

# Foreign Direct Investment Determinants In Nigerian Economy From 1970 To 2015

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**Abstract:** *This study sought to examine the relationship between foreign direct investment and its potential determinants (market size, exchange rate, inflation rate and degree of openness) in the Nigerian economy from 1970 to 2015. Annual time series data for 46-years were collated from Central Bank of Nigeria – Statistical bulletin and World Bank Annual Data. The study employed error correction methodology (ECM). The Long-run static model indicates that market size was found to be positive and significant in attracting foreign direct investment (FDI) in the Nigerian economy. But the short-run dynamic model revealed that lagged value of market size is positive and not significant in attracting foreign direct investment. Furthermore, the coefficient of the error correction mechanism in the short-run dynamic model is significant with appropriate negative sign which is the requirement for dynamic stability of the model. The study recommends among others that the government should adopt effective fiscal policies that would intensify trade liberalization policy so as to increase openness in the economy, and improve the nation's business environment.*

**Keywords:** *Foreign direct investment, market size, exchange rate, inflation rate, and degree of openness.*

## I. INTRODUCTION

Foreign direct investment plays an extraordinary and growing role in global business by providing a firm with new markets and marketing channels for their products. For a host country or foreign firm which receives the investment, it provides them with new technologies, capital for investment, enhances job creation, managerial skill, products, and modern management practices. All these are presumed to contribute to economic growth and development in an economy. Foreign direct investment is important not just for the developing countries but also for developed nations. Nigeria is regarded as the giant of Africa, Rotberg (2008) submits that Nigeria is popularly referred to as the sociopolitical giant of Africa due

to its position as the most populous country in Africa and the continent's largest oil producer. It has an estimated population of over 170 million people. It also has a large abundance of human and material resources, yet fail to attract enough foreign direct investment. To this end, Nigerian authorities decided to deregulate and liberalize the economy to attract foreign direct investment through various reforms. Some of the policies that were put in place to attract foreign direct investment include; the deregulation of the economy in the 1980s, the New Industrial Policy of 1989, establishment of the Nigerian Investment Promotion Commission (NIPC) in the early 1990s, and the establishment of the Economic and Financial Crimes Commission (EFCC), and the Independent Corrupt Practices Commission (ICPC) in the late 1990's.

The World Bank Report (2003) reports that Nigeria's policy of economic deregulation and liberalization has opened up new windows of opportunity to all investors wishing to invest in the country's economy. In this connection, interest rate regimes supportive of the private sector of the economy as well as an exchange rate regime that is market determined are the objects of government policy. The security of life and property of the citizens is being vigorously pursued with the reorganization and strengthening of the Nigeria Police Force. In addition, the Nigerian Investment Promotion Council (NIPC) has been strengthened to enable it serve as a one-stop office for clearing off all the requirements for investment in the country. The tariff structure is being reformed with a view to boosting local production. Government has also introduced a new visa policy to enable genuine foreign investors to procure entry visa to Nigeria within 48 hours of submission of the required documentation. The existing "expatriate quota" requirement for foreign nationals working in Nigeria is in the process of being replaced with "work permit" which will be administered by NIPC.

#### STATEMENT OF PROBLEM

Despite the role of foreign direct investment in a host country in promoting growth, Nigeria, has really not felt the impact of foreign direct investment. At the same time, even when regarded as the largest economy in Africa, the Nigerian economy is still gambling with unemployment, mass poverty, very weak manufacturing sector, still a mono culture country and over dependent on oil sector. All these raise questions as to, one, what has been the trend of foreign direct investment and its potential determinants in the Nigerian economy. Two, what is the relationship between the foreign direct investment and its potential determinants in the Nigerian economy? So many researchers have worked on foreign direct investment determinants in Nigeria, but none, has been able to establish the magnitude of the long and short run effect of the variables. To fill this gap, therefore, this study would examine both the short and long run effects of the variables considering the fact that the economy has not performed satisfactorily in terms of attracting FDI inflows in spite of government policies and various incentives. The central problem of this study is to investigate empirically the determinants of FDI inflows with a view to chosen appropriate policies to attract the desired inflow of FDI.

#### OBJECTIVES OF THE STUDY

In view of the above statement of problem, the Objectives of this study include;

- ✓ To examine the trend of foreign direct investment and that of its potential determinants in the Nigerian economy from 1970 – 2015.
- ✓ To examine the relationship between the foreign direct investment and its potential determinants in the Nigerian economy from 1970 – 2015.

This rest of the paper is organised as follows: Apart from section one that introduces the paper, section two discusses the literature review; while section three presents the

methodology. Section four presents the results and discussion while section five concludes the paper.

## II. LITERATURE REVIEW

### MEANING AND THEORIES OF DETERMINANTS OF THE FOREIGN DIRECT INVESTMENT

#### *MEANING OF FOREIGN DIRECT INVESTMENT*

*Foreign Direct Investment* is an investment that involves the injection of foreign funds into an enterprise that operates in a different country of origin from that of the investor. It is a long term investment reflecting a lasting interest and control by a foreign direct investor or parent enterprise of an enterprise entity resident in an economy other than that of the foreign investor (International Monetary Fund, 1999). As FDI flows grew in volume and complexity in the 1990s and early 2000s, three new players appeared on the global stage: They are: sovereign wealth funds (SWFs), which were government-controlled entities with the authority to take significant equity stakes in foreign firms; private equity (PE) firms, which resorted increasingly to cross-border acquisitions, and emerging-market multinational enterprises (EMNEs), which ratcheted up their overseas acquisitions and investments.

#### *THEORIES OF DETERMINANTS OF FOREIGN DIRECT INVESTMENT*

Many studies on foreign direct investment determinants such as saskia (1998); Asiedu (2002) and Njogo, (2014) have identified various theories that explain FDI determinants. The theories are grouped into three schools namely; the dependency, modernization and integrative schools.

#### *DEPENDENCY SCHOOL*

The dependency school seeks to achieve more equal wealth, income, and power distribution through self-reliant and collective action of developing nations. There are two sets of theories within the dependency school that have emerged to explain the causes of underdevelopment and dependency and they are the dependencia /neo-Marxist subschool on the one hand and the structuralist subschool on the other. The dependencia or neo-Marxist subschool states that developing countries are exploited either through international trade which leads to deteriorating terms of trade (an unequal exchange in Marxist terms), or through multinational corporations transferring profits out of developing economies while, structuralist subschool posits that international centers (industrialized countries) and domestic centers (national capital) extract resources from the peripheries, namely the poor countries or local countryside.

#### *MODERNIZATION SCHOOL*

The modernization school was developed before the dependency school, and it remains widely influential to the present day. Modernization theorists proclaim that there is a

natural order through which countries ascend to what is seen as higher developmental stages.

### INTEGRATIVE SCHOOL

An integrative foreign direct investment theory considers macro-, micro, and meso-economic variables that determine foreign direct investment. The macro-level envelops the entire economy, the micro-level denotes firms, and the meso-level represents institutions linking the two, for example government agencies issuing investment policy to enterprises. What distinguishes integrative foreign direct investment theory from its predecessors is that it accords more importance than previous theories to the meso-level, the sphere where macro- and micro-variables meet, and public and private sectors interact. It is in this arena that public policies are established and implemented. Thus, the meso-level is pivotal to the successful implementation of public policies. At the meso-level that the day-to-day challenges in foreign direct investment policy implementation occur and structural rigidities are revealed. The present study is rooted in the integrative school.

### MAIN DETERMINANTS OF FOREIGN DIRECT INVESTMENT

Foreign Direct Investment determinants have been widely discussed in literature. Based on the theories, Foreign direct investment is classified into two types: - market oriented and export-oriented. And in these two categories, there are a lot of factors that determine the inflow of FDI into a particular country. These factors can be classified into micro determinants and macro determinants. Krugell (2005) and Wang & Swain (1997) have explained the determinants of FDI. The micro determinants are mainly concerned with those location specific factors that have an impact on the profitability of FDI at firm's or industry level. The host country characteristics that influence productivity and cost at this micro level include market size and growth, labour costs, tariffs, host government policies and trade barriers. The macro-determinants of FDI are the factors that influence profitability and the choice to invest at an economy-wide level (Krugell, 2005). These are the size and growth of the host market, exchange rates and political stability. These factors are referred to as export oriented in nature and they look at cost competitiveness.

Based on the micro and macro determinants discussed above, the factors that determines the FDI inflows into a country are listed below;

- ✓ Market size and growth of the Nigerian Economy
- ✓ Natural and human resources endowments-cost and productivity of labour
- ✓ Openness to international trade and access to international markets
- ✓ Development of the regulatory frame work and economic policy coherence.
- ✓ Inflation Rate
- ✓ Exchange Rate
- ✓ Infrastructure
- ✓ Investment Incentives

- ✓ Stock exchange
- ✓ Environment

First, market size and growth has been said to have positive effect on FDI because it directly affects the expected revenue of the investment (Sun, et.al, 2002), thus it is one of the most important determinants that have been used in empirical studies to explain the inflow of FDI to a host country.

Second, Natural and Human Resource Endowments

Nigeria has rich resources of labour with average salaries of workers remaining at a relatively low level. Also, looking at Nigeria's large population, automatically one would see large market, skilled manpower, abundant natural resources and a surfeit of entrepreneurial spirit, which are the basics differentiating Nigeria from many other markets in Africa. Investors taking these advantages can achieve a lot.

Third, openness to international trade and access to international markets.

Chakrabarti (2001) defines openness to trade as trade intensity which refers to the ease with which capital can be moved in or out of a country by investors. Since economic liberalization in 1995, Nigeria has had one of the most open regimes in Africa for foreign investors, The Business Trade and Investment Guide (2010). Openness to international trade induces FDI's inflow but at the same time, may have negative influence on domestic industry in terms of competition.

Fourth, Development of the regulatory framework and economic policy coherence.

Nigeria has been working hard to improve its reputation abroad, and it has made substantial progress in addressing the issues that have worried foreign investors in the past. They have also formulated and implemented a series of preferential policies to encourage international trade. These policies include restoring the rule of law, and challenging corruption and gratification. Also on ground at the moment is the issue of security. The present government is working hard to handle this with the help of the international community.

Fifth, Inflation Rate: Asiedu (2002) notes that inflation rate is used as a measure of overall macroeconomic stability of a country. A low inflation rate serves as an attraction of FDI in a country while a high inflation rate serve as a disincentive on FDI as it increases the user's costs of capital. Inflation reduces private investment by increasing risk, reducing average lending maturities, distorting the informational content of relation prices, and indicating macroeconomic instability.

Sixth, Exchange Rate: Several studies report the effects of changes in the real exchange rate and the terms of trade on investment. These studies generally find that the variability of the real exchange rate is usually more of a disincentive for investment than is the level (Serven and Solimano, 1993; Faruqee 1992).

Seventh, Infrastructure: previous empirical studies have generally focused on the role of host country infrastructures in influencing the FDI inflows. According to Head, (2000), in his study, he demonstrated that FDI inflows is attracted not only to regions with high levels of final demand for the output, but also to region with high densities of manufacturing activities and extensive transportation infrastructure.

Eighth, Investment Incentives: Investment incentives in form of cheaper land cost or lower tax rate are also FDI determinants in a country. FDI inflow in countries with investment incentives could enable investors to achieve low operation cost and high efficiency. In the case of taxation, (Friendman, et. al., 1992; Loree & Guisinger, 1995) in their empirical studies, found out that the rate of corporate taxation as an investment incentives has negative effect on investment decision.

Ninth, Stock Exchange: It has been observed by some market speculators in Nigeria that what makes foreign investors to come into a country is a sophisticated and high developed stock exchange market. This is one of the issues that deters foreign investors into Nigeria, apart from the issues mentioned above.

Tenth, Environment: Once an environment is volatile, an investor prefers to wait or invest in a project of short term in nature.

#### *REVIEW OF EMPIRICAL FINDINGS ON FDI DETERMINANTS*

Empirically, there has not been a consensus on all the important determinants of foreign direct investment. This is because of the different types of foreign direct investment inflows into a country which is affected by different factors. Also, the lack of consensus also has to do with the difficulty of getting accurate data (particularly for developing countries) on some of the determinants, such as labour costs and labour quality, investment/regulatory climate, degree of openness and natural resources. Beatrice and Adolf (2004) note, that natural and human resources endowments are an important determinant of foreign direct investment inflows. At the same time, the determinants of foreign direct investment in developed and developing countries cannot be grouped together given different economic conditions. There are a few studies that concentrate on region and yet very few on the Nigerian economy.

Soumyananda (2009), in his study of factors attracting FDI to Nigeria, employed most of the variables listed above in his work (market size, exchange rate, inflation rate, openness and natural resources). Using vector error correction model, the results show that in the long run, foreign direct investment inflow to Nigeria is co-integrated with natural resources outflow, GDP per capita, openness, inflation and foreign exchange rate. Also, the coefficients of error correction of foreign direct investment flow and foreign exchange rate are significantly negative whereas that of resources flow and GDP are significantly positive. This suggests that in short run, if there is any disturbance in the economy, FDI and foreign exchange rate returns to their long run equilibrium path whereas resource flow and GDP do not come back to their long run equilibrium path. The result also shows that inflation rate affects FDI inflows in Nigeria in the short run. FDI inflow increases directly with rising inflation in Nigeria, and GDP, FDI and openness also have significant impact on resource outflow. At the same time, inflation rate significantly reduces real GDP. Natural resources flow significantly affect inflation rate, which follows autoregressive structure. His findings

suggest that the bulk of FDI inflow to Nigeria can be explained by resource seeking FDI.

Obida, and Abu (2010), in their study found out that market size of the host country, deregulation, and political stability are the main determinants of FDI in Nigeria, but exchange rate was found to be negative. Beatrice and Adolf (2004), Anyanwu (1980), and Iyoha, (2001), also confirmed the positive role of market size in determining FDI inflows into the country.

Asiedu (2002) in her study of the determinants of foreign direct investment to developing countries (71 countries – divided into 32 Sub-Saharan African Countries and 39 non Saharan African Countries) for the period of 1988 – 97, found that FDI and trade are complements, and openness to trade and natural resources promotes FDI to Sub-Saharan African Countries and non Saharan African Countries. This is in line with (Andre´ 2008; Bénassy-Quéré et al (1999); Botrić and Škuflic (2006); Greenaway et al (2007); Hakro and Ghumro (2007); Onyeiwu and Shrestha (2004)).

Yuko and Nauro (2002) in their study of the location determinants of foreign direct investment in transition economies used market size and resource abundance as variables. In their work, they argued that different types of FDI namely, the market-seeking FDI and the resource-seeking FDI are motivated by different factors. The market-seeking FDI goes to countries with large local market while the resource-seeking FDI goes to countries with abundant natural resources. Using OLS model, their first result indicates that FDI into transition economies are mainly driven by the host country's market, availability of skilled workers (or the level of human capital), and sufficient infrastructure. The natural resources dropped out because of its invariance over time in the data set after taking first-differences.

#### *SUMMARY OF REVIEW OF RELATED LITERATURE OF FOREIGN DIRECT INVESTMENT DETERMINANTS IN THE NIGERIAN ECONOMY FROM 1970 – 2015*

Most of the researchers that worked on foreign direct investment determinants have identified several determinants of foreign direct investment through the use of ordinary least square, error correction model and other techniques. However, none has established the magnitude of the long and short run effect of the variables. Therefore, this study would examine both the short and long run effects of the variables.

The identified variables relevant to this study are as follows:

- ✓ Market size
- ✓ Exchange rate
- ✓ Inflation rate
- ✓ Degree of openness.

Our reason for making use of the four variables is as result of access in getting the data.

### III. METHODOLOGY

This is analytical research as it aims to study the trend of foreign direct investment and that of its potential determinants in the Nigerian economy and to examine the relationship



between foreign direct investment and its potential determinants in the Nigerian economy

**SOURCES OF DATA**

Annual time series data of the variables were used and they include, total FDI inflows and its potential determinants (market size, degree of openness, exchange rate and inflation rate). The data on all the variables were collected from the various issues of the Central Bank of Nigeria- Statistical bulletin (various issues) and World Development Indicators – WorldBank DataBank - for the period 1970 to 2015,

**SPECIFICATION OF MODEL**

In this study, the researchers employed a multiple regression model to estimate the relationship between foreign direct investment and its potential determinants. The model expresses foreign direct investment (FDI) as a function of the market size (GDP), exchange rate (EXR), inflation rate (INF), and degree of openness (DOP). The functional form of the model is stated thus;

$$FDI = f(GDP, EXR, INF, DOP) \dots\dots\dots (1)$$

The econometric model is stated as;

$$FDI = \beta_0 + \beta_1 GDP_t + \beta_2 EXR_t + \beta_3 INF_t + \beta_4 DOP_t + \mu_t \dots (2)$$

Where

- FDI* = Foreign Direct Investment is measured in naira
- GDP* = the GDP per capital, which reflects the income level of the whole economy was used to capture market size.
- EXR* = exchange rate of the host country’s currency
- INF* = inflation rate which is frequently used as an indicator of macroeconomic instability
- DOP* = trade openness which is the sum of exports and imports as a percentage of GDP in the previous period.
- $\mu_t$  = error term.
- $\beta_0$  = intercepts, of the equation 2
- $\beta_i$  = Coefficients of explanatory variables or regressors,  $\beta_1, \beta_2, \beta_3, \beta_4 > 0$

**A PRIOR EXPECTATION**

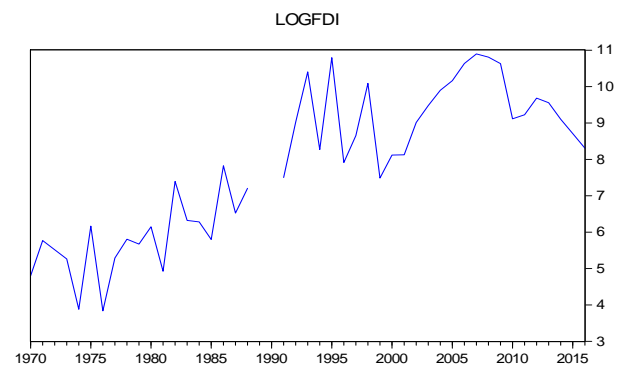
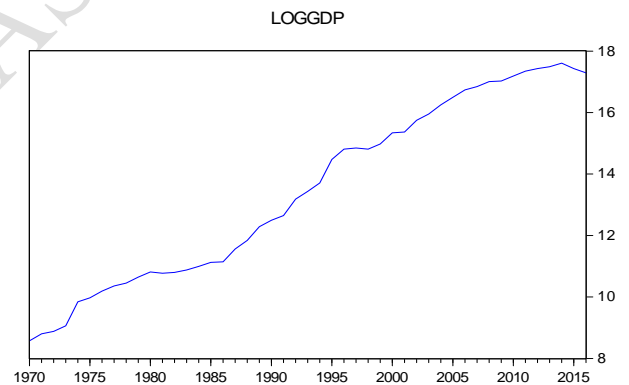
Proxy Variables	Definitions	Expected Sign
Foreign Direct Investment (FDI)	FDI in a host country is captured by the total inflows of FDI into Nigeria and this comprises the equity capital, reinvested earnings and other capital.	
Gross Domestic Product (GDP)	the GDP per capital, which reflects the income level of the whole economy was used to capture	+

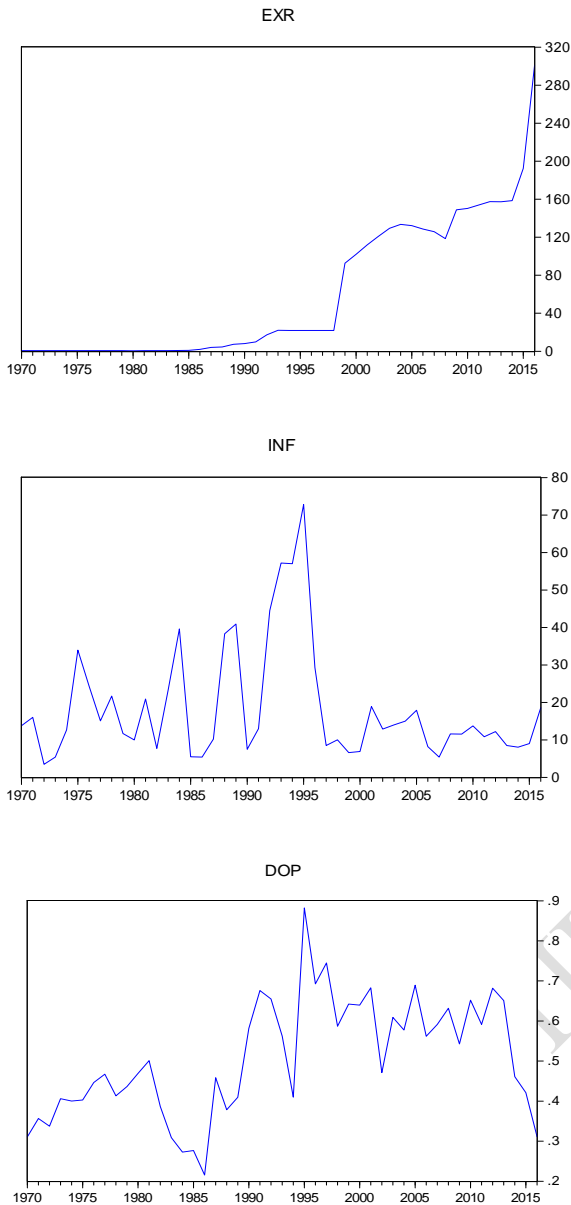
	market size.	
Exchange Rate (EXR)	This is the rate at which the naira is converted to the US dollar	-
Inflation rate (INF)	The rate of inflation refers to the changes in the general price level and is measured in percentage.	+
Degree of Openness (DOP)	This is measured as the ratio of export and import to GDP	+

**IV. RESULTS AND DISCUSSION**

*Objective One:* To study the trend of foreign direct investment and that of its potential determinants in the Nigerian economy from 1970 to 2015.

**GRAPHICAL REPRESENTATION OF FDI, GDP, EXR, INF & DOP**





Looking at the graph, GDP remained on the increase starting from 1970 up to 1985. The exchange rate which was high in 1970 came down in 1971. It continued going down minimally until 1976. Then in 1977, it increased a bit and decreased again 1978 and later increased in 1984 and 1985 showing irregular and fluctuating movements. The inflation rate was so unsteady too but was high in 1976 and very high in 1984. DOP also shows unsteady movements.

From, the graph, it could be seen that there was an increase in FDI inflow in 1986, this was as a result of various reforms like deregulation of the economy that was introduced at that time to attract FDI into the country. There was astronomical increase of FDI inflows from 1990 – 1993. This increase can be linked to the dramatic rise in FDI inflows from emerging countries in Asia such as China and India. Another reason was the rapid rise in crude oil prices which increased investment in the petroleum sector. The exchange rate in 2000 came down from 1999 to 2000 and inflation was single digit. Interestingly, reason to note is that Nigeria is deemed to have

been reaping the benefits of its turn to democracy, as the country seems to be achieving strong economic growth in recent times. FDI in 2002 was high but dropped in 2003 and further dropped drastically 2010 then picked up in 2011 and fell in 2012 and continued up to 2015. The decline may be linked to global economic crises which affected the MNCs across the globe. However, the recent recovery from the global economic crises in 2010 is supposed to overturn the decline, but another problem in Nigeria’s FDI inflow is the issue of recent petroleum industry bill passed by the Nigerian legislative arm which requires a review of the tax exemptions previously granted to oil companies, increased government participation and also enforcement of local content directive for professional and management staff in oil companies. At the same time, there is issue of political insecurity, kidnapping, and Islamist sect Boko Haram disturbing the business environment.

**OBJECTIVE TWO:** To examine the relationship between the foreign direct investment and its potential determinants in the Nigerian economy from 1970 – 2015.

The descriptive statistics for foreign direct investment, gross domestic product, exchange rate, inflation rate, and degree of openness are shown in Table 1. The mean value of the exchange rate is the largest with a value of 62.12178 over the entire period; it was followed by inflation with a value of 18.24289 while degree of openness (DOP) has the lowest value of 0.51. Also, the descriptive statistics show that degree of openness had the lowest standard deviation of 0.15, while exchange rate had the highest standard deviation of 74.62. All the variables are positively skewed except FDI and GDP which are negatively skewed. The kurtosis statistic of Inflation Rate had a high peak distribution, called leptokurtic, since it was greater than (3), while other FDI and GDP had relatively low peak distribution, called platykurtic, since they were less than three (3). However, exchange rate had a normal distribution (that is mesokurtic).

	FDI	GDP	EXR	INF	DOP
MEAN	7.821567	13.51496	62.12178	18.24289	0.508082
STD. DEV	2.028187	3.018262	74.62446	15.31543	0.149300
SKEWNESS	-0.195063	-0.082713	0.984124	1.898619	1.133160
KURTOSIS	1.9919582	1.503015	3.304726	6.176093	2.362600

Source: Authors’ computation (2017)

Table 1: Descriptive statistics

### UNIT ROOT TEST ANALYSIS

We carried out a stationarity test on all the variables to avoid having a spurious regression analysis using the Augmented Dickey Fuller (ADF) test. The result of the ADF presented in Table 2 indicated that all the variables are stationary though at different orders of integration. Three of the variables namely FDI, GDP and EXR are stationary at first difference while INF, and DOP are stationary at level. It implies that the null hypothesis of non-stationarity for all the variables is rejected.

VARIABLE	ADF Test-Statistic	ORDER OF INTEGRATION	Decision
FDI	-12.42486 (0.00)	I(1)	Stationary

GDP	-5.294247 (0.00)	I(1)	Stationary
EXR	-6.173377 (0.00)	I(1)	Stationary
INF	-3.328111 (0.01)	I(0)	Stationary
DOP	-3.124487 (0.03)	I(0)	Stationary

Source: Authors' computation (2017)

Table 2: Stationarity test

### CO-INTEGRATION ANALYSIS

Going by the results of the stationarity test, it is imperative to verify if the variables co-integrate, that is, if a long run relationship exists among the variables. The result in Table 3, presents the cointegration which test the null hypothesis of no cointegration against the alternative that cointegration exists among variables. The result indicates that the result of Johansen co integration test showed some evidences of long run relationship between foreign direct investment and the explanatory variables by showing that there is one cointegrating equation at 5% level of significance. The Max-eigenvalue test also, indicated the presence of a co integration relationship at 5% and the Trace test indicates the presence of one (1) co integration equation at 5%. Hence, the explanatory variables can predict the behavior of the dependent variable (FDI) in the specific model.

Date: 08/23/17 Time: 13:36

Sample (adjusted): 1972 2015

Included observations: 40 after adjustments

Trend assumption: Linear deterministic trend

Series: LOGFDI LOGGDP EXR INF

DOP

Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.607901	71.61284	69.81889	0.0357
At most 1	0.348729	34.16320	47.85613	0.4929
At most 2	0.220764	17.01002	29.79707	0.6393
At most 3	0.145348	7.032376	15.49471	0.5739
At most 4	0.018574	0.749951	3.841466	0.3865

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level

\* denotes rejection of the hypothesis at the 0.05 level

\*\*MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.607901	37.44965	33.87687	0.0179
At most 1	0.348729	17.15317	27.58434	0.5668
At most 2	0.220764	9.977646	21.13162	0.7468
At most 3	0.145348	6.282425	14.26460	0.5773
At most 4	0.018574	0.749951	3.841466	0.3865

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level

Source: Authors computation.

Table 3: Co integration

### REGRESSION ESTIMATE (LONG RUN)

Sequel to the co integration estimate, we used the ordinary least square method to estimate the cointegration equation, and obtained the results in Table 4. The estimate of the long-run model that captures the relationship between the foreign direct investment inflow and its potential determinants in the Nigerian economy during the study period indicated that the coefficient of logGDP which we used to capture market size was found to be positive and significant in attracting foreign direct investment (FDI). This shows that holding other variables constant, a percentage increase in market size in the previous one year causes the FDI inflow to increase by approximately 0.84 percent. This finding is consistent with the work of Soumyananda (2009), Obida and Abu (2010), Beatrice and Adolf (2004) and Iyoha (2001) and also in line with our a prior expectation. The positive result of market size variable (GDP) implies that GDP is one of the factors attracting the FDI inflow in the Nigerian economy. This further implies that FDI moves to countries with larger and expanding markets and purchasing power, where firms can potentially receive a higher return on the capital and by implication receive higher profit from their investments. This is actually the case because an increase in economic performance of any nation gives a positive signal that the business environment is conducive. Therefore, all things been equal, foreign investors will invest in such an economy. This result is in line with our a prior expectation.

The coefficient of exchange rate, though negative and insignificant to FDI, holding other variables constant, shows that a unit change in exchange rate will result in decline in foreign direct investment inflow by approximately 0.01 percent. This result is consistent with the findings of Anyanwa (1980), soumyananda (2009), and Obida and Abu (2010) and also, in line with our prior expectation. The variability of exchange rate which Nigeria is having is disincentive for investment.

Furthermore, the result of inflation rate is statistically insignificant but positively related to FDI inflow into the country. This shows that holding other variables constant, a percentage change in inflation will result in 0.02 change in FDI. Interestingly, this result is inconsistent with our a prior expectation and in line with the works of soumyananda (2009) and Obida and Abu (2010).

However, the results illustrate that degree of openness shows a negative and insignificant impact on FDI. This implies that holding other variables constant that a percentage change in DOP will culminate in 0.5 decrease in FDI. This implies that Nigerian economy were less open to foreign investment during the period under investigation. This result is in line with the work of Njogo (2014) and Akenbor (2014) but contrary to the findings of soumyananda (2009) and Obida and Abu (2010). Asiedu (2002), Botrić, V and Škuflí, L. (2006), and Onyeiwu and Shrestha (2004) that confirmed degree of openness positive. This negative result of DOP, though at variance with our a prior expectation, implies that foreign investors would be scared to come in.

In addition, the coefficient of determination ( $R^2$ ) suggest that 81% systematic variation of FDI is explained by the independent variables (GDP, EXR, INF, DOP). This suggests

that the model has a good fit. The F-statistic of 43.43 and probability of F-statistic (0.000) indicates that the model is adequate enough to explain the changes in FDI. Furthermore, Durbin Watson statistics value of 1.87, which is (approximately 1.9) showed the absence of serial autocorrelation among the model.

Dependent Variable: LOGFDI  
Method: Least Squares  
Sample: 1970 2015  
Included observations: 44

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-2.925605	1.354034	-2.160658	0.0369
LOGGDP	0.842556	0.153888	5.475129	0.0000
EXR	-0.011085	0.006240	-1.776433	0.0835
INF	0.018121	0.010666	1.699010	0.0973
DOP	-0.547503	1.448082	-0.378088	0.7074
R-squared	0.813146	Mean dependent var	7.810574	
Adjusted R-squared	0.793982	S.D. dependent var	2.050279	
S.E. of regression	0.930606	Akaike info criterion	2.800682	
Sum squared resid	33.77505	Schwarz criterion	3.003431	
Log likelihood	-56.61501	Hannan-Quinn criter.	2.875872	
F-statistic	42.42985	Durbin-Watson stat	1.873629	
Prob(F-statistic)	0.000000			

Source: Authors computation

Table 4: Long run estimate

### MODEL SUMMARY

The analysis of the result suggests that if;

$$\text{LogFDI} = - 2.925605 + 0.842556\text{LogGDP} - 0.011085\text{EXR} + 0.018121\text{INF} - 0.547503\text{DOP}$$

Then;

T-statistic= (-2.16) (5.48) (-1.78) (1.70) (-0.38). The result further shows that;

R – Square = (0.81)

F-statistic = (42.43)

Prob (0.00)

### ERROR CORRECTION MODEL (ECM) ANALYSIS

In addition to the long-run estimate on the relationships between foreign direct investment and its potential determinants in the Nigerian economy during the study period, this study also analysed the short-run relationships among the variables by applying error correction mechanism (ECM) model of analysis. The results are presented in Table 5. From the short-run estimate presented in Table 5, it is observed that the coefficient of determination ( $R^2$ ) suggest that 87% systematic variation of FDI is explained by the independent variables (GDP, EXR, INF, DOP). This suggests that the model has a good fit. The F-statistic of 4.81 and probability of F-statistic (0.00) indicates that the model is adequate enough to explain the changes in FDI. Furthermore, Durbin Watson

statistics value of 1.57 (which is approximately 2.0) showed the absence of serial autocorrelation among in the models. Also, the estimates of the dynamic model showed that the coefficient of the error correction mechanism was negative and statistically significant. The coefficient of the error mechanism (-0.56) implied that the model corrected its short-run disequilibrium by 56% speed of adjustment in order to return to the long-run equilibrium.

With respect to the explanatory variables, the table shows that immediate change in GDP is negative and non-significant to FDI. Thus, a unit change in GDP will result in decline in FDI by 73%. However, we observed that when GDP is lagged up to three periods, GDP has positive and non-significant impact on FDI. Also, past values of DOP up to three lag has negative and non-significant in attracting FDI in the short-run. This implies that, an increase in past degree of openness (DOP) will result in decline in FDI inflow into the country.

The coefficients of second and third lag of exchange rate were positive but significant at third lag in influencing FDI inflow into the country in short-run.

Furthermore, the result of past values of inflation rate was positively related to FDI but when lagged up to three periods has negative and non-significant impact in attracting FDI in the short-run. This implies that, an increase in inflation rate will result in decline in FDI inflow into the country.

Dependent Variable: DLOGFDI

Method: Least Squares

Date: 08/25/17 Time: 20:12

Sample (adjusted): 1974 2015

Included observations: 35 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.141196	0.394089	-0.358284	0.7255
DLOGFDI(-1)	-0.565985	0.165256	-3.424906	0.0041
DLOGFDI(-2)	-0.080496	0.221864	-0.362818	0.7222
DLOGFDI(-3)	0.018898	0.170913	0.110574	0.9135
DLOGGDP	-0.728085	0.989922	-0.735498	0.4742
DLOGGDP(-1)	0.146439	0.952711	0.153707	0.8800
DLOGGDP(-2)	0.694387	1.059769	0.655225	0.5229
DLOGGDP(-3)	0.975820	0.989971	0.985706	0.3410
DDOP	-0.976948	2.177395	-0.448678	0.6605
DDOP(-1)	-2.664830	2.760746	-0.965257	0.3508
DDOP(-2)	-3.560136	2.795416	-1.273562	0.2236
DDOP(-3)	-2.705334	2.710945	-0.997930	0.3352
DEXR	-0.044234	0.016454	-2.688329	0.0177
DEXR(-1)	-0.011874	0.013476	-0.881091	0.3931
DEXR(-2)	0.013891	0.011888	1.168450	0.2621
DEXR(-3)	0.027400	0.012460	2.199003	0.0452
DINF	0.000804	0.014685	0.054718	0.9571
DINF(-1)	-0.014864	0.014303	-1.039185	0.3163
DINF(-2)	-0.009405	0.014439	-0.651350	0.5254
DINF(-3)	-0.013812	0.016629	-0.830590	0.4201
ECM(-1)	-0.561739	0.143937	-3.902682	0.0016
R-squared	0.872856	Mean dependent var	0.048512	
Adjusted R-squared	0.691221	S.D. dependent var	1.315455	
S.E. of regression	0.730970	Akaike info criterion	2.494821	
Sum squared resid	7.480444	Schwarz criterion	3.428030	
Log likelihood	-22.65937	Hannan-Quinn criter.	2.816965	
F-statistic	4.805563	Durbin-Watson stat	1.578000	
Prob(F-statistic)	0.002146			

Source: Authors' computation (2017) using E-view 7.0

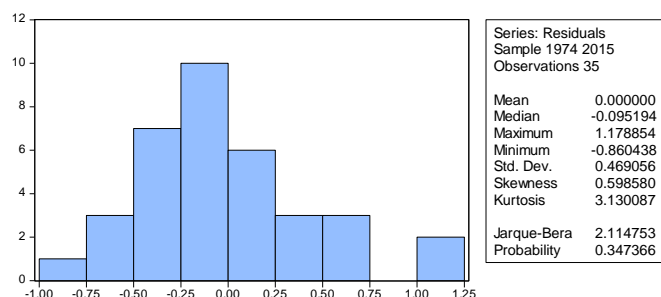


Table 5: Estimated Error Correction Model

FURTHER DIAGNOSTIC TESTS OF THE MODEL

The robustness of the model was further established, using Jacque-Bera normality Test, for distribution of residuals term (Ho: normality Test), Breusch-Godfrey LM serial correlation residual test (Ho: no autocorrelation) and Heteroskedasticity Breusch-Pagan-Godfrey (Ho: heteroskedasticity). The outcomes reported are serially uncorrelated, homoskedastic, normally distributed and stable.

NORMALITY TEST



Breusch-Godfrey Serial Correlation LM Test:

F-statistic	2.049340	Prob. F(2,12)	0.1715
Obs*R-squared	8.910905	Prob. Chi-Square(2)	0.0116

Table 6: Breusch-Godfrey Serial Correlation LM Test

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.432083	Prob. F(20,14)	0.9577
Obs*R-squared	13.35847	Prob. Chi-Square(20)	0.8615
Scaled explained SS	2.276376	Prob. Chi-Square(20)	1.0000

Table 7: Heteroskedasticity Test

V. CONCLUSION

We attempt to offer evidence on the relationship between foreign direct investment and its potential determinants in the Nigerian economy. The variables are foreign direct investment (FDI), gross domestic product (GDP), exchange rate (EXR), inflation rate (INF) and degree of openness (DOP). The series used in the analysis was tested for stationarity, using Augmented Dickey-fuller Test (ADF), and the results showed that three of the variables namely FDI, GDP and EXR are stationary at first difference while INF, and DOP are stationary at level implying that the null hypothesis of non-stationarity for all the variables is rejected. On the Johansen co integration test, the results show evidence of long run relationship between foreign direct investment and the explanatory variables. But the long-run static model indicates market size to be positive and significant in attracting foreign direct investment (FDI) in the Nigerian economy. This implies that FDI moves to countries with larger and expanding markets and purchasing power, where firms can potentially receive a higher return on their capital and by implication receive higher

profit from their investments. This further shows that Nigeria is a very important economy to invest in. Therefore, government should make the business environment friendly.

Furthermore, the coefficient of the error correction mechanism in the short-run dynamic model is negative and significant with appropriate sign and this is a requirement for dynamic stability of the model. The model indicated that all the variables are positively related to foreign direct investment except the degree of openness which is negative and non-significant. But, it is only exchange rate that is statistically significant. The potency of these results was further confirmed by the results of the diagnostic tests.

Therefore, given the negative result of degree of openness, government should intensify the trade liberalization policy which was initiated under the structural adjustment programme in 1986, so as to increase the openness of the economy to attract foreign direct investment and at the same time, should be cautious about political crises and social unrest that discourage foreign investment.

In addition, the federal government and the Central Bank of Nigeria should have a strong policy on exchange rate that would help the manufacturers in producing rather than importing goods and services from outside the country. In doing this, in the long run, naira would gain value and further exchange rate stability will be achieved. Finally, with respect to the results of inflation in this study, the Nigerian government should come up with policies that control excess money in the economy. There is need for the government to improve on close monitoring of the macroeconomic indices such as price level and interest rate. The close monitoring of these macroeconomic indices would help to reduce the inflationary pressure in the country.

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