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The Short and Long Run Determinants of Foreign Direct Investment in Nigeria

Oludayo Elijah Adekunle[1]♦
[1]Adekunle Ajasin University Akungba-Akoko, Ondo State (Nigeria)
✉ adekunleoludayo864@yahoo.com

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Abstract :

What determines foreign direct investment inflows has been a subject of controversies among scholars. As a result of the highlighted gap discussed in this study, the short and long run determinants of foreign direct investment and their effects on foreign direct investment inflow in Nigeria was investigated from 1986 to 2018. Data were analyzed with Augmented Dickey-Fuller and Philip Perron unit root test, Autoregressive Distributed Lag and Pairwise Granger Causality techniques. Evidence of long run dynamic equilibrium relationship was established between foreign direct investment and its determinants. The short and long run coefficients revealed that government capital expenditure and inflation impede the inflow of foreign direct investment both in the short and long run while exchange rate serve as bane to foreign direct investment in the long run. However, gross domestic product and trade openness were found to stimulate the inflow of foreign direct investment in the short and long run. The Pairwise causality result revealed that government capital expenditure, exchange rate and trade openness had independent causality with foreign direct investment while gross domestic product and inflation rate had unidirectional causality with foreign direct investment. Thus, government should allocate more funds for the provision of enabling and investment enhancing environment to promote foreign direct investment inflow. The study added value to previous studies by estimating the short and long run

♦**Corresponding author:** Adekunle Ajasin University Akungba-Akoko, Ondo State (Nigeria). [✉adekunleoludayo864@yahoo.com]

determinants of foreign direct investment using more dynamic and robust technique of Autoregressive Distributed Lag developed by Peseran and Shin (1999).

Keywords: ARDL, Causality, Economic Policies, Foreign Direct Investment.
JEL Codes: C32, F21.

1. Introduction

Foreign direct investment plays significant role in the development of most economies. The wave of globalization has led many countries to open their economy to the inflow of international investments through liberalization policy (Ramirez, 2006; Akinwale, Adekunle & Obagunwa, 2018). The need for foreign direct investment arises due to the inability of most developing countries to adequately harness their resources in achieving aspired growth and development needed. Foreign direct investment serves as one of the major tools of development to most emerging and transition nations due to diverse opportunities it offers to the host countries. Iffiong and Atsu (2014); Koko, Aminurraasyid and Tapiwa (2017) opined that it serves as source of infrastructure, employment generation, resource utilization and access to international markets as well as managerial and technological transfers.

Theoretically, foreign direct investment provide cross boarder financing opportunities to local firms, promote access to foreign market, boost international trade integration, aid human capital development, provide risk and product diversification opportunities, stimulate efficiency and effectiveness among local industries and increases productivity (Li & Liu, 2005; Lee, Lvendis & Guitierrez, 2012, Yao 2006, Ramirez, 2006; Ebiringa & Emeh, 2013; Garavito, Iregui & Ramirez 2014; Ojong, Felix & Anthony, 2015). As a result of the crucial role played by foreign direct investment in promoting sustainable growth and development, countries of the world especially less developed and transition economies like Malaysia, Ghana, South Africa and Nigeria among others adopted liberalized their economy in the early 80's in line World Bank and International Monetary Fund policy proposal with the aim of boosting international relationships and encourage the inflow of foreign direct investment. Dunning (2009); Vasconcellos and Kish (1998); Enisan (2017) asserted that the different macroeconomic policies and reforms in most countries are directed towards encouraging the inflow of foreign direct investment.

However, the extent of the inflow of foreign direct investment in an economy is determined by certain factors which are peculiar to the host

country. Mfinanga (2018) stated that the inflow of foreign direct investment in the host country is base on long term commitment because it involves large investment capital which are very difficult to recover if there is cyclical fluctuation, uncertainties and economic instability in the host country. Thus, the investment decision of foreign investors in entering into the host country partly relies on prevailing economic conditions and investment environment of the host country (Wheeler & Mody, 1992; Suleiman, Kaliappan & Ismail, 2015). Narayan (2014) opined that determinants of foreign investment in host country include factors such as market size, rate of urbanization and industrialization, labour cost, infrastructure both physical, inflation, tax regime, external debt are economic, country policy framework such as trade policies, country risk, legal framework including property rights, quality of bureaucracy and the attitude of the government towards foreign direct investment.

Over the years, the major policy thrust of government in Nigeria has been anchored upon the attraction of foreign direct investment inflow in the country. After the adoption of liberalization policy in 1986 through which the economy was deregulated and opened to the inflow of foreign investment, Nigeria has witnessed significant growth in the inflow of foreign direct investment. Ojong *et al.,* (2015) stated that the adoption of policies like SAP in 1986, industrial policy of 1989, Export Processing Zone Decree of 1991, Nigerian Investment Promotion Commission (NIPC) through decree 16 of 1995 were aimed at enhancing the inflow of foreign direct investment into the country.

Dinda (2009) in Oba and Onuoha (2013) opined that Nigeria is the major recipient of foreign direct investment among Africans nations receiving 70% of the sub-regional total and 11% of Africa's total and out of this; Nigeria's oil sector alone received 90% between 1970 and 2006. Recently, there is significant fluctuation in the inflow of foreign direct investment into Nigeria. Foreign direct investment inflow fell from ₦875.1 billion in 2013 to ₦738.2 billion in 2014. Furthermore, the country experienced declined in foreign direct investment in 2015 with foreign direct investment stock falling to ₦602.1 billion. However, there was increase in the inflow of foreign direct investment in 2016 to ₦1,124.1 billion before reducing to ₦1,069.4 and ₦610.4 billion in 2017 and 2018 respectively (CBN, 2018). Ojong *et al.,* (2015) averred that foreign investors are unwilling to invest in Nigeria due to the perceived riskiness of doing business in the country. The Nigeria investment environment is characterized by high inflation, poor infrastructure, unstable exchange rate, political instability, financial crisis, recession and currently, the recent

Corona Virus Disease (COVID-19) outbreak.

There are diverse studies on the determinants of foreign direct investment inflows in both developed and developing nations (Korez-Vide, Voller & Bobel, 2014; Portilla, Maza, Villaverde & Hierro, 2016; Suleiman, *et al.*, 2015; Narayan, 2014; Eshghi, Eshghi & Li, 2016; Ibrahim, Omar & Ali, 2017). In Nigeria, majority of studies conducted largely focused on the effect of foreign direct investment on economic growth. Few studies conducted on the determinants of foreign direct investment in Nigeria were based on long run by employing Ordinary Least Square techniques (Oba & Onuoha, 2013; Etim, *et al.*, 2014; Ojong, *et al.*, 2015; Koko, *et al.*, 2017). Most of the studies established diverse results. However, the studies did not focus on the long run and short run determinants of foreign direct investment using Autoregressive Distributed Lag approach.

Also, while determinants variables such as trade openness, political stability market size and inflation rate were adopted by some studies, important determinants which such as government capital expenditure and exchange rate were not captured. According to Dunning theory of foreign direct investment determinants, government capital expenditure plays significant role in the economy through the provision of conductive and enabling environment while exchange rate determines the purchasing power of local currency to foreign currencies and stability of external economy of the host country. In the same vein, the direction of causality between determinants of foreign direct investment and foreign direct inflow was not established. Finally, this study advance on previous studies by extending the study period to 2018 as majority of the studies stopped at different period latest being 2016 (Etim, *et al.*, 2014; Ojong, *et al.*, 2015; Koko, *et al.*, 2017; Ebire, Onmonya & Ini, 2018). In the recent period Nigeria has experienced different economic situations such as high insecurity, political instability, recession, exchange rate fluctuation, and financial sector turmoil among others. Thus, there is need to re-investigate the determinants of foreign direct investment in the economy given the high rate of unemployment rate, low standard of living and poverty in the economy. Thus, the study sought to achieve the following objectives:

- investigate the effect of government capital expenditure on foreign direct investment;
- examine the effect of gross domestic product (market size) on foreign direct investment;
- establish the effect of exchange rate on foreign direct investment;
- determine the effect of inflation rate on foreign direct investment;

- examine the effect of trade openness on foreign direct investment;
- establish the directional of causality between the determinants of foreign direct investment and foreign direct investment inflow in Nigeria.

Other than the current introductory part, the paper was sectionalize into literature review, methodology, discussion of findings and conclusion.

2. Literature Review

The role of foreign direct investment in the economy has been well documented in literature (Dunning, 2009; Suleiman, *et al.,* 2015; Narayan, 2014; Eshghi, *et al.,* 2016; Ibrahim, *et al.,* 2017). Foreign direct investment is a form of investment that is undertaken by foreign citizens with the aim of creating physical assets and production capacity in a host country. It is the ownership or control of entire or some fractional part of firms by foreigners in a domestic economy through the acquisition or creation new of assets, purchase of existing assets or joint ownership with the government or citizens of the host countries (Oba & Onuoha, 2013).

Foreign direct investment serves as driver of growth and development through the provision of investment capital, boosting of competition and aiding of local firms in adapting more efficient technology and management styles in their operation. Portilla, *et al.,* (2016); Mfinanga (2018) foreign direct investment reduces the level of poverty, sustain the economic growth and stimulate the smooth and favorable integration of country's economy into the global international economy which promote long run development. Due to insufficiency of domestic investment to promote the growth aspiration of an economy, the need for international investment to stimulate growth becomes necessary. However, the capacity of an economy to attract the inflow of foreign investment depends on some factors.

Theatrically, eclectic paradigm theory' assigned to Dunning (1977; 1993) provides a frameworks on the determinants of foreign direct investment which are set of advantage such as Ownership advantage, the Internalization advantage, and the Location advantage. The advantages hover around factors such as high per capita income, large market size, and market growth, cheap labor, raw materials, and natural resources, low tariffs, easy macroeconomic policies, tax holiday, financial stability and low transactions costs which must be present in host countries.

Studies conducted in developed countries stressed the role of some factors in enhancing the inflow of foreign direct investment. Garavito, *et al.*, (2014) employed large firm level data set to investigate the determinants of

foreign direct investment (FDI) in Colombia which was analyzed Panel Probit and it was revealed that that firms listed on the stock market, involved in foreign trade activities, and operating in sectors with greater capital intensity are more likely to be recipients of FDI. Korez-Vide, *et al.,* (2014) explored foreign direct investment location choice factors of German and Austrian companies in Brazilian regions. The study employed Multinomial Nested Logit Model and supplements its findings by the qualitative analysis, based on the semi-structured experts' interview. The analyses showed that investor-nation specific agglomeration, industry specialization, workforce qualification and physical infrastructure were important FDI location choice factors for German and Austrian companies in Brazil.

Portilla, *et al.,* (2016) analyzed determinants of the inflow of foreign direct investment (FDI) in Spain at regional and sectoral levels over the period 1997 and 2013. The study applied GMM and GLS and it was found that FDI inflows in Spain are mainly determined by market size, the level of human capital in interaction with wages, and the own characteristics of Madrid. In the recent study by Klimeck (2018) negative binomial regression was employed to evaluate the role of agglomeration economies in FDI in ABS in Poland. The selected variables include GDP, GDP per capita, Density of ABS, Density of firms, Students, Technical students, Economics students, Capital city, Internal migration density and External migration density. The results of the analysis revealed that agglomeration economies had significant effect on FDI in service industry. All the variables relating to the agglomeration were established to have positive and significant effect on FDI. O'Meara (2015) examined the determinants of foreign direct investment on a cross country basis by using a large sample of both developed and developing countries which were analyzed using pooled regression technique and it was found that country's size and scale of economic activity in the host country had significant effect on foreign direct investment flows, while economic freedom, tax incentives and human capital were not significant in determining foreign direct investment.

Also, in developing countries, it was found that determinants of foreign direct investment are germane in promoting the inflow of foreign direct investment. Narayan (2014) analyzed the determinants of FDI inflows in India from 2012 to 2013 by employing correlation matrix and multiple regression techniques to analyzed the relationship between FDI determinants and FDI inflows was analysed. It was found that the size of GDP and rate of growth of GDP are important for attracting higher inflows of FDI and higher FOREX reserves served as major determinants of FDI in

India. Eshghi, *et al.,* (2016) investigated the impact of corporate tax rate on foreign direct investment inflows from Germany into five Central and Eastern European countries from 2000 to 2012. The study employed simple least square analysis and it was found that corporate tax rate had a significant and negative impact on FDI inflows in Central and Eastern European countries.

Suleiman, *et al.,* (2015) examined the determinants of Foreign Direct Investment (FDI) in Southern Africa Custom Union (SACU) countries by employing panel data from the period 1990–2010 which was analyzed using Pooled OLS as the main estimation method. The findings revealed that market size, natural resource availability and trade openness are positive and significant determinants of FDI for the SACU member countries. Mfinanga (2018) assessed the determinants of foreign direct investment inflow in Tanzania by employing annual time series data from World Bank Development indicators which covered the period between 1990 and 2015 which was analyzed using Ordinary Least Square (OLS) and Augmented Dickey Fuller. Market size, trade openness, inflation rate and exchange rate are among of the selected sample variables in this study. The results found that exchange rate is a major determinant of foreign direct investment inflow into Tanzania and this indicates that the fluctuated exchange rate policy adopted by the country increases the inflow of foreign direct investment in the country. Ibrahim, *et al.,* (2017) assessed the determinants of foreign direct investment (FDI) in Somalia. The study employed time series data obtained from World Bank and SESRIC for a period of 41 years that is 1970-2010 and analyzed using Augmented Dickey-Fuller test was used for the unit root test and ordinary least square statistical technique. The results of the analysis showed a negative and significant relationship between exchange rate and FDI, while a positive and significant relationship was established between inflation, external debt and domestic investment of FDI. Finally, negative and insignificant relationship was observed between lack of government and FDI.

In Nigeria, Oba and Onuoha (2013) examined the relationship between determinants of foreign direct investment and economic growth employing data that covered a period of ten years (2001-2010) by variables such as real GDP, inflationary levels, openness of trade, electricity consumption, transport and communication. The study employed regression analysis and revealed that real GDP, inflation and electricity consumption had negative effect on foreign direct investment while trade openness and transport and communication had positive effect on foreign direct investment. Offiong and Atsu (2014) investigated the determinants of

foreign direct investment in Nigeria from 1980 to 2011 by assessing the relationships that exist between GDP, wage rate, interest rate and relative openness index and foreign direct investment Nigeria which was analyzed using multiple regression analysis and it was found that gross domestic and wage rate had positive and significant effect foreign direct investment while trade openness and lending rate had insignificant effect on foreign direct investment.

Etim, *et al.,* (2014) focus on the determinants of foreign direct investment and their impact in Nigeria from 1975 between 2010 Ordinary Least Square (OLS), and co-integration Error Correction Method (ECM) were employed and indicated that Market Size (GDP), openness, and exchange rate had significant impact on FDI inflow while political risk had unfavourable effect on FDI inflow. Ojong, *et al.,* (2015) examined the factors that determine FDI inflow in Nigeria with the specific objectives of assessing the extent to which market capitalization, trade openness gross fixed capital formation and level of economic activities affect foreign direct investment inflow in Nigeria. Time series data were collected from the CBN statistical Bulletin and were analyzed using the ordinary least square multiple regression statistical technique, ADF and PP unit root. A correlation matrix was also used to check the relationship between all the variables and indicted that all the variables were strongly related except market capitalization, gross fixed capital formation and level of economic activities which had weak relation with FDI. The result of the OLS revealed that there is an inverse relationship between market capitalization and gross fixed capital formation on FDI inflow in Nigeria while high liberal trade policy discourages foreign direct investment in Nigeria. Finally, there exists a significant and positive effect of level of economic growth on FDI attraction in Nigeria.

In their Koko, Aminurraasyid and Tapiwa (2017) investigated the effect of political risk on FDI inflow to Nigeria using secondary data from 2000 to 2014 which was analyzed using simple linear regression. Empirical results found that political risk had a positive and significant association with FDI to Nigeria. Nwosa and Adeleke (2017) examined the determinants of Foreign Direct Investment (FDI) and Foreign Portfolio Investment (FPI) volatility in Nigeria using annual data covering the periods 1986 to 2016 and analyzed using E-GARCH approach. The study observed that trade openness and world GDP were the significant determinants of FDI volatility, while domestic interest rate and stock market capitalization were significant determinants of FPI volatility in Nigeria. Ebire, *et al.,* (2018) investigated the major determinants of FDI in Nigeria. The result showed

that exchange rate, GDP, first lag of GDP, military expenditure, first lag of military expenditure, political stability and financial development are the major determinants of FDI inflows to Nigeria.

In summary, this study investigated the short and long run determinants of foreign direct investment in Nigeria using a dynamic and robust technique of Autoregressive Distributed Lag approach developed by Peseran and Shin (1991) and Peseran and Smith (2001) which is a major advancement to previous studies. Also, the study contributed to previous empirical literature by evaluating the direct of causality between foreign direct investment and its determinants. Finally, the study used more recent data which gave room for recent findings regarding Nigeria economy.

3. Methodology

This section presented the research procedures used in the study. It commenced with research design and types and sources of data collection. The next procedure is the specification of model which was base on Dunning (1977; 993) eclectic paradigm theory. The a priori expectation was formulated in line with this theory. Finally, the last procedure is method of analyzing data.

3.1 Research Design and Data Collection

This study was base on quantitative research methodology to investigate the effect of foreign direct investment determinants on the inflow of foreign direct investment in Nigeria. This is because the data employed were numerical and historical data subject to econometric analysis for inferences and conclusion. The data for the study were time series and covered the period of 1986 to 2018. Data on foreign direct investment, government capital expenditure, gross domestic product, exchange rate, inflation rate and trade openness were obtained from Central Bank of Nigerian Statistical Bulletin (2018).

3.2 Model Specification

This study was pinned on eclectic paradigm theory developed by Dunning (1977; 1993). This theory stressed the role of determinants factors such as per capita income, large market size, market growth, easy macroeconomic policies, tax holiday, financial stability and low transactions costs which must be present in host countries. This theory opined that for foreign investors to invest in host economy there must be certain advantage which must be prevalent in host economy. Such advantage includes stable and easy macroeconomic policies and suitable investment environment (Soderstern, 2006; Dunning, 2009).

However, the model for the study followed the model of Etim, *et al.*,

(2014); Ojong, *et al.,* (2015); Koko, *et al.,* (2017) with little modification to include important variables like government capital expenditure and exchange rate. Thus, the model for the study is given as:

FDI = (GCE, GDP, EXR, INFR, TOP) (1)

This is given econometric terms to include coefficients and error term as:

$LFDI = \beta_0 + \beta_1 LGCE + \beta_2 LGDP + \beta_3 EXR + \beta_4 INFR + \beta_5 TOP + e$ (2)

Where

FDI = Foreign Direct Investment. This measured the volume of foreign direct investment attracted by Nigeria economy in billion and naira.

GCE = Government Capital Expenditure. This is the total government consumption which represents expenditure in the provision infrastructural facilities and enabling environment for investors.

GDP = Gross Domestic Product. This measured the size of Nigeria economy in terms of annual monetary value of goods and services.

EXR = Exchange Rate. This measured the value of naira in relation to foreign currencies. It captures the level of external balance of the economy.

INFR = Inflation Rate. This measured the purchasing power of naira and internal stability.

TOP = Trade Openness (Summation of total exports and import as a percentage of GDP). This captured the trade capacity of the economy and the level of openness of Nigeria to foreign relationships. It measures the level of openness to the inflow of capital and technology.

L = Logarithm form of the Variables.

β_0 = Constant Term

$\beta_1 - \beta_5$ = Coefficient

e = Stochastic Error Term

A Priori Expectation

Theoretically, it is expected that the determinants of foreign direct investment inflow will have positive and significant effect on foreign direct investment. Thus, β_1, β_2, β_3 and $\beta_5 > 0$ while $\beta_4 < 0$. The larger the government capital expenditure, market size measure as gross domestic product, stable exchange rate and openness of the economy the higher the inflow of foreign direct investment while unstable macroeconomic condition through high inflationary pressure will lead to fall in foreign direct investment inflow (Dunning, 1993; Wheeler & Mody, 1992; Soderstern, 2006; Narayan, 2014, Suleiman, *et al.,* 2015).

3.3 Method of Data Analysis

This study adopted different econometric techniques to investigate the short and long run effects of government capital expenditure, gross domestic product, exchange rate, inflation rate and trade openness on foreign direct investment in Nigeria. The Augmented Dickey-Fuller and Philip Perron unit root techniques were employed to test the stationarity properties of the data series and obtain the order of integration of the variables. This is necessary to avoid the problem of spurious regression. The data series were found to be stationarity at level and instegrated at first difference 1(1) which justified the estimation of short and long run dynamic regression Autoregressive Distributed Lag (ARDL) approach developed by Pesaran and Shin (1999) and Pesaran, Shin and Smith (2001). This technique was suitable for the study because it is fitted for small sample size or data, correct the problem of residual serial correlation and endogeneity through the inclusion of sufficient lags in the model.

Furthermore, the study employed ARDL Bound Test to determine the existence of long run equilibrium between determinants of foreign direct investment namely government capital expenditure, gross domestic product, exchange rate, inflation rate and trade openness and foreign direct investment. The equation for estimating the ARDL Bound Test is:

$$D(LFDI_t) = \alpha_{01}+\beta_1 LFDI_{t-1}+\beta_2 LGCE_{t-1}+\beta_3 LGDP_{t-1}+\beta_4 LEXR_{t-1}+\beta_5 INFR_{t-1}+\beta_6 TOP_{t-1}+\sum_{i=1}^{p}\alpha 1 LFDI_{t-1}+\sum_{i=1}^{p}\alpha 2 LGCE_{t-1}+\sum_{i=1}^{p}\alpha 3 LGDP_{t-1}+\sum_{i=1}^{p}\alpha 4 LEXR_{t-1}+\sum_{i=1}^{p}\alpha 5 INFR_{t-1}+\sum_{i=1}^{p}\alpha 6 TOP_{t-1}+\varepsilon_1 \quad (3)$$

Where: LFDI, LGCE, LGDP, LEXR, INFR, and TOP are variables of study, D is first difference and ε is error term. The null hypothesis of no co-integration was tested against the alternate hypothesis of co-integration by comparing the F-test value against the lower bound critical value at 5%.

Following the estimation of the ARDL Bound Test, the short and long run dynamic coefficients was estimated with following equations: by adopting the ECM-ARDL short run approach which is given as:

$$LFDI_t = \alpha_0 + \sum_{i=1}^{p}\lambda_1 \Delta LFDI_{t-1} + \sum_{i=1}^{p}\lambda_2 \Delta LGCE_{t-1} + \sum_{i=1}^{p}\lambda_3 \Delta LGDP_{t-1} + \sum_{i=1}^{p}\lambda_4 \Delta LEXR_{t-1} + \sum_{i=1}^{p}\lambda_5 \Delta INFR_{t-1} + \sum_{i=1}^{p}\lambda_6 \Delta TOP_{t-1} + \phi ECT_{t-1} + \mu_T \quad (4)$$

From equation 4, λ is the coefficients relating to the short run dynamics of the convergence to equilibrium, Δ represents the differencing

of the variables, ECT_{t-1} is the error correction term resulting from the estimated long run equilibrium relationship, and ϕ is the coefficient denoting the speed of adjustment to long run equilibrium when there is a shock in the system, The long run coefficients of the ARDL model is thus given as:

$$LFDI_t = \alpha_{01}+\sum^{p}_{i=I}\Theta_1 LGCE_{t-1}+\sum^{p}_{i=I}\Theta_2 LLGDP_{t-1}+\sum^{p}_{i=I}\Theta_3 LEXR_{t-1}+\sum^{p}_{i=I}\Theta_4 INFR_{t-1}+\sum^{p}_{i=I}\Theta_5 TOP_{t-1}+ e_t \quad (5)$$

Where: LFDI = Log of Foreign Direct Investment, LGCE = Log of Government Capital Expenditure, LGDP = Log of Gross Domestic Product, LEXR = Log of Exchange Rate, INFR = Inflation Rate, TOP = Trade Openness. $\Theta_1 - \Theta_5$ represents the parameters of the variables. e = Error Term. Finally, the direction of causality among the variables was evaluated using Pairwise Granger Causality technique.

4. Result and Discussion

This section presents results and interpretation of data analyzed using econometric techniques. It commenced with the presentation on unit root Augmented Dickey-Fuller and Philip Perron unit root techniques which are presented in table 1.

Table 1: Summary of Augmented Dickey-Fuller and Philip Perron Results

Series	ADF t-statistics	Order of integration	PP t-statistics	Order of integration
LFDI	-7.100035	I(1)	-7.382755	I(1)
LGCE	-6.171587	I(1)	-6.119882	I(1)
LGDP	-3.720387	I(0)	-3.305926	I(0)
LEXR	-5.655136	I(1)	-3.023596	I(0)
INFR	-4.746238	I(1)	-5.672315	I(1)
TOP	-3.221243	I(0)	-3.165915	I(0)

Source: Computed by Author from E-views 9

The result of the Augmented Dickey-Fuller and Philip Perron unit root test is presented in Table 1. Unit test was conducted to avoid the problem of non-genuine result and it is tested at 5% significant level. The result shows base on the Augmented Dickey-Fuller test that log of gross domestic product and trade openness are stationary at level while log of foreign direct investment, log of government capital expenditure, log of exchange rate and inflation rate are stationarity at first difference. This indicates that the data series are mixture of order zero and order one which

requires the estimation of short and long run dynamic coefficients.

This is supported by the Philip Perron result which shows that log of gross domestic product, log of exchange rate and trade openness are stationary at level while log of foreign direct investment, log of government capital expenditure and inflation rate are integrated at order one. Thus, the study estimated short and long run dynamic coefficients using Autoregressive Distributed Lag Technique developed by Peseran and Shin (1999). However, before estimating the short and long run dynamic coefficients, it is necessary to ascertain the optimum lag which was established using Akaike Information Criterion (AIC), criteria presented in Table 2.

Table 2: Optimum Lag Selection

Lag	AIC	SC	HQ
0	17.40408	17.68162	17.49455
1	9.254682	11.19750*	9.887993*
2	9.208756*	12.81685	10.38491

* indicates lag order selected by the criterion
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

Source: Computed by Author from E-views 9

The result of the optimum lag is indicated in Table 2. Base on the result the Akaike Information Criterion (AIC) shows that the suitable lag for estimating the short and long run coefficients is 2. Thus, the analysis proceeded to the evaluation of the long run relationship between foreign direct investment determinants namely government capital expenditure, gross domestic product, exchange rate, inflation rate and trade openness and foreign direct investment inflow using ARDL Bound technique given in Table 3.

Table 3: ARDL Bound Test

Null Hypothesis: No long-run relationships exist		
Test Statistic	Value	K
F-statistic	4.893825	5
	Critical Value Bounds	
Significance	I0 Bound	I1 Bound
10%	2.26	3.35
5%	2.62	3.79
2.5%	2.96	4.18
1%	3.41	4.68

Source: Computed by Author from E-views 9

The result of the long run relationship is presented in Table 3. The null hypothesis of no long-run relationship is tested against the alternate hypothesis of the existence of long run relationship at 5% lower bound (I0) critical value. Evidence from the result shown in Table 3 reveals that the ARDL F-statistic value of 4.893825 is greater than the lower bound (I0) critical value of 2.62 at 5% indicating the rejection of the null hypothesis of no long-run relationships. Thus, it is concluded that foreign direct investment determinants namely government capital expenditure, gross domestic product, exchange rate, inflation rate and trade openness have long run dynamic relationship with foreign direct investment inflow in Nigeria. Thus, the analysis advances to the estimation of the short and long run coefficients which are presented in Table 4 and 5 respectively.

Table 4: ARDL Short Run Coefficients

Dependent Variable: Foreign Direct Investment			
Variable	Coefficient	t-Statistic	Prob.
D(LGCE)	-0.900786	-1.291446	0.2138
D(LGCE(-1))	1.590741	2.433991	0.0263
D(LGDP)	3.961751	1.293859	0.2130
D(LGDP(-1))	6.781465	2.745688	0.0138
D(LEXR)	0.818712	1.089866	0.2910
D(INFR)	-0.028667	-1.811007	0.0878
D(INFR(-1))	0.049613	3.050427	0.0072
D(TOP)	1.557851	1.899950	0.0745
CointEq(-1)	-0.641226	-4.779926	0.0002

Source: Computed by Author from E-views 9

The short run co-integrating result is presented in Table 4. The result shows that first period lag of log of government capital expenditure, first period lag of log of gross domestic product and first period lag of inflation rate have positive and significant effect on log of foreign direct investment in the short run. Also, in the short run log of government capital expenditure and inflation have negative and insignificant effect on foreign direct investment in the current period.

However, log of gross domestic product, exchange rate and trade openness have positive but insignificant effect on foreign direct investment in the current period in the short run. Finally, the short run result shows that the co-integrating equation has the expected negative sign of -0.641226 which is significant at 5%. This indicates that foreign direct investment adjusted speedily to short run changes in the dynamic equation. This implies that feedback in the short run disequilibrium is corrected at speed of 64%

towards equilibrium path in the long run.

Table 5: ARDL Long Run Coefficients

Dependent Variable: Foreign Direct Investment			
Variable	Coefficient	t-Statistic	Prob.
LGCE	-3.584808	-4.351429	0.0004
LGDP	3.028801	3.686868	0.0018
LEXR	-1.072071	-1.064921	0.3018
INFR	-0.149184	-3.055561	0.0072
TOP	2.429489	1.868864	0.0790
C	1.042588	0.295283	0.7714

Source: Computed by Author from E-views 9

The result of the long run coefficients is presented in Table 5. The result shows that log of government capital expenditure has negative and significant effect on log of foreign direct investment which implies that government spending in the provision of conducive climate for investment is not enough to induce the inflow of foreign direct investment in Nigeria. This is an indication of the bottleneck in the infrastructural facilities which has continued to impede the inflow of foreign direct investment. This result is not in line with the a priori expectation and the findings of Suleiman, *et al.*, (2015)

However, the result shows that log of gross domestic product which measures size of the economy has positive and significant effect on the log of foreign direct investment in the long run which conforms to the a priori expectation. This implies that the larger the size of the Nigeria economy in terms of productivities which signifies larger demand the bigger the inflow of foreign direct investment in Nigeria. This is also an indication of larger labour productivity which is an important determinant of foreign direct investment. This finding does not correspond to the result of Ibrahim, *et al.*, (2017); Mfinanga (2018) but is in line with the empirical findings of Narayan (2014); Offiong and Atsu (2014).

Conversely, the long run result shows that log of exchange rate has negative and insignificant effect on log of foreign direct investment which point to the unstable and high depreciation of naira. This implies that higher exchange rate will make cost of doing business high which discourages the inflow of foreign direct investment. This result does not conform to the a priori expectation and findings of Mfinanga (2018) but in tandem with

findings of Narayan (2014).

Also, inflation rate is found to have negative and insignificant effect on log of foreign direct investment which implies that high inflationary pressure which is a measure of internal stability will lead to fall in the inflow of foreign direct investment in the long run which is line with the theoretical expectation. The finding is not supported by the result of Ibrahim, *et al.,* (2017); Nwosa and Adeleke (2017); Mfinanga (2018) though is in line with empirical analysis of Oba and Onuoha (2013); Suleiman, *et al.,* (2015)

Finally, it is found that trade openness has positive but insignificant effect on foreign direct investment which indicates that the more the openness of the country to international relations the higher the inflow of foreign direct investment which is in line to the a priori expectation and supported by the findings of Oba and Onuoha (2013); Offiong and Atsu (2014); Nwosa and Adeleke (2017) though not in tandem with findings of Mfinanga (2018).

Table 6: Diagnostic and Stability Test

Diagnostics test	Chi-square value	P-value
Normality Test	2.6639	0.263968
Breusch-Godfrey LM test for Serial Correlation	0.2921	2.461413
Heteroskedasticity Test: Harvey	0.6863	10.09358
Ramsey RESET test of Omitted Variables	0.2587	1.171117

Source: Computed by Author from E-views 9

Table 6 shows the diagnostics and stability test for the regression result. The Jarque-Bera normality test reveals that the residual of the model is normally distributed. Also, Breusch-Godfrey Lagrange Multiplier test (LM) indicates that the regression model is not serially correlated. The result of Harvey Heteroskedasticity test shows that the residual is Homoscedastic. Finally, the result revealed that regression model is relatively stable.

Table 7: Pairwise Granger Causality Tests

Null Hypothesis:	Obs	F-Statistic	Prob.
LGCE does not Granger Cause LFDI	31	0.24808	0.7821
LFDI does not Granger Cause LGCE		0.20066	0.8194
LGDP does not Granger Cause LFDI	31	0.19978	0.8202
LFDI does not Granger Cause LGDP		3.99355	0.0307
LEXR does not Granger Cause LFDI	31	0.12276	0.8850
LFDI does not Granger Cause LEXR		0.21600	0.8072
INFR does not Granger Cause LFDI	31	1.70920	0.2007
LFDI does not Granger Cause INFR		4.31460	0.0241
TOP does not Granger Cause LFDI	31	0.13270	0.8763
LFDI does not Granger Cause TOP		0.88325	0.4255

Source: Computed by Author from E-views 9

The result of the Pairwise granger causality tests is presented in Table 7. The result shows that log of government capital expenditure, log of exchange rate and log of trade openness have independent causality with log of foreign direct investment. However, is found in the result presented in Table 7 that, log of gross domestic product and inflation rate have unidirectional causality with log of foreign direct investment with causality mainly flowing from log of foreign direct investment to log of gross domestic product and inflation rate.

5. Conclusion

The inflow of foreign direct investment serves as source of growth and development to most developing countries like Nigeria. In the recent years, government has continued to stress the importance of foreign direct investment as a tool for assuaging the economy from some challenges facing the economy. The government has continued to put in place mechanisms and policies to attract the inflow of foreign direct investment in Nigeria. Thus, this study investigated the determinants of foreign direct investment and how they influence the inflow of foreign direct investment both in the short and long run in Nigeria.

In summary, it was found that, both government capital expenditure and inflation rate impede the inflow of foreign direct investment both in the short and long run. This is an indication of the poor infrastructural facilities and unstable macroeconomic environment being experienced by Nigeria. This is highly connected and depicted in government annual budget in the provision and revamping of in infrastructural capacity of the nation. Also, the nation's high inflationary pressure has continued to serve as bane to the inflow of foreign direct investment. Exchange rate was also established to contribute negatively to the inflow of foreign direct in the long run

compared to short run. This emphasized the unstable nature of the Nigeria exchange rate which makes cost of importation of materials and doing business in the country to be high. Finally, it was revealed that market size measured by gross domestic product and trade openness stimulate the inflow of foreign direct investment both in the short and long run. This indicates that the large market size and high demand was well as high labour productivities reflected in high gross domestic of the economy encourages the inflow of foreign direct investment.

It was thus recommended that government should as a matter of urgency allocate more funds for the provision of enabling and investment enhancing environment for the purpose of stimulating the inflow of foreign direct investment in Nigeria. There should be massive allocation and investment in infrastructural facilities like road, electricity and port amongst others in the nation. Government should ensure stable macroeconomic environment and political stability in order to promote foreign investment in both the short and long run. The issue of insecurities and internal threats should be addressed by the government. Finally, the trade policy of the nation should be improved upon in order to ensure the openness of the economy to international market, technology and capital to attract the inflow of foreign direct investment into the economy.

However, this study was limited by lack of enough data which impede the adoption of important variables like political risk and insecurity. Thus, it was suggested that further studies should be conducted by adoption political risk and insecurity as important determinants of foreign direct investment. Also, studies should be conducted to investigate sectoral determinants of foreign direct investment in Nigeria and other developing countries.

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