



Impact of Foreign Direct Investment on Economic Growth in Nigeria (1980 - 2018)

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Abstract. Foreign Direct Investment (FDI) serves as a means through which developing economies earn overseas earnings through aid, business startups, and investments from developed nations. This study analyses the determinants of the inflows of FDI into Nigeria from 1991 – 2018 and its effect on the growth of the country. Data was obtained from different official sites such as the World Development Indicators (WDI), the National Bureau of Statistics (NBS), the Central Bank of Nigeria Bulletin (CBN), and the International Monetary Fund (IMF). Multivariate co-integration analysis (VAR) was employed to ascertain the relationship between the FDI and economic growth. After the first differencing, the variables became stationary at 0.05%. Johansen and Granger causality tests were conducted to check for causality between foreign direct investment and economic output. The outcome showed that openness to trade, exchange rate, and infrastructural facilities contributed to output. The result of the study indicated that FDI is a significant measure of growth. Employing the multivariate times series data, it was concluded that the determinants of foreign direct investment include infrastructural facilities, openness to trade, and exchange rate which are positively related and statistically significant to economic growth. This study recommends that the government improve infrastructural facilities such as stable electricity supply, good roads, and a conducive environment to assure foreign expatriates about their safety and investment. This will boost investment inflow into society and reduce local investors' emigration.

Keywords: Exchange rate, Foreign Direct Investment, Gross Domestic Product, Vector Autoregressive Methods

1. Introduction

Foreign direct investment is perceived to hold a beneficial effect on the growth of a host country via different intended and unintended avenues to boost home investment which is vital for the accomplishment of the country's growth and

development. However, the fast development for enthusiasm toward foreign direct investment (FDI), is on account of recognized chances deducible using this type of foreign capital infusion to the economy, which expands household reserve funds and thereby boosts investment advancement, particularly in developing economies (Rygh & Benito, 2018).

Foreign investment inflow specifically FDI is visualized as having a beneficial effect on the development of the host country using various direct and indirect avenues (McGaughey, Raimondos & Cour, 2020). Many countries especially developing economies depend on FDI inflows which is a crucial determinant of aggregate demand. Due to the great demand for products, services, and commodities, Nigeria has attracted foreign direct investment inflows into the nation through the years. FDI can be characterized as an investment ventured into by an establishment that can be entirely or usually not completely foreign-owned (Anyanwu 2017). The definition of foreign direct investment (FDI) in the Nigerian context stems from the Investment Code established by Decree No. 16 of 1995, which created the NIPC and the Foreign Exchange Monitoring and Miscellaneous Provisions Decree, also enacted in 1995, both of which fully support foreign direct investment in Nigeria (Ekhaton & Anyiwe, 2016).

Nthangu (2020) posited that the vitality of capital from expatriates for the growth of developing economies in Nigeria has contributed to the abundance of least developed countries (LDCs). The importance of foreign direct investment in boosting society most especially in developing countries is because it influences economic advancement by encouraging local investment, improving transfer of innovation, and increasing capital formation of the domestic country (Bermejo & Werner, 2018).

The studies on FDI and economic growth are vast and country-specific (Awa, 2021; Ciftci & Durusu-Ciftci 2022; Olofin, Aiyegbusi & Adebayo 2019; Oyegoke & Aras, 2021). These studies investigated the

significance of FDI on economic development and growth and especially means through which the economy can be enhanced. The outcomes of investigations conveyed in the correlation between foreign direct investment and Nigeria's economic growth are not consistent in their compliance. Taking into account the criticism of a practical review on how foreign direct investment affects the economic growth of Nigeria, there is a requirement to promote more investigations on the significance of FDI on Nigerian economic output after the financial crisis. This is so, given that foreign investment remains a way of economic growth. Given this fact, the assessment is based on the existing link between gross domestic product, exchange rate, and foreign direct investment. The effect of FDI on economic development is very combative in empirical over hypothetical reviews, subsequently, the compelling demand to scrutinize the significance between FDI and growth in distinctive economic disbursement. Thus, this study advances the current literature by exploring the impact of foreign direct investment on Nigeria's economic growth and identifying the key factors that influence foreign direct investment in the Nigerian economy.

1.1 Scope of the Study

This study employed the vector autoregressive method (VAR) econometric technique. The relationship between FDI and economic growth in Nigeria was analyzed as well as the sources of FDI in the economy. A time series of secondary data was sourced from the Central Bank of Nigeria, Statistical Bulletin, World Bank Development Indicators, and the National Bureau of Statistics with the period of analysis from 1981– 2018. The macroeconomic variables include Gross Domestic Product (GDP) being the dependent variable whereas the explanatory variables which include inflation rate (INF), infrastructural development (INFRA), level of openness (LVLOPN), foreign direct investment (FDI), and human capital (HMCAP). An augmented Dickey-Fuller test was conducted to avoid spurious estimation. This study examined potential issues related to the endogeneity of macroeconomic variables. The VAR analysis provided a framework to analyze the interdependence of these variables endogenously, acknowledging their mutual influence within the macroeconomic structure. The results showed that FDI in Nigeria is primarily influenced by political instability, stable macroeconomic policies, and infrastructure development, while inflation and openness to trade may not encourage FDI. Although FDI contributes to economic growth in Nigeria, its overall impact on growth may be negligible or insignificant, with the determinants of FDI showing significant positive

effects. Additionally, the findings revealed an indirect relationship between the rate of inflation and economic growth, as analyzed using the augmented growth rate model.

2. Empirical Review

This section reviewed empirical findings on the effects of foreign direct investment inflow on the economic growth in Nigeria. Various studies have explored the relationship between FDI and economic growth. FDI can be viewed as a significant determinant for the non-debt influx and hence its continuous expansion as a means of getting finance and also a method for achieving combative effectiveness through producing relevant worldwide interrelationships. In Nigeria, the performance of foreign direct investment has been poor due to the country's weak macroeconomic framework. Bermejo & Werner (2018) established the fact that foreign capital has minimal influence on economic growth and also that it is statistically insignificant. Appiah, Gyamfi, Adebayo & Bekun (2023) used the cointegrating test of Granger causality to check the causality of interconnection between FDI growth and economic growth. Yunus & Wahob (2021) state that the impact of spill-over can be recognized in the labor markets through learning and how it affects domestic investment of productivity. Emako, Nuru & Menza (2022) present evidence that FDI develops direct spillover for recipient countries although it is feeble. Even though the conceptual study on FDI pinpoints merits, hopefully, spillover could howbeit be minimal.

Iamsiraroj & Doucouliagos (2015) opine that FDI implies a direct significance on the development of a country although there may exist a limited level of benefit over which FDI possesses a direct and positive impact on growth. The reason for this is that few nations that have achieved a minimum standard of revenue can incorporate modernized innovations and gain more profits from FDI. Neoclassical economists contend that FDI inserts significance on the growth of an economy by expanding the measure per individual although, due to diminishing returns in capital, there is minimal or no impact on long-run economic growth. Ong'ondo (2018) concluded that foreign direct investment will be required to commit to the growth of the economy such as the provision of foreign capital in addition to crowding in additional domestic investment. Kahouli & Omri (2017) opine that there is a positive effect on the level of trade in products and services by FDI. Hussain, Bashir & Shahzad (2021) asserted that foreign investment influx had an encouraging impact on developing countries' economic growth. This

is because in developing countries, FDI solves socioeconomic issues e.g. balance of payment (BOP) deficits, unemployment, etc.

The use of multivariate VAR (Vector Auto regression) model was employed by Pradhan et al. (2017) which comprised output and foreign direct investment to analyze causative effects between the growth of an economic output and foreign direct investment in four Organisation for Economic Co-operation and Development (OECD) countries which were Finland, Denmark, Sweden, and Norway. They employed techniques designed by Yamada and Toda (1995) and Toda and Yamamoto (1998) in their analysis which found long-run uni-facial causality dynamic from foreign direct investment growth to gross domestic product expansion in Norway but flopped the discovery of causality between output growth and FDI. Gourgourinis (2023) contends that FDI functions as an incentive for incoming finance by integrating national assets and supplying a motion of certainty in investment contingencies. Otto and Ukpere (2014) investigated FDI and economic development in Nigeria for 41 years. Their analysis concluded that a significant connection existed between FDI and economic growth in Nigeria. This implied that policies are deserved and therefore, encourage the inflow of investments into the economy.

Karahan & Çolak (2024) examined the correlation between foreign direct investment and economic development employing time-series data for 31 years (1969-2000) for Chile, Malaysia, and Thailand. The research utilized Toda and Yamamoto's (1995) causality test method. Results of their investigation showed that GDP Granger causes FDI in Chile however, FDI does not Granger cause GDP giving us a unidirectional causality even though Thailand and Thailand depict solid proof bidirectional connection amongst the 2 macroeconomic variables (GDP and FDI). Agrawal (2015) investigated the causality link between the inflow of foreign direct investment and economic development in the five BRICS countries; Brazil, Russia, India, China, and South Africa for the timeframe of 1989 – 2012. Co-integration and unit root analysis were done. The evaluation revealed that FDI and economic development are cointegrated around the group stage, inferring the existence of a long-run equilibrium connection between growth and FDI. The outcome of the causality tests points out the presence of long-run causality moving from FDI to economic growth in the BRIC nations.

Emmanuel (2016), Seyoum, Wu & Lin (2015) investigated the significance of foreign direct

investment on the output of the Nigerian economy to solve the question of the determinants of foreign direct investment and how this affects the economy. OLS (Ordinary least square) regression approach was employed to test the data for a period of 37 years (1970–2007). Autocorrelation was done using Cochrane-Orcutt iterative and the model says there is a working relationship between the economic growth of Nigeria which is a proxy as real gross domestic product (RGDP) and FDI. The results did not show a great deal of backing for a firm connection between FDI and Nigeria's economic growth as implied by past reviews even though the outcome suggests FDI is unnecessary, it decreases the certainty in the theory that FDI has expended an independent progress result in Nigeria.

Muntah et al. (2015) investigated the significance of FDI on the development of Pakistan society for a duration of 16 years (1995–2011). They obtained data from Index Monde, Economic Survey of Pakistan, World Bank, and Economy of Pakistan Books. The regression method employed for this research showed that foreign direct investment expedites a positively significant effect on the economic growth of Pakistan. Mustafa (2019) analyzed the relationship between the rate of inflation and economic growth through FDI. This enforces a measure whereby the impact of inflation is indirectly conveyed in the growth of the economy for the progress of the countries. Ugonna (2022) also studied the impact of an influx of FDI on economic growth in Nigeria for 31 years (1990-2021). They found that FDI expedites a positive effect on economic growth in Nigeria although; the research resolved that the existence of FDI in least-developed countries especially Nigeria is not entirely beneficial.

Dalaseng, Xiongying & Srithilat (2022) examined the significance of FDI influx and level of trade openness to the economic development of developing economies inside the endogenous growth-theory framework. They employed cross-sectional data expressed in a case study of sixty-six developing counties for three decades. The results showed that foreign direct investment and openness to trade commit to promoting development and growth in developing economies and that FDI is often the major avenue via which ultramodern technology is transmitted to developing countries. The impact of FDI was also investigated by Uwubanmwun and Ogiemudia (2016) for a time frame of 2000-2020. They employed the use of VECM. The outcome showed that there is no causality between FDI and economic growth in the long run but that there exists an insignificant statistically contradictory impact on

society. However, there is an instantaneous and time lag effect of FDI in the society in the short run. Olatunji & Shahid (2015) analyzed determinants of FDI in Nigeria from 1970 – 2006 by employing the co-integrating analysis. The outcome of their analysis discovered that politics, exchange rate, and market size determined foreign direct investment especially when simulations are carried out utilizing variance decomposition of forecast error and impulse response functions (IRF) which the outcome did not consider trade loosening.

Zekarias (2016) and Awolusi & Adeyeye (2016) analyzed the effect of foreign direct investment on growth and concluded that economic growth is not promoted by FDI. This usually occurs in SSA countries because the outcome of FDI can be insignificant, negative, or positive relying upon the factors of the host countries such as strength to accommodate innovations, climatic conditions, and institutional framework (Asamoah, Mensah & Bondzie 2019). It can be noted that previous research conducted to investigate the nexus between foreign direct investment and growth varies in different conclusions. This is because most investigations failed to capture in their analysis the fact that sixty percent of foreign investment influx is gotten from the oil sector (extractive part).

The review of the literature reveals that FDI impacts the economic growth of a country through domestic benefits and productivity. However, there have been different conclusions and results on foreign direct investment and investment some of which are positive while others are negative. GÜNGÖR & RINGİM (2017) asserted that there was a significant linkage between inflows of foreign direct investment and the economic growth of Nigeria. Sahu (2021) presented evidence that FDI is positively related to GDP. He concluded that higher foreign direct investment inflow would allow for the country's greater economic performance. Employing the seemingly unrelated regressions (SUR) approach, Inyang & Basse (2020) analyzed the impact of FDI on the growth of the Nigerian economy and discovered that FDI is negatively pro-import and pro-consumption connected to gross domestic investment. The effect of foreign direct investment on economic growth was investigated by Hlavacek and Bal-Domanska (2016) in Central and Eastern European countries namely Latvia, Slovenia, Poland, Estonia, Slovakia Lithuania, Hungary and Czech Republic during the period 2000- 2012. They employed the endogenous growth model which revealed that there is a statistically significant linkage between FDI, economic growth, and investment growth. The outcome also revealed that some of the

countries e.g. Poland had a lower influence of the FDI in their economy whilst the other countries e.g. Slovakia had a better incentive for FDI on the economic growth of their country.

Kashif and Muhammad (2013) estimated the effect of FDI on Pakistan society using a refined Auto Regressive Distributed lag (ARDL) model of analysis. They investigated the long-run association between the macroeconomic variables and discovered the non-appearance of a long-run association between FDI and economic growth. The effect of corporate components and macroeconomic variables on FDI was also analyzed by Matthews (2023) in thirty Sub-Saharan African (SSA) countries from 1995 through 2008. The outcome of their analysis showed that market size, improvement of facilities, and fiscal development aid are imperative components that quantify FDI inflows into SSA areas.

3. Data and Variables

Time series secondary data was sourced from the Central Bank of Nigeria Statistical Bulletin, World Bank Development Indicators, National Bureau of Statistics, and International Monetary Fund for the period of 38 years (1980–2018). Vector Autoregressive Methods (VAR) were used to ascertain the relationship between the FDI and economic growth. The relationship between FDI and economic growth in Nigeria were analyzed as well as the determinants of FDI in the economy. VAR analysis could be the reduced, recursive, or structural type according to Gouriéroux et al. (2017). According to Choi et al. (2024), there are two kinds of foreign investment which are market seeking investment (this deals with supplying the domestic economy) and non-market-seeking (this deals with the production of goods in the home country for foreign economies which will boost economy growth as a consequence of increase in productivity). Since we are examining the relationship between FDI and Economic growth and Nigeria is a beneficial of the two kinds of FDI, the dependent variable will be GDP per capita which were obtained from the CBN Statistical bulletin and the explanatory variables were: human capital, infrastructural development, inflation rate, level of openness and exchange rate.

3.1 Model

The model employed is by Obiwona (2001) which follows the endogenous growth model which is defined as

$$Y = f(L, K, A)$$

Where Y = Output =Gross Domestic Product (GDP)

L = Employment
 K = Capital stock
 A = Total Factor Productivity (TFP) of growth in output, not accounting for increase in factor outputs (K and L). A refers to economic factors that are determined endogenously.

3.2 Methodology

The above model can be written as an empirical model of FDI on the economic growth of Nigeria following the augmented growth model of MRW:

GDP = F (FDI, HUMCAP, INFRA, INFLTN, LVLOPEN)

Where,

GDP = Gross domestic product which is the dependent variable and acts a proxy for economic growth

FDI = foreign direct investment defined as (FDI/GDP*100)

HUMCP = the level of human capital (ratio of high school and tertiary admission in the country)

INFRA = infrastructure facility development (electric per capita electricity consumption)

INFLTN = the rate of inflation which is a proxy for political instability

LVLOPN = openness of trade by the economy (export + import – GDP ratio)

The long-run model will then be

$GDP = \beta_0 + \beta_1 FDI + \beta_2 HUMCAP + \beta_3 INFRAC + \beta_4 INFL + \beta_5 OPEN + \varepsilon$

Where

ε is the error term β_0 = -i-intercept

$\beta_1 - \beta_5$ = regression coefficients

3.3 Cointegrating Test

Augmented Dickey-Fuller Test

The Augmented Dickey Fuller Test (ADF) was conducted to avoid spurious estimating and mis-interpretation of results. This was done to check for stationary of our time series data. If we have non-stationary data, it means that they do not exhibit mean reversion and the data generating series does not evolve around zero (Granger 1969).

Null hypothesis of ADF test (unit root test) is that the series are non-stationary. The alternative hypothesis is that the series are stationary.

Johansen Cointegrating Test

The Johansen co-integrating technique was also conducted to check for the presence of long-run equilibrium among the series of the same order of integration through the forming of a co-integration equation and the lag-likelihood was done to check the selection criterion of the number of lags to be used.

The Johansen test was used because it is a better estimate when using multivariate time series. Based on [Johansen and Juselius (1990)], the test assumed a VAR due to the order of p which is given below:

$$Y_t = A_1 Y_{t-1} + A_p Y_{t-p} + Bx_t + e_t \quad (1)$$

Y_t = nonstationary I(1) variable vector x_t = deterministic variables vector

e_t = innovation vector.

Granger causality test

The granger causality test was also conducted to check for short run causality between the variables. Based on Granger (1969), Y is said to granger-cause X when and if only X is more forecasted employing the previous values of Y. We can have various forms of granger causality such that:

We will have a unidirectional causality if GDP the dependent variable causes any of the macroeconomic variables but the macroeconomic variable does not cause GDP.

We will have statistically independent variables if GDP does not cause FDI and FDI does not cause GDP as well.

We will have a relationship existing between the variables when GDP causes FDI and FDI causes GDP as well.

The Hypothesis will therefore be: H_0 : FDI does not granger cause GDP H_1 : FDI does granger cause GDP

The model will therefore be:

$$GDP_t = A_1 * FDI_{t-1} + A_2 * GDP_{t-1} + u_{1t} \quad FDI_t = A_3 * FDI_{t-1} + A_4 * GDP_{t-1} + u_{2t}$$

4. Results and Discussions

Evaluation of the selection criterion to decide the number of lags to be picked. Based on Table 5 as shown in the Appendix, the LR criteria pick lag 4 so do the FPE, AIC, HQIC, and SBIC. This means that the best lag to use is lag 4 because all criteria choose this as the best when estimating our model. This is because all models are system equation models and the selection criteria model is also a system equation model.

Augmented dickey fuller result

The Augmented Dickey-Fuller test is first employed to examine the properties of the time series. When the variables are integrated of order one and non-stationary, we can say that they are co-integrated and would include long-term progression indicated by the number of cointegrating points that is ADF hypothesis will be:

The null hypothesis (H_0) of the above two unit root tests, state that there exist unit root and that all variables are non-stationary, whereas the alternative

hypothesis (H1) states that no unit root exists in the series and suppose the stationarity of all variables.

At level, all the macroeconomic variables were non-stationary but after the first differencing at 5%, as shown in Table 2 in the Appendix, they became stationary. This therefore makes our model good and it will not lead to spurious analysis as well as misinterpretation of results.

To confirm this, we ran the Johansen co-integration test which implies that the variables are integrated of the same order that is the variables are not stationary but when converted into the first difference, they become stationary which is the condition for Johansen co-integration that is, we convert one of the variables into first differencing to make the variables stationary which is the condition for Johansen test (Box and Jenkins 1976).

Null hypothesis (Ho): there is no co-integration

Alternative hypothesis (H1): there is co-integration

From table 3 in Appendix, there is the presence of cointegrating vectors in the structure of this country. Maximum statistics and trace statistics show 3 cointegration levels at 0.05% and therefore, we reject the null hypothesis and therefore accept the alternate hypothesis. Due to this, there is proof of long-run equilibrium from foreign direct investment and other variables which is in context with Dinh, Anh & Nguyen (2019). Therefore, we run the Vector Autoregressive Model (VAR). Due to the non-cointegrating variables, the unrestricted vector autoregressive model was estimated.

4.1 VAR Analysis Result

From the analysis, looking at GDP as the dependent variable, we see that GDP L4, opn L4, exr L4, and inf L4 are statistically significant and impact GDP but FDI L4 and infra L4 are not statistically significant (0.962) and (0.075) on gdp at 5%.

FDI as the dependent variable, Gdp L4, FDI L4, infra L4 and opn L4 are all statistically significant to explain the dependent variable FDI because the probability of each variable is small that is less than 5% and there is a short-run causality between the independent variables to FDI as the dependent variable but exr L4 and inf L4 are not statistically significant on fdi.

Infra as the dependent variable, gdp L4, opn L4 and exr L4 are all statistically significant to explain the dependent variable infra because the probability of each variable is very small that is less than 5% but fdi L4, infra L4 and inf L4 are not significant on infra.

Opn as the dependent variable, gdp L4, fdi L4 and inf L4 are all statistically significant to explain the

dependent variable opn because the probability of each

variable is very small that is less than 5% but ifra L4, opn L4 and exr L4 are not statistically significant on opn.

Exr as the dependent variable, fdi L4 and opn L4 are statistically significant to explain the dependent variable exr because the probability of each variable is very small that is less than 5% which shows us a short run causality but gdp L4, infra L4, exr L4 and inf L4 are not statistically significant on exr.

Inf as the dependent variable, gdp L4, fdi L4, infra L4, opn L4, exr L4 and inf L4 are not statistically significant on inf because the probability of each variable is high that is more than 5% and therefore there is no short run causality.

Granger causality test

The Granger causality test also known as the Wald test was done to check the causality of the variables.

Null Hypothesis (Ho): The independent variable does not Granger-cause the dependent variable.

Alternative Hypothesis (H1): The independent variable Granger-causes the dependent variable.

Decision criteria

We reject the null hypothesis of no granger causality if the p-value is lower or equal to

0.05. If the p-value is higher than 0.05, we accept the null hypothesis of no causality and reject the alternative hypothesis.

With GDP being the dependent variable, all the regressors such as FDI, INFRAC, OPN, EXR, and INF do not granger cause GDP as their p-value is higher than 0.05. Therefore, we cannot reject the null hypothesis.

The null hypothesis (H0) of the above granger causality tests, state that there is no causality between the independent and dependent variables, whereas the alternative hypothesis (H1) states that there exists a causality from the independent variable to the dependent one. When all variables are regressed together, we accept the null hypothesis and thus reject the alternative hypothesis. This is corroborated by Goh, Sam & McNown (2017) who avers that there is a unidirectional causality running from economic growth proxy by GDP to foreign direct investment rather than bidirectional causality as advised by Mahembe & Odhiambo (2016). By this, we can use previous data on the economic growth of a country to predict future information on FDI. The result recommends that the accomplishment of the host country grants incentives for the influx of FDI to the

society.

5. Conclusion and Recommendations

The objectives of this study were to analyze the effect of foreign direct investment on the economic growth of Nigeria and to examine its implications on the main determinants of foreign direct investment in the Nigerian economy. Data were obtained from various sources to analyze these objectives. Using multivariate time series data, the results demonstrated that foreign direct investment is positively related and statistically significant to economic growth, unlike other studies. The main determinants of foreign direct investment are exchange rate, openness to trade, and infrastructural facilities however the effect of infrastructural facilities is small. Continuous improvement of infrastructure in the economy will lower the expenses of engaging in ventures in Nigeria thereby increasing the number of investors in the economy, which boosts FDI inflows. The inflation rate is positively related but statistically insignificant to economic growth. It does not determine FDI in the economy. The Granger causality test showed that there exists a unidirectional causality between foreign direct investment and economic output. The conclusion of this study is for the Nigerian government and policymakers to adopt policies (such as authorizing concessional permits to investors) in which foreign direct investment is captivating to expatriates to boost economic output and growth. The study recommends adjusting inflation rates to boost FDI inflows into the economy. This study also shows that the effect of FDI becomes evident after a time lag of four years and recommends that, with a transparent government, good infrastructure including reliable electricity, quality roads, and a safe environment, to reassure expatriates about their security and investment prospects. These improvements will increase investment inflow into the country and help retain local investors, such policies could include granting. This study failed to analyze the effect of foreign direct investment in various sectors of the Nigerian economy, the percentage contribution of each sector to the country's economic growth, and policies adopted by the government in bringing in inflows of FDI into the country. This could be another research area that could be examined.

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