Causality and Dynamics of Foreign Direct Investment and Economic Growth in Nigeria: An Impulse Response Function Analysis

God'stime Osekhebhen Eigbiremolen
Department of Economics, University of Nigeria, Nsukka
E-mail: eigbiremolen@gmail.com

Abstract

This study, using the impulse response function (IRF) analysis and the Granger causality test, empirically examines the simultaneous interactions and responses to innovations or shocks between foreign direct investment (FDI) and real gross domestic product (RGDP) as well as the nature of causality between them. Annual time series data from 1970-2012 were employed in the analysis. The Johansen cointegration test identifies one cointegrating vector among the two core variables of interest. The impulse response function analysis reveals that economic growth responds positively to a one standard deviation positive shock to FDI, depicting a positive relationship. However, the accretion in economic growth exhibits a fluctuating or up-and-down trend all through the periods under consideration. Also, a one standard deviation positive innovation to economic growth causes FDI to increase, showing a positive relationship as well. On the other hand, the granger causality test result shows a unidirectional causal relationship between FDI and economic growth, with the former causing the latter. Therefore, practical policies and programmes that would help to maximize existing foreign investment so as to achieve a stable and steady economic growth which in turn would attract more foreign investment into the Nigeria economy should be urgently embark upon by the government and policy makers.

Key words: Economic growth, foreign direct investment, impulse response, granger causality.

1.0   Introduction

Faced with insufficient resources to finance long-term development in Africa and with poverty reduction and other Millennium Development Goals (MDGs) looking increasingly difficult to accomplish by 2015, the issue of attracting foreign direct investment (FDI) has assumed a prominent place in the strategies of economic renewal being advocated by policy makers at the national, regional and international levels (UNCTAD, 2005). In many economies of the world, Nigeria being a good example, private domestic investment has proven to be inadequate in providing the economy the required push to enable it meets its economic growth target because of the mismatch between their capital requirements and savings capacity. Foreign direct investment, thus, augments domestic resources to enable the country carry out effectively her growth and development programmes and raise the standard of living of her people. Since the 1980s, flows of investment have increased dramatically the world over. Despite the increased flow of investment to developing countries in particular, Sub-Sahara African (SSA) countries are still characterized by low per capita income, high unemployment rates and low and falling standard of living, problems which foreign domestic investment are theoretically supposed to checkmate (Osinubi and Amaghionyeodiwe, 2010). According to Adegbite and Ayadi (2010), FDI helps fill the domestic revenue-generation gap in a developing economy, given that most developing countries' governments do not seem to be able to generate sufficient revenue to meet their expenditure needs. FDI is expected to contribute to economic growth not only by providing foreign capital but also by crowding in additional domestic investment. By promoting both forward and backward linkages with the domestic economy, additional employment is indirectly created and further economic activity stimulated (Jenkin & Thomas 2002) in Erhieyovwe and Jimoh (2012).

2.0   Background of the Study

From 1970-1990, Nigeria accounted for 30% of FDI inflow to Africa; this was largely as a result of its oil attractiveness (UNCTAD, 1999). However, in 2007 in spite of the oil boom, Nigeria accounted for only about 16% of total FDI inflow to Africa. It's most important role in terms of attracting FDI started dwindling due to the surge of FDI to other oil-rich countries, such as Angola and Sudan. Another factor is the improved FDI

performance of other large African countries such as Egypt and South Africa which are successful in attracting FDI in various sectors of their economies (Ibi-Ajayi, 2006). The United Nation Conference on Trade and Development (UNCTAD) World Investment Report in 2007 shows that FDI inflow to West Africa was dominated by inflow to Nigeria which received 70% of the sub-regional total inflow and 11% of Africa's total inflow. Out of this, Nigeria's oil sector alone receives 90%. Foreign Direct Investment inflows to Nigeria dropped considerably between 2009 and 2010 by $3.7bn from $6bn in 2009 to $2.3bn in 2010 (UNCTAD, 1999, 2006, 2007). This immense fall of 60.4 percent shows the need for Nigerian government to begin to rigorously and courageously address the challenges to foreign investment and other business interests in the country. The UNCTAD report noted that investment inflow into Nigeria and the rest of Africa increased substantially in 2008 but declined significantly in 2009. In spite of economic reforms by the government, no appreciable improvement was made. Insecurity in the land is a likely primary factor responsible for the sharp decline. This is a true reflection of Nigeria's economic, social, legal and cultural environment which raises several questions and anxiety from prospective foreign investors.

Recently, the government of Nigeria has however taken some giant stride in ameliorating the insecurity situation in the country. The "Boko Haram" insurgence which started since 2009 in Nigeria is receiving coordinated attention from the governments. The relative peace presently enjoyed in the Niger Delta region of Nigeria brought about by the amnesty and post-amnesty programs is worthy of note. This has improved the macroeconomic environments in the oil sector. The ongoing reforms in the financial sector as well as government commitment to tackle the challenge of inadequate power supply are other sources of encouragement. There seemed to be some renewed confidence in investing in the country (Kareem, Kari, Alam, Chukwu and David, 2012). FDI as a parentage of gross domestic product (GDP) in Nigeria from 1976-2011 is summarized in table I below.

Table I: FDI as a percentage of Gross Domestic Product (1976-2011)

Year	1976	1977	1978	1979	1880	1981	1982	1983	1984
FDI (as % of GDP)	0.93	1.22	0.58	0.66	-1.15	0.91	0.87	1.04	0.67
Year	1985	1986	1987	1988	1989	1990	1991	1992	1993
FDI (as % of GDP)	1.71	0.96	2.60	1.66	7.90	2.06	2.61	2.74	6.30
Year	1994	1995	1996	1997	1998	1999	2000	2001	2002
FDI (as % of GDP)	8.28	3.84	4.51	4.25	3.27	2.89	2.48	2.48	3.17
Year	2003	2004	2005	2006	2007	2008	2009	2010	2011
FDI (as % of GDP)	2.96	2.13	4.44	3.34	3.64	3.96	5.07	2.65	3.62

Sources: International Monetary Fund, Balance of Payments database, supplemented by data from the United Nation Conference on Trade and Development.

The essence of this study is to critically evaluate the simultaneous interactions and responses to innovations or shocks between foreign direct investment and real gross domestic product (a proxy for economic growth) in Nigeria as well to examine the direction of causality between them. For other researchers, this study will spur them into further research in this area. At the individual level, this study would enable people to understand and appreciate the interactive nature of FDI and economic growth in Nigeria. For the government, it would provide a framework for policy formulation and implementation. Above all, this study would add to the existing stock of literature and bridge the gap in knowledge, especially in understanding and appreciating how FDI and economic growth simultaneously interact and transfer shocks between each other since most of the previous studies in Nigeria have basically focused on impact analysis which does not really trace out changes or effect over time simultaneously. Annual time series data from 1970-2012 sourced from the Central Bank of Nigeria (CBN) Statistical Bulletin would be employed in this study. The rest of the study is outlined as follows – section three reviews various related literature, section four discusses the methodology, section five presents the data analysis and interpretation of findings and section six provides conclusion and recommendations.

3.0   Review of Literature

A number of studies, both in Nigeria and in the international scene, have been carried out to examine the relationship between FDI and economic growth. Majority of such studies seems to lack consensus on the impact

FDI has on economic growth as well as the direction of causality that exists between them. Provided below is a review of some of the empirical literature.

Onakoya (2012) investigated the impact of Foreign Direct Investment (FDI) on economic growth in Nigeria. The research developed a structural macro-econometric model consisting of four blocks made up of supply, private demand, government and external sectors. The model deploys 18 simultaneous equations and 100 variables to capture the required proxies. The research adopted a three-stage least squares (3SLS) technique and macro-econometric model of simultaneous equations to capture the disaggregated impact of FDI on the different sectors of the economy and the inter-linkages amongst the sectors in order to give better insight into the variations inherent therein. The finding shows that FDI has a significant impact on output of the economy but that the growth effects of FDI differ across sectors. The paper recommends sector-specific policies, enhanced trade openness, import substitution development strategy incentives to existing investors, and potential overseas investors so as to enhance the development of the country.

HarunaDanja (2012) studied foreign direct investment and the Nigerian economy, collecting data for the period of more than 30 years. For analyzing the data, both econometric and statistical methods were applied. In order to evaluate the relationship between FDI and major economic indicators such as GDP, IIP and GFCF, ordinary least square was used. The model reveals a positive relationship between FDI and those variables but FDI has not contribute much to the growth and development of the Nigerian economy and was evidence due to repatriation of profits, contract fees, and interest payment on foreign loans. The study therefore recommends human capacity building, infrastructural facilities and strategic policies to attract FDI inflow.

Ahmed and Mayowa (2012) examined the determinants and impact of FDI in Nigeria from 1970 through 2009. The study utilized the Vector Error Correction Model (VECM) to examine the issue. Granger causality methodology was used to analyze and establish the nature of relationship (if any) between FDI and its determinants on one side and economic development on the other. Our empirical analysis reveals that macroeconomic variables (exchange rate, interest rate, inflation) and openness of the economy are among the major and important factors that determine the inflow of FDI into Nigeria during these periods. The GDP and government size exhibited positive but insignificant influence on FDI. The analysis revealed the presence of a long-run equilibrium relationship between FDI and GDP, but FDI does not have any significant effect on the growth as well as the development of Nigeria economy during this period. The study therefore recommends that government should ensure stable macroeconomic policies (as motivating factor for the attraction of FDI into Nigeria) and also increase its expenditure in the area of infrastructural development as ways to accelerate the growth of Nigerian economy which will reduce the excessive dependence of Nigeria on FDI.

Kareem, Kari, Alam, Chukwu and Oke (2012) investigated the impacts of Foreign Direct Investment in oil sector in Nigeria and its attendant impact on economic growth. The co-integration analysis was employed for the study. The results showed that Foreign Direct Investment at current year is negatively associated with GDP possibly due to the fact that such investment needed to be allowed some time lag to translate to any significant impact. The impact of domestic capital formation is relatively small compared with the impact of Foreign Direct Investment in the oil sector. This is a further evidence of the dominant role of foreign investors in the oil sector of the country. Therefore, addressing problems related to security, corruption, inadequate infrastructure and inconsistent regulations remains the key elements of Nigeria's future challenge of attracting more efficiency-seeking Foreign Direct Investment that can promote her economic growth. The Foreign direct investment is significant to the expectations of improvement of Nigeria's economy, as it is a way of growing the capital existing for savings. And the economic growth required lessens deficiency and elevate standards of living.

Oyatoye, Arogundade, Adebisi and Oluwakayode (2011) evaluated the possible` impact and relationship between Foreign Direct Investment, and Economic Growth in Nigeria. Data used for this study were sourced from annual accounts and statistical bulletin of the Central Bank of Nigeria (CBN). The scope covers a period of 20 years (1987 – 2006) both years inclusive. Regression analysis of ordinary Least Square ((OLS) was used in analyzing the data. 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 DFI.

Osinubi and Amaghionyeodiwe (2010) analyzed the direction and significance of the effect of foreign private investment on economic growth in Nigeria. Secondary data for the period 1970 to 2005 was used for the study.

Among the findings was that Foreign Private Investment, Domestic Investment growth and Net Export growth were positively related to economic growth in Nigeria. More so, the Foreign Private Investment, Domestic Investment growth, Net export growth and the lagged error term were statistically significant in explaining variations in Nigeria's economic growth.

Edoumiekumo (2009) examines the causal relationship between foreign direct investment (FDI) and economic growth, measured by the gross domestic product (GDP). Augmented Dickey-Fuller (ADF) test was used for the unit root test, Johansen Cointegration test was conducted to establish short and long run relationship between the two variables, ordinary least square (OLS) statistical technique was used to assess the degree of influence the variables have on each other. Finally, Granger causality was used test to study the direction of causality between the two variables. These techniques were applied on time series data obtained from the Central Bank of Nigeria for a period of 37 years (1970-2007). The conventional view which suggests that the direction of causality runs from FDI to economic growth is true in Nigeria. Empirical findings clearly suggest that GDP causes FDI in Nigeria and vice versa. The contribution of FDI to economic growth is significant.

Sefiya (2007) evaluated foreign direct investment as a strategy for sustainable economic growth in Nigeria. This study shows that dependency theory is limited by its failure to account for the fact that many developing economies of the world that depended on FDI have grown faster than ever before due to more FDI net flow. This study utilizes primary data obtained through the use of questionnaires and personal interviews as well as data obtained from World Investment Annual Reports and Account Books, NIPC and CBN publications and other related literatures to provide a working guide for analytical discussions. The study shows that there are strong indications that the Nigerian economy is desirous of FDI and have joined the team of developing nations that are strategizing its systems for effective attraction of FDI. It also shows that there are constraints to the attraction of FDI which needs to be addressed before meaningful progress can be made. These constraints are being managed by the leading investment promotion outfit of the country, the Nigerian Investment Promotion Commission.

4.0   Methodology

In order to capture the simultaneous interactions and responses to innovations or shocks between foreign direct investment and real gross domestic product (a proxy for economic growth), this study will use the Vector Autoregressive (VAR) model pioneered by Sims (1980) and more specifically, the impulse response function (IRF) analysis. Therefore, the model is specified thus:

$$y_t = c + \phi_i y_{t-1} \ldots\ldots\ldots\ldots\ldots\ldots\ldots + \phi_k y_{t-p} + \mu_t \qquad (1)$$

Where $y_t = (y_{1t}\ldots\ldots\ldots y_{kt})$ represent an (n x 1) of time series variables and μ_t is an (n x 1) unobservable zero mean white noise vector process (serially uncorrelated or independent) with time invariant covariance matrix.

Equation 1 can be summarized as:

$$y_t = c + \sum_{i=0}^{p} \phi_i y_{t-1} + \mu_t \qquad (2)$$

Where;

y_t is a (2 x 1) vector of observations at time t on the economic variables under consideration. C = $(c_1,\ldots\ldots c_2)$ is the (2x1) intercept vector of VAR. ϕ_1 is a sequence of (2×2) matrix of autoregressive coefficients for I = 1, 2,... p and $\mu_t = (\mu_{1t},\ldots., \mu_{3t})$ is the (2×1) generalization of a white noise process or vector of disturbances to the system.

It is assumed here that the dynamic behavior of y_t is governed by the following structural model:
B (L) = y = c + μ_t (3)

Where, B (L) is a 2nd order matrix polynomials in the lag operator L such that:

$$B\ (L) = B_0 - B_1 L - B_2 L^2 \tag{4}$$

B_0 is a normalized non-singular matrix and it summarizes the contemporaneous relationship between the variables contained in the vector y_t. Also, μ_t is a vector of structural disturbances and is t serially uncorrelated.

To check for the direction of causality between FDI and RGDP, the granger causality test will be employed. The granger causality test is stated thus:

$$FDI_t = \sum_{i=1}^{n} \alpha_i RGDP_{t-i} + \sum_{j=1}^{n} \beta_j FDI_{t-j} + U_{1t} \tag{5}$$

$$RGDP_t = \sum_{i=1}^{n} \lambda_i RGDP_{t-i} + \sum_{j=1}^{n} \delta_j FDI_{t-j} + U_{2t} \tag{6}$$

Where; FDI = Foreign direct investment; RGDP = Real gross domestic product and U_{1t} and U_{2t} are assumed be uncorrelated.

5.0 Data Analysis and Interpretation

5.1 Stationarity Test: A stationary test was carried out in order not to run a spurious regression. The Augmented Dickey-Fuller (ADF) test was used for this analysis since it adjusts for serial correlation. The test was done with the following hypothesis:
Null hypothesis (H_0): Variable contains unit root and hence is non-stationary.
Alternative hypothesis (H_A): Variable does not contain unit root and hence is stationary.

Decision rule: If the calculated ADF Test statistic is greater than the MacKinnon critical values (both in absolute term) at the chosen level of significance, reject the null hypothesis of non-statonarity and accept the alternative hypothesis of stationarity, otherwise do not the null hypothesis of non-stationarity. The result is summarized in table II below.

Table II: Adf Test Statistics

Variable	Adf Test Statistics	5% critical value	Order of integration
FDI	-11.01663	-2.935001	Stationary at first difference
RGDP	-5.131577	-2.935001	Stationary at first difference

The result from table II above reveals that FDI and RGDP are both integrated at order 1 or stationary at first difference. This result implies that first differencing is sufficient in modeling in this study.

5.2 Cointegration Analysis

Economically speaking, two variables will be cointegrated if they have a long-run or an equilibrium relationship between them (Gujarati, 2004:822). The Johansen (1991) 2 likelihood ration test statistics, the trace and maximal eigenvalue test statistics, were utilized to determine the number of cointegrating vectors. The decision rule is to reject the null hypothesis if the probability (P value) is less than 5% (0.05). Otherwise, we do not reject. The result is summarized in the tables III and IV below.

Table III: Johansen Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistics	0.05 Critical Value	Prob.**
None *	0.476385	21.48113	15.49471	0.0055
At most 1	0.023994	0.777162	3.841466	0.3780

* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Table IV: Johansen Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistics	0.05 Critical Value	Prob.**
None *	0.476385	20.70397	14.26460	0.0042
At most 1	0.023994	0.777162	3.841466	0.3780

* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Both the trace statistics (table III) and Eigen value statistics (table IV) reveal the rejection of the first null hypothesis at 5% level of significance based on our decision rule. However, they both show the acceptance the second null hypothesis. This implies that there is one cointegrating vector among the two variables of interest. Therefore, there is a long run relationship between the variables.

5.3 Granger Causality: The granger causality testing procedure is stated as follows:

$$F = \frac{(RSS_R - RSS_{UR})/m}{RSS_{UR}/(n-k)}$$

Where;
m is equal to the number of lagged M terms and k is the number of parameters estimated in the unrestricted regression. The decision rule is to reject the null hypothesis if the computed F value exceeds the critical F value at the chosen level of significance (5% level for this study), otherwise, we do not reject. The granger causality between financial liberalization and interest rate structure is summarized in the table V below:

Table V: Granger Causality Test

Null Hypothesis	Computed F value	Critical F value (5%)
FDI does not granger cause RGDP	4.42312	3.23
RGDP does not granger cause FDI	0.97587	3.23

The result in table V above reveals that foreign direct investment granger cause economic growth, whereas economic growth does not granger cause foreign direct investment. In other words, there is a unidirectional causal relationship between foreign direct investment and economic growth in Nigeria.

5.4 Impulse Response Function (IRF) Analysis

Impulse response functions are very useful in analyzing the interactions between variables in a vector autoregressive model. The impulses represent the reactions of the variables to shocks hitting the system (Durlauf and Blume, 2008). The simultaneous interactions and responses to innovations or shocks between foreign direct investment (FDI) and real gross domestic product (RGDP) for a period of ten years are presented below.

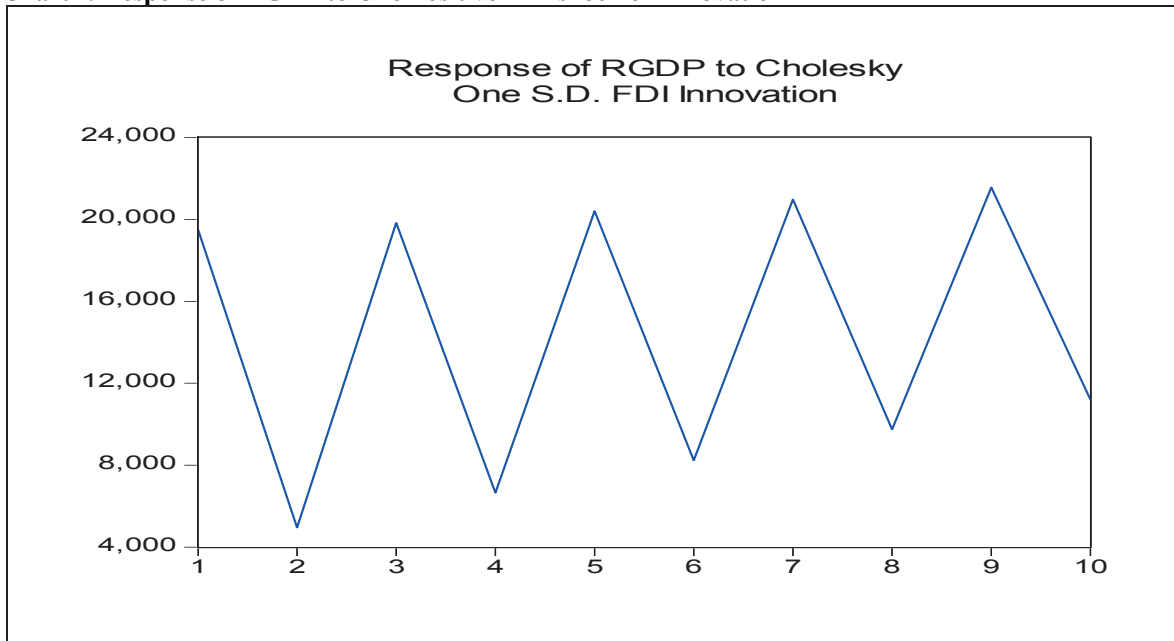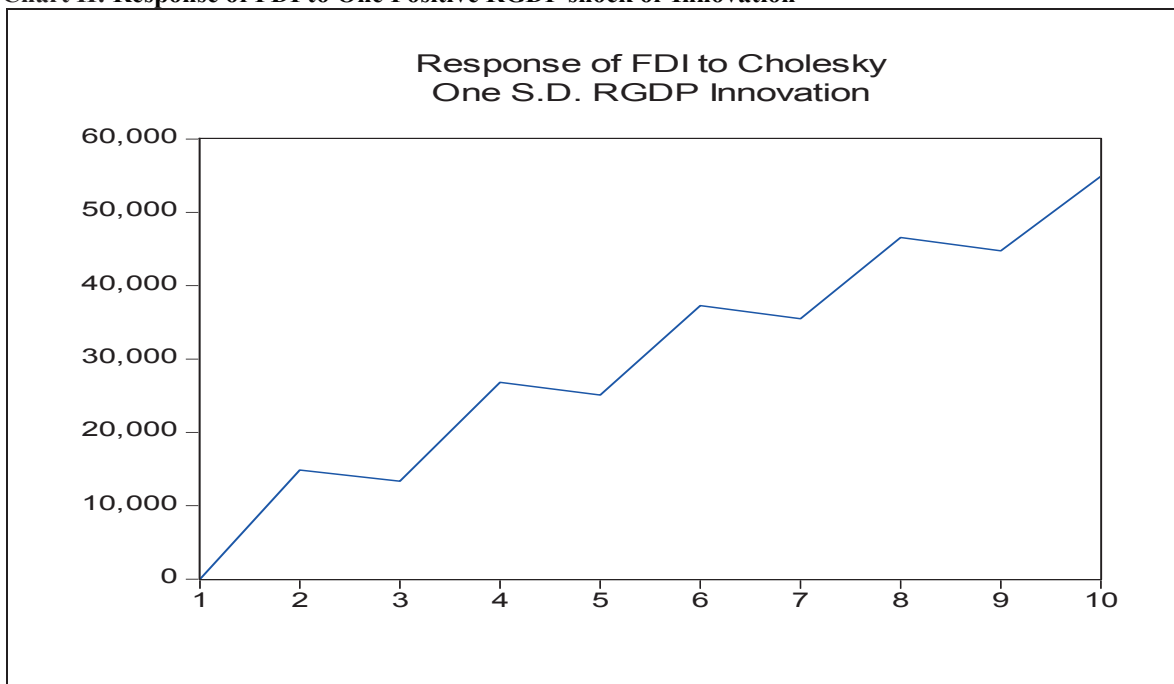**Chart I: Response of RGDP to One Positive FDI shock or Innovation**

Response of RGDP to Cholesky
One S.D. FDI Innovation

Chart II: Response of FDI to One Positive RGDP shock or Innovation

Response of FDI to Cholesky
One S.D. RGDP Innovation

As can be seen from chart I, economic growth (RGDP) responds positively to a one standard deviation positive shock or change to foreign direct investment (FDI), peaking at the ninth year. That is, economic growth increases for every increase in foreign direct investment all through the ten years period under consideration, depicting a positive relationship. However, the accretion in economic growth exhibits a fluctuating or up-and-down trend all through the ten years periods. This reflects an unstable growth in the economy that would not allow for a coordinated economic planning, forecasting and prediction into the future.

On the other hand, a one standard deviation positive innovation or change to economic growth (chart II) causes foreign direct investment to increase throughout the ten years periods under review, climaxing at the tenth year. This also shows a positive relationship. The implication of this is that as the economy grows and continues to remains viable, foreigners would be naturally motivated to invest their resources into the Nigeria economy as they are sure of positive returns in their investment.

6.0   Conclusion

This study, using the impulse response function (IRF) analysis and the Granger causality test, empirically examined the simultaneous interactions and responses to innovations or shocks between foreign direct investment (FDI) and real gross domestic product (RGDP) as well as the nature of causality between them. The impulse response function analysis reveals that economic growth responds positively to a one standard deviation positive shock or change to foreign direct investment. This implies that economic growth increases for every increase in foreign direct investment all through the ten years period under consideration, depicting a positive relationship. Also, a one standard deviation positive innovation or change to economic growth causes foreign direct investment to increase throughout the ten years periods under review, depicting a positive relationship as well. This means that growth in the economy would act as incentive for foreigners to come and invest their resources in the Nigeria economy as they are sure of maximizing profit from their investment. On the other hand, the granger causality test result shows a unidirectional causal relationship between foreign direct investment and economic growth, with the former causing the latter. Based on these findings, government and policy makes in Nigeria should urgently put in place practical policies and programmes that would help to maximize existing foreign investment so as to achieve a stable and steady economic growth which in turn would attract more foreign investment into the Nigeria economy.

References

Adegbite, E.O. and F.S. Ayadi (2010), "The Role of FDI in Economic Development: A Study of Nigeria," World Journal of Entrepreneurship, Management and Sustainable Development, Vol.6, No 1.

Ahmed, U.E. and A.G. Mayowa (2012), "The Determinants and Impacts of Foreign Direct Investment in Nigeria," International Journal of Business and Management, Vol.7, No. 2.

Ajayi, S.I. (2006), "FDI and Economic development in Africa," Tunisia, ADB/AERC International Conference on Accelerating Africa's Development Five years into the Twenty-First Century.

Edoumiekumo, S. (2009), "Foreign Direct Investment and Economic Growth in Nigeria: A Granger Causality Test," Journal of Research in National Development, Vol. 7, No 2.

Erhieyovwe, E.K. and E.S. Jimoh (2012), "Foreign Direct Investment Granger and Nigerian Growth," Journal of Innovative Research in Management and Humanities 3(2), ISSN: 2141-8217.

Gujarati, D.N. (2004), Basic Econometrics (4th Ed), New York, McGraw-Hill Publishing.

Jenkins, C. and L. Thomas (2002), Foreign Direct Investment in South Africa: Determinants, Characteristics and Implications for Economic Growth and Poverty Alleviation, University of Oxford, Center for the Study of African Economies.

Kareem, S.D., F. Kari., G.M. Alam., M., Chukwu and D. Oke (2012), "Foreign Direct Investment into Oil Sector and Economic Growth in Nigeria," The International Journal of Applied Economics and Finance, Vol. 6, Issue: 4, Page No.: 127-135.

Onakoya, A.B. (2012), "Foreign Direct Investments and Economic Growth in Nigeria: A Disaggregated Sector Analysis," Journal of Economics and Sustainable Development, Vol.3, No. 10.

Osinubi, T.S. and L.A. Amaghionyeodiwe (2010), "Foreign Private Investment and Economic Growth in Nigeria," Review of Economics and Business Studies, Volume 3, Issue 1, pp. 105-127.

Oyatoye, E. O., K. K. Arogundade., S. O. Adebisi and E. F. Oluwakayode (2011), "Foreign Direct Investment, Export and Economic Growth in Nigeria," European Journal of Humanities and Social Sciences, Vol.2, No, 1.

Sefiya, U. (2007), "An Evaluation of Foreign Direct Investment as a Strategy for Sustainable Economic Growth in Nigeria," Retrieved from http://kubanni.abu.edu.ng:8080/jspui/handle/123456789/3365.

HarunaDanja, K. (2012), "Foreign Direct Investment and the Nigerian Economy," American Journal of Economics, p-ISSN: 2166-4951.

This academic article was published by The International Institute for Science, Technology and Education (IISTE). The IISTE is a pioneer in the Open Access Publishing service based in the U.S. and Europe. The aim of the institute is Accelerating Global Knowledge Sharing.

More information about the publisher can be found in the IISTE's homepage: http://www.iiste.org

CALL FOR JOURNAL PAPERS

The IISTE is currently hosting more than 30 peer-reviewed academic journals and collaborating with academic institutions around the world. There's no deadline for submission. **Prospective authors of IISTE journals can find the submission instruction on the following page:** http://www.iiste.org/journals/ The IISTE editorial team promises to the review and publish all the qualified submissions in a **fast** manner. All the journals articles are available online to the readers all over the world without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. Printed version of the journals is also available upon request of readers and authors.

MORE RESOURCES

Book publication information: http://www.iiste.org/book/

Recent conferences: http://www.iiste.org/conference/

IISTE Knowledge Sharing Partners

EBSCO, Index Copernicus, Ulrich's Periodicals Directory, JournalTOCS, PKP Open Archives Harvester, Bielefeld Academic Search Engine, Elektronische Zeitschriftenbibliothek EZB, Open J-Gate, OCLC WorldCat, Universe Digtial Library , NewJour, Google Scholar