the third World nations to get out of this economically devastating relationship, they must develop independently of foreign capital and goods. While the influence of the dependency theory peaked in the 1970s, debate on its validity continued beyond this decade. For instance, [25], argued that the positive effects of foreign investment inflows on economic growth of the underdeveloped economies are short lived, while accumulated stock of foreign

capital has a long-term retardant effect on economic growth and fosters greater income disparity. [26], however, rejected this claim. He pointed out that studies that found foreign investment harmful to poor nations have focused on the negative relationship between the investment capital stock ratio and the growth of per capita GDP. However, since capital stock is the denominator for the investment rate, the greater the stock, the lower the investment rate. Some commentators such as [27] and [28] among others have either impliedly or explicitly questioned the need for FDI. [29], observed for instance, that multinational corporations are agents of 'global apartheid' responsible for Africa's worsening economic condition, whilst [30], suggests that what Africa needs is 'self-reliance and not FDI reliance'. The above views, which implicitly suggest that FDI is exploitative, find sympathy in the dependency theory of FDI. Drawing from the experience of Latin American countries, proponents of this theory argue that relations of free trade and foreign investment with the industrialized countries are the main causes of underdevelopment and exploitation of developing economies [31, 32, 33, 34]. This theory focuses largely on the relationship between the center and periphery where Well-developed and industrialized countries are deemed to constitute the center and the least developed countries the periphery. In this regard, FDI is seen as a conduit through which the center exploits the periphery and perpetuates the latter's state of underdevelopment and dependence.

#### **The Classical Theory of FDI**

Abridged to its basic form, the classical theory symbolizes a budge from earlier doctrinal objections held by many third world countries on the role played by multinational corporations (MNCs) in their economies. MNCs were viewed as inimical to the economic development of the developing countries. Based on this claim, MNCs were either discriminated against and their role in the host economy severely restricted or limited [35, 36, 37]. The classical theory is of the view that the benefits derivable from FDI are through positive spillovers [38, 39]. Multinational Corporations (MNCs) are an important source of these spillovers through provision of information relating to new technologies, new markets, new customers and management techniques from which domestic firms benefit [40]. This information spillover from MNCs occurs through imitation, competition, linkages and/or training. By imitating the more advanced technologies and managerial skills of multinational corporations (MNCs), and through the movement of highly skilled staff from MNCs to domestic firms, local firms are forced to catch up and become more productive [41]. In addition, the entry of MNCs in local markets increases the level of competition in the domestic market and encourages domestic firms to become more efficient through exposure to best practicrest of the economy.

#### **The Intervention/Integration Theory**

The intervention or integrative paradigm analyzes FDI from the point of view of both the host country and the investor. It blends arguments from both the classical and dependency schools. For this reason, it is sometimes referred to as Middle Path Theory. The theory conjectures that foreign investment must be protected but only to the extent of the benefits it brings the host state and the extent to which foreign investors have behaved as good corporate citizens in promoting the economic and social objectives of the host country [19]. The theory calls for a mixture of intervention and openness in dealing with foreign investment. It supports neither too much openness nor excessive regulation/intervention [20]. The theory recognizes that there are instances where the market is better placed to act and other instances where government intervention is essential. What is needed therefore is a balancing act between those activities that can best be handled by the market and those that can best be done by the government. In many ways, the middle path/integration theory represents a convergence between Adam Smith's case in favor of a laissez-faire approach and Keynes' argument in favor of government intervention in the market. Whilst Adam Smith in his *Wealth of the Nations* believed that except for intervention in providing public works and institutions, the role of the state in the market must be minimized [16, 17], Keynes, who was greatly influenced by the effects of the US Great Depression of the 1930s, strongly believed that government participation in the market was crucial to stimulate the economy. The notion that governments and markets are complements and not substitutes stands in stark contrast to earlier views which held the position that the existence of one required the diminution of the other. In the 1950s and 1960s, the state in many developing countries was the primary player in economic matters. Following the debt crisis of the 1980s, major reforms were introduced which sought to limit and confine the role of government to the provision of public goods such as securing property rights, maintaining macroeconomic stability and providing education and the necessary infrastructure [18,19].

#### **Neoclassical Growth Theory Solow**

One of the theoretical approaches to understanding foreign direct investment is the neoclassical growth theory. [19], attempted to express a growth model into a simple production function and to explore key variables that could provide steady growth rates. In his model, he captures variables determining FDI in growth rates. On the other hand, within the endogenous growth theory, FDI flows may contribute either directly or indirectly to the economic growth of an economy. In the traditional neoclassical growth models by [33], in the late 1950s, showed that the output of an economy grows in response to larger inputs of capital and labour (all physical inputs). Non-economic variables such as human capital or human health variables have no function in these models. Furthermore, the economy under such a model conforms to the law of

diminishing returns to scale. With these assumptions, the neoclassical growth models afford some implications to the economy; particularly, as the capital stock increases, growth of the economy slows down, and to keep the economy growing, it must capitalize from incessant infusions of technological progress. It is well known that this type of mechanism in the neoclassical growth model is neither inherent nor does it strive to explain much.

### Empirical Literature

The empirical evidence on the effect of FDI on economic growth is mixed; some studies found positive effect of FDI on economic growth while some found that FDI has negative effect on economy of the host countries. This suggests that a lot of studies have been done on the relationship between FDI inflows and economic growth and the issue is far from being settled in view of the mixed findings reached. Some of their studies are discussed below.

[6], examined the impact of foreign direct investment (FDI) in Nigeria over the period 1980 to 2010. The study employed multiple regressions analysis using the ordinary least square (OLS) regression technique and the results of the findings revealed that FDI impacted positively on the growth of the Nigeria economy over the period under study. Based on this, the study recommended the provision of adequate infrastructure and policy framework that will be conducive for doing business in Nigeria, so as to attract the inflow of FDI necessary to stimulate growth.

[7], empirically investigated the relationship between foreign direct investment (FDI) and GDP in Nigeria. Using co-integration, Error correction mechanism (ECM), Unit roots techniques for this study analysis, the findings of the study indicated that the main determinants of FDI in Nigeria are market size (proxied by GDP), stable macroeconomic policies and a level of human capital that is tolerable by investors and equally that FDI contributes positively to Nigeria's economic growth since it had a positive and significant relationship with the growth of the whole economy. In other words, trade is very important to growth of the Nigerian economy, and most importantly to the oil sector since the oil industry is producing mainly for export at the moment. From these findings, they therefore asserted that FDI in Nigeria induces the nation's economic growth.

[10], studied the effect of Foreign Direct Investment on the Nigerian economy over the period 1980-2009 investigating whether the following growth determining variables in the economy; Balance on current account (Balance of payment), Inflation and Exchange rate have any effect on FDI. The study equally sought to determine whether Foreign Direct Investment have any effect on Gross Domestic Product (GDP). An econometric

model was developed to investigate the relationships between the aforementioned variables and foreign direct investment. Based on the data analysis it was discovered that foreign direct investments have positive and significant impact on current account balance in Balance of payment. While inflation was seen not to have significant impact on foreign direct investment inflows, exchange rate had positive effect on foreign direct investment. Therefore it is recommended that for Nigeria to attract the desired level of FDI, it must introduce sound economic policies and make the country investor friendly. There must be political stability, sound economic management and well developed infrastructure.

[11], analyzed the impact of foreign direct investment on the economic growth in Nigeria for the period 1970-2010 making use of annual time series data through a neo-classical framework. The findings show that foreign direct investments have positive impact on economic growth in Nigeria and so does domestic investment. The study therefore recommends that for the country to effectively reap the benefits of foreign and domestic investments, its economic planners should create a healthy and enabling business environment that encourages both foreign and local investors, provide incentives for innovation and skills improvement, and contributes to competitive corporate climate.

[12], investigated the impact of foreign direct investment (FDI) flows on economic growth in Nigeria and they found that FDI had a beneficial impact on the economic growth. However they reported that that the extent to which FDI influences the economic growth positively could be limited by human capital. [30], examines the relationship between foreign direct investment (FDI) and economic growth and measuring the gross domestic product (GDP) finds out that gross domestic product causes foreign direct investment and that the contribution of FDI to economic growth is significant.

[33], in his study of the effects of foreign direct investment on economic growth in Nigeria showed that there is a negative relationship between the two variables FDI and GDP. [22], conducted a granger causality test to examine the causal relationship between gross domestic investment and economic growth in Nigeria for the period 1975-1996. The result showed that the relationship between gross domestic investment and economic growth is unidirectional, running from investment to growth. Evidence from the findings gives credence to the crucial role of capital formation in the growth process. [40], examines the possible impact and relationship between Foreign Direct Investment, and Economic Growth in Nigeria 1998-2011 using regression analysis of ordinary Least Square (OLS).The study concluded that there is a positive relationship

between direct foreign investment and gross domestic product (GDP). The result further showed that one naira increase in the value of direct foreign investment (DFI) will lead to N104.749 increase in GDP. The value of co-efficient of determination ( $r^2$ ) is 18.5%, showing that only 18.5% change in GDP has been explained by DFI while the remaining 81.5% is unexplained by the model. This supports a positive relationship between GDP and FDI developing countries since its potential to contribute to economic growth.

[6], using the ordinary least squares and the 2SLS method, estimated an augmented growth model to ascertain the relationship between the FDI, its components and economic growth. It investigated the empirical relationship between non-extractive FDI and economic growth in Nigeria and examined the determinants of FDI into the Nigerian. [7], employed 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 using foreign direct investment, exchange rate and total domestic savings as the explanatory variables. The result showed that foreign direct investment has significant impact on economic growth in Nigeria during the period under study and he therefore concluded that foreign direct investment performs a role in accelerating economic growth in Nigeria. Though the relationship was found to be statistically insignificant, he recommended that government should strive to create a conducive environment for foreign direct investment in Nigeria through fiscal, monetary and general economic policies.

### METHODOLOGY

In line with similar studies on FDI and economic growth especially across countries, the study used a linear regression approach in determining the influence and relationship which FDI has on Nigeria's economic growth. The work looked at Foreign Direct Investment (FDI) and economic growth in relationship with other variable like openness, financial development, government capital and recurrent expenditure. Times series annual data are sourced from Central Bank of Nigeria CBN statistical bulletin for the period of 1980 to 2015.

The Augmented Dickey-Fuller (ADF) and Philip Peron (PP) unit root tests are employed to check if they data are stationary or not, using E-Views 9.0 econometric application package (software). The Co-integration Test is used to determine long run relationship between dependent and independent variables. While the Vector Error Correction Model (VECM) and other diagnostics test will be performed.

### Model Specification

For the purpose of empirical investigation, the methodology of Hassen & Anis (2012) is adopted with little modification. Hassen and Anis empirically tested for long-run relationship between foreign direct investment (FDI) and economic growth in Tunisia. They used gross domestic product GDP as dependent variable and foreign direct

investment (FDI), human capital development (proxied by secondary school enrolment), trade openness (Open) and financial development (DF) as independent variable to develop their functional notation:

$$GDP = F (FDI, SEC, OPEN, DF) \quad 1$$

In response to the critical role played by domestic environment and country specificity in choice of variables, we effected slight adjustment to the above model by expunging human capital development index as proxied by Secondary School enrolment (Sec) and replacing it with government expenditure which is a critical variable in any growth model. This brings the functional notation for this study to:

$$GDP = F (FDI, GEX, OPEN, DF) \quad 2$$

On the above note, and for the purpose of estimation, we linearize the above functional notation as follows:

$$GDP_t = a_0 + a_1 FDI_t + a_2 GEX_t + a_3 OPEN_t + a_4 DF_t + \varepsilon_t \quad 3$$

To reap the benefits of long linear equations of obtaining point elasticity rather than estimates, we transform equation (1) above to:

$$LGDP_t = a_0 + a_1 LFDI_t + a_2 LGEX_t + a_3 OPEN_t + a_4 DF_t + \varepsilon_t \quad 4$$

Where;

GDP = Real GDP (GDP divided by consumer price index), FDI = foreign direct investment, GEX =, government expenditure (capital and recurrent expenditure), OPEN = total trade (import + export of goods and services) DF = Financial development (money supply ( $M_2$ )), L = natural logarithms,  $a_0$  = intercept of the equation,  $a_1, \dots, a_4$  = explanatory powers of the variables and 't' reflects time trends.

$$LGDP_t = a_0 + a_1 LFDI_t + a_2 LGE_t + a_3 OPEN_t + a_4 LDI_t + \varepsilon_t \quad 5$$

### A priori expectation

With the model specified, the a priori expectations are to be considered and hence, the need to take into cognizance the expected signs borne by the parameters' estimate. The sign expected to be borne by FDI estimate is positive. In this form, any increase in FDI is expected to bring about increase in GDP. Thus, there is a positive relation between GDP and FDI. Also it is expected that increase in government expenditure will lead increase in activities in the economy and this will lead to increase in economic growth thus a positive relationship is expected between GDP and GE. Also it expects a direct relationship between the Openness (OPEN) and economic growth proxied by the country's GDP.

### Data Sources

The analysis covers time series data spanning across 1981-2015, and sourced from Central Bank (CBN) statistical bulletin, volume, 26 (2015).

### Results and discussion

#### Summary Statistics of Variables employed for the Study

This is intended to provide the preliminary test on the observed economic variables to enable the researcher express opinion on the nature of innovations in each of the employed data series. The data on RGDP, FDI, GEX, OPEN and DF for the period of 1980-2012 in Nigeria are presented in tables below as their means, median and standard deviations (SD).

**Table: 1 Summary of descriptive Statistics of Variables employed for the Study**

Variables	Details	Mean	Median	SD
LRGDP	Real Gross Domestic Product	10.194	10.014	0.520
LFDI	Foreign Direct Investment	3.163	4.391	2.396
LGEX	Government Expenditure	5.805	6.188	2.195
OPEN	Trade Openness	-3.215	-2.393	2.146
DF	Financial Development	2.80	2.809	0.307

*Source: Author's calculation based on data from CBN Statistical Bulletin, 2015*

The concept of mean is the sum of a collection of numbers divided by the number of numbers in the collection (i.e.  $\Sigma fx/N$ ). The collection is often a set of results of an experiment, or a set of results from a sample. Thus, this refers to a central value of a discrete set of numbers: specifically, the sum of the values divided by the numbers of values. Therefore, considering the variables; LGDP, LFDI, LGEX, OPEN and DF, with their means as contained inside the table above. These scores indicate the central value of the data of each variable specified in the model which also should be regarded as the averages of the considered variables. Gross Domestic Product (LGDP) has the highest mean value with the mean value of 10.19 percent followed by Government expenditure (GEX) while trade openness (OPEN) has the lowest mean value.

The median is the numerical value separating the higher half of a data sample or a population from the lower half. It is therefore the middle value in the list of numbers. To find the median, the numbers have to be listed in numerical order. Thus, median for grouped data is more accurately found by using the formula;  $Me = x_{m_e} + i_{m_e} \frac{1/2\Sigma f_{m_e} - 1/f_{m_e}}$ . With the aid of the econometric software employed (E-views 9), the median during this period of study for the variables are as presented in the table.

The standard deviations ( $S^2$ ) of a data set show how much variation or dispersion exists from their mean. A low standard deviation indicates that the data points tend to be very close to the mean; a high standard deviation indicates that the data points are spread out over a large range of values. Because of the operation of squaring, the variance is expressed in square units rather than in the original unit. Thus, it becomes necessary, therefore, to extract the square root restore the original unit. Hence the standard deviation could be defined as the positive square root of the variance. The values for

the standard deviation imply that there are no outliers among the time series data of the variables.

### Unit Root Test

An implicit assumptions that underlie regression analysis involving time series data is that such a data series is stationary [13]. In this context, testing for stationarity or otherwise of the employed data sets becomes of essence in this analysis. Stationarity means that the marginal distribution of the process does not change with time. Otherwise stated, implies that the mean and the variance of the time series data stay the same over time. So anything that violet it will be deemed non-stationarity. It is common for time series variables to demonstrate signs of non-stationary. This typically suggests that both the conditional means and variances of macroeconomic variables trend upwards over time [16]. On this note we explicitly text for presence of non-stationarity, both as a first step in exploring the characteristics of the employed data, and for the fact that the manifestation of such non-stationarity often has significant econometric implications. Augmented Dickey-Fuller (ADF) formular was employed to test for the existence of unit roots in the data using trend and intercept. The test results are presented in table 2 below:

**Table 2: Augmented Dickey Fuller Unit Root Test**

Intercept @ 1<sup>st</sup> difference

Series	ADF Test Statsitcs (Level)	ADF Test Statistic (1 <sup>st</sup> Difference)	5% critical values	Order	Remarks
LRGDP	-2.219403	-3.602984	-3.552973	1(1)	Stationary
LFDI	-2.857101	-8.028083	-3.552973	1(1)	Stationary
LGEX	-0.794663	-7.305526	-3.552973	1(1)	Stationary
OPEN	-0.825431	-6.643009	-3.552973	1(1)	Stationary
DF	<b>-2.229306</b>	<b>-5.383128</b>	<b>-3.552973</b>	1(1)	Stationary

Sources: Researchers' compilation from E-view (version 9.0)

The above empirical test shows that none of the variables (LRGDP, LFDI, LGEX, OPEN and DF) are not stationary at level since their ADF test statistics are less than their critical values. However, all the variables are stationary at first difference with ADF test. Considering the time series using Augmented-Dickey Fuller at Trend & Intercept and Intercept, all their calculated statistics are greater than the critical values at 5% level of significance. The results show that the time series are integrated of the same order; I (1), with the application of ADF Test. Thus, a linear combination of series integrated of the same order are said to be co-integrated. On the basis of the above unit root tests, the researcher then employed the Johansen (1988&1999) and Johansen and Juselius (1990, 1992, and 1994) cointegration test.

### Co-integration Test

With manifestation of non-stationarity among the variables, which the precondition for the existence of a stable linear steady-state relationship the trace test the cointegration test provides an analytical statistical framework for ascertaining the long run relationship between the variables. The summary of the Johansen Co-integration Test is shown in the Table below. The model with lag 1 was chosen with the linear deterministic test assumption.

**Table 3: Johansen co-integration test for the series; LRGDP, LFDI, LGEX, OPEN and DF**

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.721894	82.76462	69.81889	0.0033
At most 1	0.494426	41.81249	47.85613	0.1640
At most 2	0.313890	19.98654	29.79707	0.4238
At most 3	0.183364	7.931565	15.49471	0.4727
At most 4	0.044289	1.449576	3.841466	0.2286

Sources: Researchers' compilation from E-view (version 9.0)

In order to find out the type of relationship that exist between the LRGDP and the explanatory variables; LFDI, LGEX, OPEN and DF, using the Johansen Co-integration Test, there is one co-integrating equation. Under the Johansen cointegration test, Cointegration is said to exist if the values of computed Eigen values are significantly different from zero or if the trace statistics is greater than the critical value at 5 percent level of significance. The results of the cointegration in the table above indicates one cointegrated equation since trace statistics is greater than the critical value at 5 percent level of significance in only one of the hypothesized equations. In other words, the null hypothesis of no co-integration among the variables is rejected since at least one variable in the four equations at 5% were statistically significant. The test result shows the existence of a long-run equilibrium relationship among the variables.

From the normalized co-integrating adjusted coefficients it was found that there exists for one co-integrating equation given by the long-run relationship is given as show:

$$\text{LRGDP} = 0.430854\text{LFDI} - 0.876603\text{GEX} + 0.222318\text{OPEN} + 1.303992\text{DF}$$

The signs borne by the coefficient estimate of variables are positive except the coefficient of OPEN. The positive sign borne by LFDI shows that in the long run, foreign direct investment will impact of the economic growth of Nigeria positively. The above equation represents the normalized cointegration coefficient 1 counteration long run equations, the result of this equation shows how the independent variables relate with that of dependent variable. From the results, it indicates that there exist a long run positive relationship between foreign direct investment (FDI), government expenditure

(GEX), financial development (DF) while a negative long run relationship exist between the trade openness (OPEN) and the dependent variable, Gross Domestic Product (GDP). However, the results show the direction and strength of relationship between the explanatory variables and dependent variables in long run. With the identification of a cointegrating equation among the variables employed for estimation, vector error correction model VECM estimation presents the only option for predicting the dynamic behavior of the economy (GDP) in response to inflow of FDI adjustments.

#### Vector Error Correction Model (VECM)

The choice of VECM for the study is informed by the fact that it has cointegrating relation built into the specification so that it restricts the long run behaving endogenous variables to converge to their cointegration relationship while allowing for short run adjustment dynamics. The result of VECM is presented in table 4 below:

**Table 4: Vector Error Correction Mechanism (VECM)**

Cointegrating Eq:	CointEq1	
LRGDP(-1)	1.000000	
LFDI(-1)	1.206245	
LGEX(-1)	-1.700058	
OPEN(-1)	0.180873	
DF(-1)	4.100727	
C	-15.05957	
Error Correction:	D(LRGDP)	P-VALUE
CointEq1	0.006966	0.2991
D(LRGDP(-1))	0.492894	0.0034
D(LFDI(-1))	0.000701	0.9204
D(LGEX(-1))	-0.016693	0.6031
D(OPEN(-1))	0.044012	0.0601
D(DF(-1))	0.062672	0.1408
C	0.019326	0.0811
R-squared	0.419477	
Adj. R-squared	0.285510	
F-statistic	3.131202	

**Source: Researcher's compilation from VECM using E-view (version 9.0)**

Table 6 above shows the result of VECM which specified Real Gross Domestic Product (LRGDP) as a function of the following variables: Foreign Direct Investment (LFDI), Government Expenditure (LGEX), Trade Openness (OPEN) and Financial Development (DF). The coefficient of the constant term is positive implying that at zero performance of the independent variables used, Real Gross Domestic Product (LRGDP) will stand at 0.02 units. The coefficients of LRGDP (-1) is 0.49. This implies that a percentage change in a year period lagged of LRGDP will bring about increase in LRGDP by 49 percent. Similarly, The coefficients of LFDI (-1) is 0.0007 implying that a percentage change in a year period lagged of FDI will bring about a 0.207 percent change in LRGDP. Hence FDI has a positive relationship with LRGDP for the period under review. The coefficients of LGEX (-1) is -0.0167. This entails that an increase in a year period lag of LGEX will result

to a 2 percent decrease in LR GDP. The coefficients of OPEN (-1) is 0.044 indicating that LR GDP changes 13 percent as a result of a change in the level of openness of the economy when lagged one year. Finally, financial development when lagged by one period has a coefficient of 0.062 showing a positive relationship with LR GDP. Hence, a percentage change in the level of financial development when lagged by one year will bring about a 6 percent change in LR GDP. The implication of the result obtained above is that Nigeria's RGDP increases as a result of an increase in foreign direct investment (FDI), openness of the economy (OPEN) and financial development (DF), thereby conforming with a priori expectation while on the contrary, RGDP decreases as a result of an increase in government expenditure (GEX).

The above result indicates that the  $R^2$  is 0.419 which shows that the explanatory variables explain about 42% of the total variations in RGDP during the period of the study. The coefficient of VECM is 0.007. It is observed from the positive sign of the VECM that there will be no correction of any deviations from long-run equilibrium relationship between RGDP and the explanatory variables. This implies that following short-run disequilibrium, no adjustment to the long - run will take place within one year.

To determine whether the estimated parameters are statistically significant or not, we consider the estimated p-values gotten from the system equation and placed along side the VECM estimate. A look at the probability values of the estimated parameters reveals that it is only the coefficients RGDP (-1) with p-value of 0.0034 that is significant at 5% level of significance since its probability value is less than 0.05 while others are not statistically significant. This could be as a result of some specific conditions that characterize the Nigerian market and the entire economy such as poor infrastructural facilities, inadequate and costly telecommunication services, frequent disruptions in power supply, inadequate water supply and poorly maintained network road, corruption and inconsistent polics and regulation which tend to hamper the benefits of FDI on its economic growth. This is complimented by the fact that the economy depends so much on imported goods and services which had adversely affected it.

### **Test of Hypothesis**

#### **Hypothesis One**

$H_0$ : There exist no significant casual relationship between foreign direct investment (FDI) and economic growth in Nigeria.

Granger Causality test is applied to examine if there is causal relationship between foreign direct investment (FDI) and economic growth in Nigeria between the periods of 1981 to 2015.

**Table 5: Granger Causality Test**

Null Hypothesis:	Obs	F-Statistic	Prob.
LFDI does not Granger Cause LRGDP	34	4.46152	0.0428
LRGDP does not Granger Cause LFDI		1.70469	0.2013

Source: Researcher's compilation using E-view (9.0 Version)

The hypothesis of no causal relationship between FDI and RGDP are tested at 5 percent level of significance. From table 5 above, the null hypothesis that LFDI does not granger cause RGDP is rejected since the P-values LFDI=>LRGDP, [0.0428] is less than 0.05 and the null hypothesis that LRGDP does not granger cause LFDI is accepted since the p-value for LRGDP=>LFDI [0.2013] is greater than 0.05. However this shows that LFDI granger causes LRGDP while LRGDP does not granger cause LFDI. Hence, there is evidence of a unidirectional causality running from foreign direct investment (FDI) to economic growth (RGDP) in Nigeria within the period of study.

#### Hypotheses II

$H_0$ : There is no long-run relationship between foreign direct investment (FDI) and economic growth in Nigeria.

The cointegration test was employed to investigate the extent to which long-run equilibrium relationship exists between foreign direct investments (FDI) and economic growth in Nigeria. Using the result from the test of the null hypothesis of no co-integrating equation ( $r = 0$ ) among the five variables of LGDP, LFDI, LGEX, OPEN and DF, the trace test indicates 1 co-integrating vector ( $r=1$ ). This means that existence of long run equilibrium relationship between the explained and the explanatory variables cannot be rejected in Nigeria within the period; 1981-2015. The test result shows the existence of a long-run equilibrium relationship among the variables.

#### Hypotheses III

$H_0$ : Increased levels of foreign direct investment (FDI) inflows do not have significant impact on economic growth in Nigeria.

To test for this hypothesis, we take a look at the relationship between foreign direct investment (FDI) and economic growth (GDP) as observed in the first panel of the VECM result presented in table 3. From the result obtained, a percentage change in a year period lagged of LFDI will bring about a 0.2 percent change in LRGDP. Hence FDI has a positive relationship with LRGDP for the period under review. However, the obtained result is not statistically significant as confirmed by its P-value. Hence, changes in FDI do not significantly explain the increased variations in RGDP which have been witnessed in the past years. This could be attributed to the high cost of doing business in Nigeria

caused by poor infrastructural development which is most evident and most pronounced in epileptic power supply and poor road network which had consistently increased the operating cost of foreign firms domiciled in the country. Similarly, consistent instability and insecurity in the country is equally another factor which could have hindered the inflow of foreign direct investment from translating into meaningful economic growth and development for the country. Judging by this, the null hypothesis that foreign direct investment inflows in Nigeria do not impact significantly on Nigerian economic growth is therefore accepted.

### Conclusion and Recommendations

This study has employed some statistical and econometric techniques to examine impact of foreign direct investment on economic growth in Nigeria. Part of the findings of the study reveals a granger-causality between each pair of the variables considered. The results show that foreign direct investment has a long-run equilibrium relationship with economic growth within the period under study. The study also found that though FDI may impact on growth, its increased levels of inflows do not significantly impact on economic growth in Nigeria. The intuition behind this results lies on the catalytic roles, domestic investment and exports play in propelling real growth in the Nigerian economy. By implication, the results established that this may be a just transfer of resources from domestic to foreign residents with no resulting impact on domestic productivity via spillovers. Following this path, the link between FDI and economic growth in Nigeria is very weak due to economic crisis resulting from insecurity challenges, and inconsistencies in government policies etc.

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## DATA SOURCE: CBN STATISTICAL BULLETIN

YEAR	RGDP (₦Billion)	FDI (₦Billion)	GEX (₦Billion)	OPEN (RATIO)	DF (RATIO)
1981	15,258.00	0.3	11.41	0.001564	15.3
1982	14,985.08	0.3	11.92	0.001266	15.6
1983	13,849.73	0.3	9.64	0.001185	16.1
1984	13,779.26	0.4	9.93	0.00118	17.3
1985	14,953.91	0.4	13.04	0.001256	16.6
1986	15,237.99	0.7	16.22	0.000978	17.7
1987	15,263.93	2.5	22.02	0.003159	14.3
1988	16,215.37	1.7	27.75	0.003246	14.6
1989	17,294.68	13.9	41.03	0.005136	12.0
1990	19,305.63	4.7	60.27	0.00806	11.2
1991	19,199.06	7.0	66.58	0.010991	13.8
1992	19,620.19	14.5	92.80	0.017776	12.7
1993	19,927.99	29.7	191.23	0.019289	15.2
1994	19,979.12	22.2	160.89	0.018462	16.5
1995	20,353.20	76.0	248.77	0.083809	9.9
1996	21,177.92	111.3	337.22	0.088402	8.6
1997	21,789.10	110.5	428.22	0.095799	9.9
1998	22,332.87	80.7	487.11	0.071163	12.2
1999	22,449.41	92.8	947.69	0.091383	13.4
2000	23,688.28	116.0	701.06	0.123721	13.1
2001	25,267.54	132.4	1,018.03	0.127679	18.4
2002	28,957.71	225.2	1,018.16	0.11247	19.3
2003	31,709.45	258.4	1,225.97	0.162984	19.7
2004	35,020.55	248.2	1,426.20	0.18817	18.7
2005	37,474.95	1.9	1,822.10	0.26811	18.1
2006	39,995.50	41.1	1,938.00	0.260859	20.5
2007	42,922.41	109.2	2,450.90	0.28474	24.8
2008	46,012.52	124.6	3,240.82	0.347316	33.0
2009	49,856.10	227.1	3,452.99	0.282553	38.0
2010	54,612.26	137.0	4,194.58	0.369431	20.2
2011	57,511.04	125.7	4,712.06	0.45613	19.3
2012	59,929.89	241.0	4,605.39	0.415584	19.4
2013	63,218.72	193.1	5,185.32	0.39073	18.9
2014	67,152.79	253.9	4,587.39	0.349937	19.9
2015	69,023.93	282.0	4,988.86	0.288613	20.1