INNOVATIONS

Foreign Direct Investments and Industrial Development in Nigeria [1988-2018]

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Abstract:
This study investigated the effect of foreign direct investment on industrial development in Nigeria from 1988-2018. The study employed times series data and ex-post facto research design and the data were gotten from World Bank Development indicators for Nigeria for the period of the study. The Augmented Dickey-Fuller unit root test was used to test the stationarity of the variables which revealed that the variables; Foreign Direct investment inflow, Foreign Direct Investment Outflow, Exchange Rate and Lending Rate all become stationary at first difference or integrated at first order. The Johansen cointegration test was used to check for long run relationship among the variables in the model and it suggested the presence of a long run relationship. Furthermore, a Vector Error Correction Model was employed to validate, confirm and determine the nature of the adjustments in the coefficients in the short-run and also to specify the long-run model of the variables in the model. This test showed the presence of a positive and significant relationship between Foreign Direct Investments outflows and Lending rate on industrial development while Foreign Direct Investments inflows had a negative and significant relationship with industrial development. Exchange rate on the other hand had a positive and insignificant relationship with industrial development. The long-run model was specified, the variables were normally distributed and there was absence of both Autocorrelation and Heteroskedasticity among the variables in the model. The study recommended from the result that the government should provide basic infrastructures that boost the performance of the industrial sector performance as it will go a long way to position them attract and retain foreign investments.The research also recommends foreign direct investment incentives like: low corporate tax rates, tax holidays, special economic zones preferential tariffs etc. that will attract and enhance foreign direct investment inflow into the country

Keywords: 1.Foreign Direct Investments 2. Foreign Direct Investment Inflows 3. Foreign Direct Investment Outflows 4.Industrial Development 5. Industrial GDP 6. Interest Rate 7. Lending Rate and Exchange Rate

1. Introduction:

Industrial development is unquestionably important for any economy's economic growth and general development; in fact, no developed economy can claim that its industries have not grown and evolved significantly. Furthermore, Foreign Direct Investment has been identified as the key and engine that drives a country's industrial growth and development over time (FDI). Indeed, in every domestic economy, it pushes the development of the economic market, labor training, increased financial inflow, and technology and talent transfer. It has an influence by increasing available resources for investment, innovation, organizational and managerial practices, and capital development (Salamatu and Zuo 2017).

Nigeria has attracted some FDI throughout the years as one of the emerging countries with a high demand for commodities produced elsewhere. According to the World Development Index (2020) of the World Bank, the influx has increased dramatically. It was $205 million in 1970, and by 1997, it had grown to $1.539 billion. In 2005, it was over $3 billion, and in 2011, it was $8.8 billion. Despite the fact that Nigeria is endowed with vast people and natural resources, she has received a low fraction of FDI inflows in recent years, which is most likely due to investors' perceptions of the economy as a high-risk investment market. Foreign investment inflows have fluctuated and declined in recent years, from $8.8 billion in 2011 to $3.14 billion in 2015, and then to $1.997 billion in 2018, (World Bank, 2020)

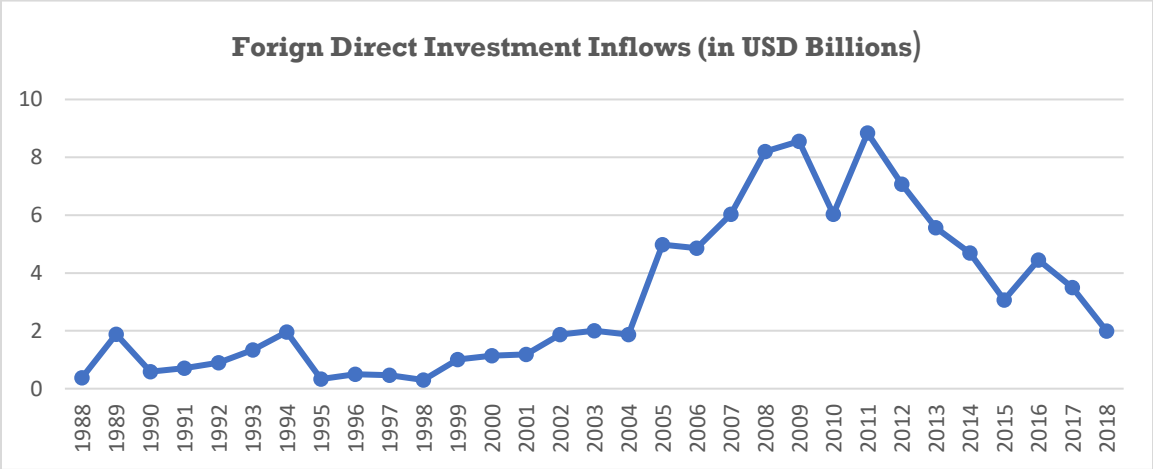

Figure 1: Graph of Foreign Direct Investment, net inflows(US$). Source: World Development Indicators

Foreign Direct Investment (FDI), as defined by Steinbock (2013), is a dynamic flow of international resources capable of supplying the requisite capital for long-term financing of developmental initiatives in enterprises within the economy, hence driving sustainable industrial and economic progress. According to Iwuagwu (2011), industrial growth and development are usually accompanied by political and societal enthusiasm and the government's commitment, and the government should be very focused on their administrative capability to implement clearly defined investment policies that can transform Nigeria's industrial sector. These policies are likely to have an impact on the types of finances available, as well as how they are channeled to support increasing industrial activity and production. Anyanwu (1997) further stated that industrial development can be defined as the process of a country's capacity to produce completed goods being developed and expanded for the aim of

turning raw materials and other inputs into finished goods for final consumption. To be able to increase the production capacity of industries within a country, certain measures must be used, such as the implementation of favorable policies, the acquisition of new and advanced technological machines and equipment (capital investments), the expansion of firms, and the employment of more skilled labor, all of which cannot be accomplished without the most important factor, finance, which comes from outside the country in the form of Direct Investments.

Foreign direct investment is a significant factor in the strategy for economic development of countries all over the world, particularly emerging countries like Nigeria, because it is a neutralizer of a slow rate of economic growth in an economy. As a result, the Nigerian government has been attempting to attract foreign direct investment through various changes. The deregulation of the economy, the 1989 industrial policy, the establishment of the Nigerian Investment Promotion Commission (NIPC), and the Bilateral Investment Treaties (BITs) bill were all implemented in the 1990s (Ihum , Fafiu and Fabian 2018).

However, most people believe that this has not been the case in Nigeria, where measures aimed at achieving this goal have looked to have had little or no impact on the growth of indigenous industries. This could be the consequence of different adjustments, neglect, or abandonment of strategies and policies, which are being implemented in the country's most disorganized manner (Adejube, 1980).

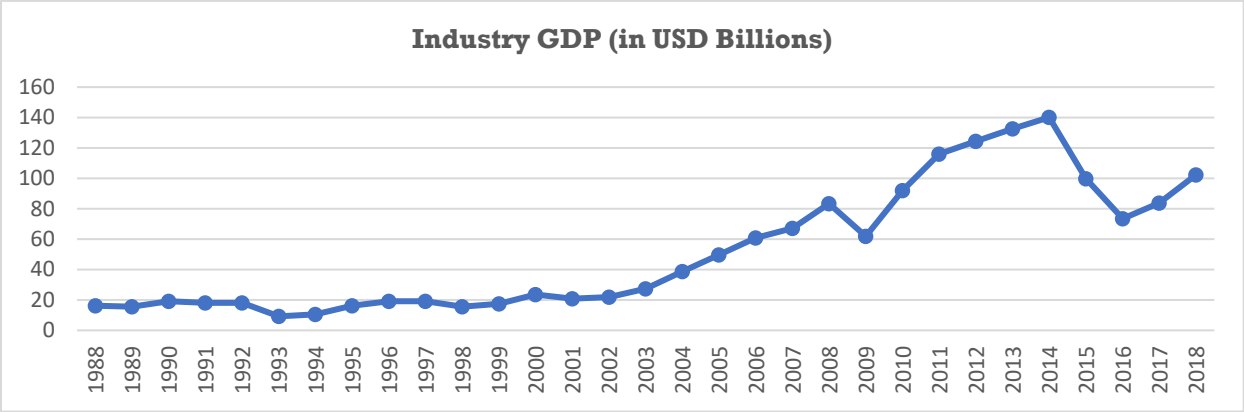

Figure 2: Graph of Nigeria Industrial GDP. Source: World Bank national accounts data

Figure 3: Graph of Nigeria Industry annual percentage growth. Source: World Bank national accounts data

This slowdown can be seen in the country's industrial growth, which peaked in 1990 and has remained in the negatives ever since. While output has increased, the overall growth has not been significant, as the value for Industry annual percentage growth was 1.94 percent in 2018; after lingering in the negatives for many years. FDI has certainly had little impact on our growth in a country like Nigeria, where investment is hampered by a variety of economic and political concerns. Because productivity is viewed as a key aspect in a country's production performance, foreign direct investment can lead to greater industrial productivity, which can raise people's living standards. This occurs as people's purchasing power rises, allowing them to afford goods and services, enjoy their leisure, better their housing and educational opportunities, and contribute positively to the nation's social and environmental programs

According to Khan (2012), who was mentioned in Bilawal, Ibrahim, Abbas, Shuaib, Ahmed, Hussain, and Fatima (2014), the exchange rate is so important in an economy that it has a considerable impact on foreign direct investment. An increase in the exchange rate of any economy lowers the cost of domestically produced goods, improving the country's export potential. The value of the naira has been steadily declining against the world trade currency dollar, prompting investors to question the feasibility of investing in Nigeria. As a result of the aforementioned, some scholars have proposed that fluctuations in exchange rates and interest rates are the primary cause of failed foreign direct investment moves. For a developing country like Nigeria, the impact of large swings in the currency rate interest rate is a major factor affecting foreign direct investment inflows. As a result, the effects of foreign direct investment on the Nigerian economy's industrial development will be evaluated in this study.

Foreign Direct Investments allow international funds to be made available to local businesses and foreign businesses to establish a foothold in the home country, all of which adds significantly to the economy's overall growth. These investments are channeled into economic sectors, where they are expected to result in greater volume and quality of production locally, allowing domestic industries to create products utilized by the population more effectively while also providing necessary services. This is to the extent that there is enough locally and that these things are exported. This will reduce the country's balance of trade deficit and drive it closer to a surplus. A consistent surplus BOT will

have funds available to reinvest in the economy and improve the country's, businesses', and citizens' overall conditions by constructing vital infrastructure and providing amenities. However, in the case of Nigeria, yes, the country receives a large amount of FDI, but does this aid in the improvement of productivity and development of the industrial sector?

Over the years, more than 70% of total FDI into Nigeria has gone into the oil and gas sector, leaving pennies for the rest of the industrial sector, and this single act has resulted in the country's revenue being overly reliant on the proceeds from the sale of oil barrels at a predetermined price, to the point where if anything happens in the global market that causes the price of oil to fall, the country's budget and funds are mercilessly ruined (UNCTAD, 2020). All of this has resulted in the industrial sub-sectors contributing insignificantly to the country's revenue and Gross Domestic Product GDP over time. According to Bennett (2015), a country is said to be industrially developed when its industrial sector contributes more than one-quarter of its GDP, and any scenario in which the industrial sector contributes less is seen as a major challenge to the country. There have also been issues of corruption, overdependence, underutilization of resources, lack of know-how, and mismanagement of realized funds, all of which have contributed to Nigeria's outrageous indebtedness, individual poverty among citizens (with over 80 million Nigerians living on less than $2 per day), and the country's overall underdevelopment industrially and otherwise (World Bank, 2020). Nigeria was also placed 161 out of 188 nations in the United Nations Human Development Programme Report of 2020, with a severe and persistent decline in her human development (United Nations Development Programme 2020).

The primary goal of this research is to determine the influence of foreign direct investment on Nigeria's industrial development. While the study's specific objectives are to determine the impact of FDI inflow on Nigerian industrial development, the impact of FDI outflow on Nigerian industrial development, the effects of the exchange rate on Nigerian industrial development, and the effects of lending rates on Nigerian industrial development.

The following are the distinct types of FDI, according to Kanu,Nwaimo, Onyechere&Obasi (2017): Horizontal FDI: In this case, a foreign company enters the market and establishes a business that is identical to what is being done in their home country, either from the ground up (Green Field FDI) or through a merger and acquisition with another company in the same industry.

Vertical FDI refers to investments made in businesses that are different from the ones the entity operates in his home country but are related in some way. For example, a manufacturing business acquiring a foreign company that supplies parts or trades in the raw materials they require in their production processes (Brown Field FDI), or a distribution company for their products in a foreign country. Vertical FDI can be divided into two categories: Investments in the upper tiers of the industry value chain, such as buying a company that supplies inputs or establishing your own factory to produce inputs, are examples of backward vertical FDI. Forward vertical FDI occurs when investments are made in lower levels of the industry's value chain, such as acquiring a company in another country that sells or distributes the output that a company has produced locally.

Conglomerate FDI occurs when an entity invests in a firm that is unrelated to its current operations in the home nation. Joint ventures are the most common form of this type of investment.

2. Literature Review:

Several studies on the impact of FDI on economic growth have been conducted, with varied results and submissions documented over time in Nigeria.

Akpan and Eweke (2017) used the Impulse Response Functions (IRFs), Variance Decomposition (VDC), and Vector Autoregressive (VAR) methods in their study on the impact of Foreign Direct Investment (FDI) and industrial sector performance on economic growth in Nigeria from 1981 to 2015. Foreign Direct Investment and Gross Domestic Product have a unidirectional causal relationship, according to their findings. Foreign Direct Investment and the production of the industrial sector, Gross Domestic Product, had a bidirectional causal relationship. Foreign Direct Investment has a strong beneficial effect on the Gross Domestic Product, according to their Vector Autoregressive (VAR) results. The industrial sector's output has a substantial positive impact on Nigeria's economic growth. Their impulse response result showed that FDI shocks had a detrimental impact on economic growth in the Third (3rd) period. As a result, beginning with the Fourth (4th) period, there was a favorable effect. Throughout the time studied, economic growth was negatively affected by industrial sector production shocks. According to the VDC research, FDI was the primary driver of economic expansion, while the industrial sector played a minor role. Their research suggested that the country's socio-economic infrastructure be improved to relieve industrialists' burdens, lowering the cost of doing business and attracting Foreign Direct Investment inflow.

In their study on the relationship between foreign direct investment and industrial performance in some selected African countries for the period 1996-2015, Adegboye, Ojo, and Ogunrinola (2016) found that foreign direct investment had a significant positive effect on industrial development in Africa, using a pooled ordinary least square technique and a fixed effect least-square dummy variable model. They recommended that the government develop programs to boost domestic industries.

In their study of the effect of foreign direct investment on the performance of the manufacturing industry in Nigeria from 1970 to 2013,Agu and Okoli (2015) found that FDI had a significant negative effect on the manufacturing sector's performance in Nigeria, using the Ordinary Least Square and the Vector Error Correction model. The research suggested that the government take strategic steps to maintain and sustain FDI inflows into the country. In the long run, this will improve the macroeconomic environment in which manufacturing enterprises can thrive.

Obasi (2015) investigated Nigerian policies on foreign direct investment. Due to constraints on foreign investment, the study found that foreign direct investment in Nigeria was low during the period of indigenization policy. The incapacity of import substitution industrialisation to create indigenous technology has a substantial impact on the country's industrial sector, according to the findings.

Using the autoregressive lag distribution model, Adejumo (20117) discovered that foreign direct investment (FDI) had a negative substantial long term effect on the Nigeria manufacturing industry in his study of the link between FDI and the manufacturing industry in Nigeria from 1970 to 2019.

Olayemi (2012) used the Johansen Cointegration Technique and Error Correction Model (ECM) to investigate the impact of foreign direct investment on industrial capacity utilization in Nigeria between 1978 and 2008. The results found that Nigeria attracts minimal foreign direct investment

inflow. In addition, the impact of foreign direct investment in Nigeria on the industrial sector was not statistically significant in the long run. The report advised that good economic policies be developed to create a favorable macroeconomic climate capable of attracting and sustaining foreign direct investment, which would increase the country's manufacturing sector's domestic output capacity.

In their study on the effect of foreign direct investment on economic growth in Nigeria, Uwubanmwen and Ogiemudia (2016) used the Error Correction Technique to reveal that foreign direct investment has both a time lag effect and an immediate effect on the economy of Nigeria in the short run, but has an insignificant negative effect in the long run.

Between 1981 and 2013, Umaru, Gambo, and Pate (2015) investigated the relationship between economic growth and foreign direct investment in Nigeria. Their findings demonstrated a substantial positive association between economic growth and foreign direct investment in Nigeria using the Vector Error Correction Model.

Using the Bounds testing approach and the Autoregressive Distributed Lags (ARDL) model, Osuji (2015) found that FDI had an insignificant positive influence on growth in the short term in his study on the link between foreign direct investment and economic growth in Nigeria 1981-2013. However, in the long run, Foreign Direct Investment had a negligible negative impact on economic growth.

Uwazie, Igwemma, and Nnabu (2015) used the Granger causality approach to investigate the relationship between foreign direct investment and economic growth in Nigeria from 1970 to 2013. They discovered that foreign direct investment drives economic growth in Nigeria both in the short and long run.

Using the VECM model, Akpan, Riman, Duke II, and Mboto (2012) investigated the long-run effects of industrial production and non-oil export on economic growth in Nigeria from 1970 to 2006. Their findings demonstrated a one-way causation between industrial sector production and economic growth.

The majority of the research works analyzed focused on the influence of foreign direct investment on economic growth, with little agreement on whether there is a relationship between foreign direct investment and economic growth, according to the literature review. And where there is a relationship, the path of the relationship is unknown. The researchers didn't pay much attention to how foreign direct investment influences Nigeria's economic growth. Again, in a research project of this sort, the data sets are rarely in the same unit of measurement, therefore in order to avoid erroneous results in such an analysis, the logarithm of the obtained data must be used to bring them into uniformity. The research studies examined failed to do so, rendering their findings illegitimate. However, this was rectified in this study. Again, the majority of the studies did not use the proper research methods to determine whether the association in their model exists in the short or long run. To bridge this study gap, the data collected (exchange rate, lending rate, industrial gross domestic product, foreign direct investment inflow, foreign direct investment outflow) must be transformed to their logarithm to bring the data set to uniformity. After that, a procedural analysis is performed to rule out spurious results and determine whether the effects of foreign direct investment on industrial development are long-term or short-term. That is the research void that this study will fill.

3. Objective of the Study:

The Objective of this study is to empirically investigate the effect of Foreign Direct Investments on Industrial Development in Nigeria during the period 1988-2018

4. Methods of the Study:

The ex-post facto design, also known as an explanatory study approach, was used in this study to identify, explain, and understand the correlations between the variables. The study employed time series data that collected fromthe secondary sources and covered the years 1988 to 2018. The information were gathered from World Bank development indices. The statistical software E-views10 was used to examine the data. Because the data set was initially in disparate units of measurement, the researchers employed the logarithm values of the data to bring it to uniformity. The time series data were then examined for stationarity using the Augmented Dickey Fuller (ADF) test, which revealed that all of the variables were stationary at the first difference. The Johansen cointegrating test was then used to determine whether the relationship in the model exists in the short or long run. The Johansen Conitegration Model revealed that there was just one cointegrating equation, suggesting a long-term association. The presence of a long run connection was established by the Vector Error Correction Model test, which showed that the Speed of adjustment in the Vector Error Correction Model was consistent with a negative coefficient. The T-test data from the VECM long run model were used to evaluate each hypothesis independently.

5. Data Used:

Data Presentation: Table 1 presents the data for Industrial GDP(INDGDP), Foreign Direct Investment Inflows (FDI), Foreign Direct Investment Outflows (FDIOUT), Exchange Rate(EXCH) AND Lending Rate (LENDR) from 1988 to 2018

Table 1: Table of INDGDP, FDIIN, FDIOUT, EXCH and LENDR

Year	INDGDP	FDIIN	FDIOUT	EXCH	LENDR
1988	16192782091	378667097.7	5061000	4.54	0.1662
1989	15573478537	1884249739	797748186.3	7.36	0.2044
1990	19134251720	587882970.6	414600000	8.04	0.253
1991	18156906776	712373362.5	411500000	9.91	0.2004
1992	18023279280	896641282.5	260100000	17.3	0.2476
1993	9206611309	1345368587	532700000	22.07	0.3165
1994	10595964200	1959219858	328200000	22	0.2048
1995	16100640831	335842165	191753359.7	21.9	0.2023
1996	19125583474	499276809.5	597184659.6	21.89	0.1984
1997	19195760695	469577019.8	102972821.1	21.89	0.178
1998	15672694589	299566658.3	158800978.8	21.89	0.1818
1999	17433992111	1004915631	172817608.8	92.34	0.2029
2000	23489655343	1140167556	168938514.5	101.7	0.2127
2001	20933022976	1190618644	93883556.75	111.23	0.2344

2002	21977691328	1874070753	172161494.6	120.58	0.2477
2003	27279639959	2005353563	167321366.7	129.22	0.2071
2004	38720034172	1874060887	260755093.6	132.89	0.1918
2005	49672601568	4982533930	14635077.18	131.27	0.1795
2006	60800637183	4854353979	319618789.8	128.65	0.1689
2007	67100295293	6036021405	867680640.4	125.81	0.1694
2008	83295795479	8195499253	1051448364	118.57	0.1514
2009	61985902805	8554740717	1525121754	148.88	0.1899
2010	91993465641	6026232041	911716681.8	150.3	0.1759
2011	1.16034E+11	8841113287	816764595.7	153.86	0.1602
2012	1.24367E+11	7069934205	1530129291	157.5	0.1679
2013	1.32564E+11	5562873606	1227437644	157.31	0.1672
2014	1.40099E+11	4693828632	1614294500	158.55	0.1655
2015	99711841326	3064168904	1435203637	192.44	0.1685
2016	73537491669	4448732917	1305037777	253.49	0.1687
2017	83848045673	3502999131	1286176889	305.79	0.1755
2018	1.02289E+11	1997485165	1380859538	306.08	0.169

Source: **World Bank Development Indicators**

Table1 above shows the values of for Industrial GDP(INDGDP), Foreign Direct Investment Inflows (FDI), Foreign Direct Investment Outflows (FDIOUT), Exchange Rate(EXCH) AND Lending Rate (LENDR) of Nigeria for the period of 1988 to 2018. The relationship can be stated as shown below:

Industrial GDP = F (Foreign Direct Investment Inflows (FDIIN), Foreign Direct Investment Outflows (FDIOUT), The Lending Rate of the country (LENDR) and the Exchange Rate (EXCH))

The econometric form of the model can be stated as follows:

$$INDGDP = \beta_0 + \beta_1 FDIIN + \beta_2 FDIOUT + \beta_3 EXCH + \beta_4 LENDR + \mu$$

However, due to the large values involved in the data and the lack of uniformity in the units of measurement of the data collected, we simplified them by using their log form to avoid spurious results.

Therefore, the equation is transformed into log form as thus:

$$LOGINDGDP = \beta_0 + \beta_1 LOGFDIIN + \beta_2 LOGFDIOUT + \beta_3 LOGLENDR + \beta_4 LOGEXCH + \mu$$

Where LOGIND is the log of Industrial GDP

LOGFDIIN is the log of Foreign Direct Investment Inflows

LOGFDIOUT is the log of Foreign Direct Investment Outflows

LOGLENDR is the log of the Lending Rate i.e. Nominal Interest Rate

LOGEXCH is the log of The Average Exchange Rate

β_0 is the intercept

β_1, β_2, β_3, β_4 are the slopes or parameters to be estimated

μ is the error term.

The apriori expectation is that $\beta_1 > 0$, $\beta_2 < 0$, $\beta_3 < 0$, $\beta_4 < 0$

6. Data Analysis:

Unit Root Test Result:

In order to test for the presence /absence of unit root in the data collected, The Augmented Dickey-Fuller (ADF) test was conducted. The table below presents the test result of the The Augmented Dickey-Fuller (ADF) test:

Table2: Summary of Unit Root Test Result

Variable	ADF @ Level Value	5% Critical Value	Decision	ADF @ 1st Difference Value	5% Critical Value	Decision
LOGINDGDP	0.595563	2.963972	Not Stationary	4.708842	2.967767	Stationary I (1)
LOGFDIIN	2.012945	2.963972	Not Stationary	8.237377	2.967767	Stationary I (1)
LOGFDIOUT	1.697527	2.967767	Not Stationary	10.06811	2.967767	Stationary I (1)
LOGEXCH	2.054289	2.963972	Not Stationary	5.243001	2.967767	Stationary I (1)
LOGLENDR	2.229406	2.976263	Not Stationary	3.242137	2.981038	Stationary I (1)

Source: *Author's Extract from E-Views10*

Table 2 shows that the variables were significant at the 1st difference, implying that the integrated variables are First Order. This was subtracted from the results of the Augmented Dickey-Fuller ADF Test, which revealed that the variables (LOGINDGDP, LOGFDIIN, LOGFDIOUT, LOGEXH, and LOGLENDR) had ADF values (0.595563, 2012945, 1.697527, 2.054289, and 2.229406) that were less than the 5% critical values (2.963972, 2.967767, 2.963972, 2.96 (2.967767, 2.967767, 2.967767, 2.967767 and 2.991038). The Johansen Cointegration test and short-run speed of adjustment from long-run disequilibrium were used because the variables were all stationary at 1st difference.

Johansen Cointegration Test Result:

This Johansen Cointegration test is used to determine whether the model contains long or short run equations. The null hypothesis states that the variables have no cointegrating relationship. We use the Johansen cointegration test to see if the model has no more than one cointegrating equation. Because there are five explanatory variables in the model, this test is used to see if there are one, two, or up to five cointegrating equations. Table 3 summarizes the results of the Johansen cointegrating analysis:

Table 3: Cointegration Test Result

Hypothesized Number of Cointegrating Equations (Null)	Trace Statistics	5% Critical Value	Decision	Max-Eigen Statistics	5% Critical Value	Decision
None*	93.72731	69.81889	Reject Null	46.93053	33.87687	Reject Null
At most 1	46.79678	47.85613	Accept Null	26.96564	27.58434	Accept Null
At most 2	19.83114	29.79707	Accept Null	10.86817	21.13162	Accept Null
At most 3	8.962968	15.49471	Accept Null	7.833376	14.26460	Accept Null
At most 4	1.129593	3.841466	Accept Null	1.129593	3.841466	Accept Null

Source: *Author's Extract from E-Views10*

Because None* has a value higher than the threshold value of 5% for both the Trace statistics and the Max-Eigen Value, the null hypothesis of No Cointegration equation in the model is strongly rejected. As a result, we can accept the option that the model contains at least one and up to four co-integrating equations. This also suggests that the dependent and independent variables in the model have a long-run relationship, implying that the variables in the model can move together in the long run and be integrated linearly. If there are short-term shocks, the variables will eventually converge (in the long run). The result of the Johansen Cointegration Test above suggests that the model has a long-run relationship because there is only one (1) Contegrating equation in the model, implying that the model has a long-run relationship.

Vector Error Correction Model Test Result

The Vector Error Correction Model (VECM) is used to confirm that the long-run relationship proposed by the Johansen Cointegration model actually exists, as well as to calculate the speed at which the short-run and long-run equilibrium are reached. The result of the Vector Error Correction Model is shown in the table below (VECM).

Table 4: The Vector Error Correction Model (VECM) result:

Vector Error Correction Estimates			
Sample (adjusted): 1990 2018 Included observations: 29 after adjustments Standard errors in ( ) & t-statistics in [ ]			
CointegratingEq:	**CointEq1**	**Error Correction:**	**D(LOGINDGDP)**
LOGINDGDP(-1)	1.000000	**CointEq1**	-0.013546
			(0.01098)
LOGFDIIN(-1)	-5.738804		[-1.23380]
	(1.35396)		
	[-4.23853]	**D(LOGINDGDP(-1))**	-0.094492
			(0.25113)
LOGFDIOUT(-1)	6.528520		[-0.37626]
	(1.00998)		
	[6.46398]	**D(LOGFDIIN(-1))**	-0.072346
			(0.12795)

LOGEXCH(-1)	0.838342		[-0.56543]
	(0.97362)		
	[0.86106]	**D(LOGFDIOUT(-1))**	0.063375
			(0.04669)
LOGLENDR(-1)	13.99303		[1.35726]
	(5.67491)		
	[2.46577]	**D(LOGEXCH(-1))**	0.174691
			(0.22788)
C	-4.894587		[0.76660]
		D(LOGLENDR(-1))	-0.439937
			(0.41217)
			[-1.06736]
		C	0.017015
			(0.02454)
			[0.69332]
R-squared	0.150956	Schwarz SC	-1.042368
Sum sq. resids	0.265605	Mean dependent	0.028188
S.E. equation	0.109877	S.D. dependent	0.105700
F-statistic	0.651917	Determinant resid covariance	2.32E-10
		Log likelihood	115.8965

Source: *Author's Extract from E-Views10*

The present of at most one cointegrating equations in the Johansen Conitegration test which suggested the existence of a long rung equation in the model is confirmed using the VECM. The Vector Error Correction Model is conducted to confirm the existence of the long run equation in the model and to determine the speed at which the short-run dynamics is adjusted to their long-run static disposition in the current period. The Error Correction Term is presented below:

ECTt-1 = [1.0000LogIndgdpt-1 – 5.73880LogFdiint-1 + 6.528520 LogFdioutt-1 + 0.838342 LogExcht-1 + 13.99303LogLendrt-1 – 4.894587] .894587]

From the table 4 above, the coefficient of the Error Correction Term ECM (-1) was consistent by maintaining a negative coefficient which confirmed that that the relationship in the model exist both in the short run and in the long run. This suggests that the Error Correction Model (ECM) could correct the previous period's deviation from long run equilibrium relationship between INDGDP and the explanatory variables at an adjustment speed of 1.35 percent in the current period. So, the coefficient of the speed of adjustment is 1.35 percent per annum. The result shows that following disequilibrium in the short run, 1.35 percent of the needed long run adjustment takes place within a year. The result of the Error Correction Model Long Run Regression result above shows an R2 value of 0.150956. This means that only about 15.1 percent of the total variations in Industrial Development are explained by the explanatory variables in the long run on average ceteris paribus at 5 percent level of significance for the period under review, while 74.9 percent of the variations in the model are explained by other variables not included in the model.

The present of at most one cointegrating equations in the Johansen Conitegration test which suggested the existence of a long rung equation in the model is confirmed using theVECM. The

Vector Error Correction Model is conducted to confirm the existence of the long run equation in the model and to determine the speed at which the short-run dynamics is adjusted to their long-run static disposition in the current period. The Error Correction Term is presented below:

$\mathbf{ECT_{t-1}}$ = [1.0000LogIndgdp$_{t-1}$ – 5.73880LogFdiin$_{t-1}$ + 6.528520LogFdiout$_{t-1}$ + 0.838342LogExch$_{t-1}$ + 13.99303LogLendr$_{t-1}$ – 4.894587]

From the table 4 above, the coefficient of the Error Correction Term ECM (-1) was consistent by maintaining a negative coefficient which confirmed that that the relationship in the model exist both in the short run and in the long run. This suggests that the Error Correction Model (ECM)could correct the previous period's deviation from long run equilibrium relationship between INDGDP and the explanatory variables at an adjustment speed of 1.35% in the current period. So, the coefficient of the speed of adjustmentis 1.35% per annum. The result shows that following disequilibrium in the short run, 1.35% of the needed long run adjustment takes place within a year. The result of the Error Correction Model Long Run Regression result above shows a R^2 value of 0.150956. This means that only about 15.1% of the total variations in Industrial Development are explained by the explanatoryvariables in the long run on average ceteris paribus at 5% level of significance for the period under review, while 74.9% of the variations in the model are explained by other variables not included in the model.

Model Diagnostics

Table 5: VEC Residual Normality Tests

Component	Jarque-Bera	Df	Prob.
LogIndgdp	5.127013	2	0.0770
LogFdiin	0.133506	2	0.9354
LogFdiout	42.65904	2	0.0000
LogExch	81.77087	2	0.0000
LogLendr	0.6603 25	2	0.7188
Joint	130.3507	10	0.0000

Source: *Author's Extract from E-Views10*

Since LogIndgdp, LogFdiin, and LogLendr have P-values of 0.077, 0.9354, and 0.7188, respectively, all greater than the critical value at the 5% level of significance, the research accepts the null hypothesis that the residuals are multivariate normal distributions or are normally distributed, according to the results of the Jarque-Bera normality test in table 5 above. We reject the null hypothesis and accept the alternative that the residuals are not multivariate normal distributions or are not normally distributed for LogFdiout and LogExch with Probability values of 0.0000, which is less than the crucial value at 5% level of significance. The probability value of the joint test for this model is 0.000, which is less than the crucial value at the 5% level of significance, indicating that the Residuals are not normally distributed.

Table 6: VEC Residual Serial Correlation LM Tests

Lag	LRE* stat	Df	Prob.	Rao F-stat	Df	Prob.
1	17.66251	25	0.8564	0.665192	(25, 49.8)	0.8644
2	19.18360	25	0.7882	0.731952	(25, 49.8)	0.7992

Source: *Author's Extract from E-Views10*

The Table 6 above shows that the LM- Statistics at lags 1 and 2 with p values of 0.8644 and 0.7992 respectively are higher than the critical value at 5% level of significance on average ceteris paribus. This indicates the absence of serial auto correlation in the model. Thus, the research accepts the null hypothesis of absence of autocorrelation in the model and conclude that there is no autocorrelation in the model.

Table 7: Vector Error Correction Residual Heteroskedasticity Tests:

Joint test:		
Chi-sq	Df	Prob.
198.9241	180	0.1588

Source: *Author's Extract from E-Views10*

When the variance of the unobserved error factor varies across different segments of the population over time, heteroskedasticity arises. The VEC Residual Heteroskedasticity test has a chi-square value of 198.9241 and a P-value of 0.1588, as shown in Table 7. This validates the model's lack of heteroskedasticity. Because the Chi Square's p-values are higher than the crucial value at the 95 percent confidence level, this is the case.

$\mathbf{ECT}_{t-1}$ = 1.0000LogIndgdp$_{t-1}$ – 5.73880LogFdiin$_{t-1}$ + 6.528520LogFdiout$_{t-1}$ + 0.838342LogExch$_{t-1}$ + 13.99303LogLendr$_{t-1}$ – 4.894587

From the Error Correction Term Equation above, a unit change in the log of Foreign Direct Investment Inflow (LOGFDIIN) is associated with a -5.73880 unit change in Industrial Development in the long run on average ceteris paribus for the period under review at 5% level of significance. The result shows a negative linear relationship existing between Industrial Gross Domestic Product and Foreign Direct Investment Infow in Nigeria in the long run with a t-calculated value of -5.73880 which is greater the t-tabulated value of 2.06 hence. So, the research rejects the null hypothesis and concludes that there exists a negative significant relationship between Foreign Direct Investment inflows and Industrial GDP in the long-run. This indicates that the long run relationship existing between Foreign Direct Investment Inflow and Industrial Development in Nigeria is negative and statistically significant at 5% level of significant on average ceteris paribus. This accounts for the low level industrialization facing the economy of Nigeria. This result confirms the research of Okoli and Agu (2015) which revealed that foreign direct investment has significant negative effect on manufacturing sector in Nigeria. This result has shown that the country do not attract and sustain

enough foreign direct investment inflow needed to enhance the development of the industrial sector of the economy. And undeveloped industrial sector of the Nigeria economy accounts for the high level of unemployment, high poverty rate, low standard of living and the high volatility of exchange rate ravaging the economy of Nigeria.

LOGFDIOUT in the long-run model has a coefficient of 6.528520 in the long-run model and a t-calculated value of 6.46398 which is greater than 2.06. Thus, we reject the null hypothesis and accept the alternative. This implies that in the long run, on average ceteris paribus, a unit change in Foreign Direct Investment outflow is associated with a 6.528520 unit change in Industrial Development in Nigeria at 5% level of significance. So, as Foreign Direct Investment Outflow increases, Industrial Development in Nigeria increases too. LOGEXCH has a coefficient of 0.838342 in the long-run model and a t-value of 0.86106 which obviously is less than 2.06. So, we accept the null hypothesis that in as much as there is a relationship between exchange rate and industrial GDP, it is not significant. LOGLENDR has a coefficient of 13.99303 in the long-run model and a t-calculated value of 2.46577 which is greater than 2.06, so, we reject the null hypothesis and accept the alternative that there is indeed a significant relationship between Lending Rate and Industrial GDP. The VECM test also showed that only 15.1% of variations in Industrial GDP is explained by the independent variables used in the model. The model diagnostics tests went ahead to show that there was no serial correlation and heteroskedasticity; however, LogIndgdp, LogFdiin and LogLendr respectively are normally distributed. For LogFdiout and LogExch, they are not multivariate normal distributions or are not normally distributed.

7. Conclusion:

Foreign Direct Investment has been acknowledged as a major propellant of growth and development of industries as Foreign Direct Investment Inflows and Outflows were both significant in the long run in the model. This significance can be traced to the features that FDI brings into an economy which includes the transfer of technology, technological innovations, know-how, managerial capacity, capital and other externalities.

Based on the findings; the following recommendations are made:

That government should look towards creating a better investment climate in the country that encourages both local and foreign investments which will lead to a stable macroeconomic environment. The research also recommends foreign direct investment incentives like: low corporate tax rates, tax holidays, special economic zones preferential tariffs etc. that will attract and enhance foreign direct investment inflow into the country.

Attention should really be paid to the improvement of the domestic infrastructure like electricity, transportation networks. This is highly and urgently required in the country as it will stimulate industries such that domestic private investment will be well positioned to receive and adapt with the influx of foreign direct investments.

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Appendix

A1:Data Presentation in Logged Form

YEAR	LOGINDGDP	LOGFDIIN	LOGFDIOUT	LOGEXCH	LOGLENDR
1988	10.20932147	8.578257571	6.704236337	0.656765588	-0.779456092
1989	10.19238563	9.275138464	8.901865825	0.867157125	-0.689483698
1990	10.28181148	8.76929088	8.617629298	0.9051634	-0.596879479
1991	10.25904186	8.852707672	8.61436984	0.996051377	-0.698066165
1992	10.25583381	8.95261873	8.415140352	1.238006563	-0.606278594
1993	9.964099808	9.128841283	8.726482697	1.343711805	-0.499626286
1994	10.02514048	9.292083174	8.516138577	1.342343711	-0.688599367
1995	10.20684316	8.526135221	8.282742982	1.340350074	-0.693932564
1996	10.28161469	8.698341394	8.776108643	1.34013514	-0.702531304
1997	10.28320533	8.671706835	8.012722611	1.340167387	-0.749702008
1998	10.19514367	8.476493475	8.200853175	1.340166395	-0.740306597
1999	10.24139685	9.002129601	8.237587992	1.965380934	-0.692717953
2000	10.37087664	9.056968679	8.227728671	2.007309565	-0.672147443
2001	10.32083195	9.075772679	7.972589534	2.046226818	-0.630073274
2002	10.34198207	9.272785983	8.235936024	2.081268646	-0.606059383
2003	10.43583863	9.302190954	8.223551403	2.111337635	-0.683732534
2004	10.58793573	9.272783697	8.416232801	2.123485847	-0.717132528
2005	10.69611691	9.697450265	7.165395017	2.118179821	-0.745975873
2006	10.78390813	9.686131442	8.504632303	2.109415417	-0.772284649
2007	10.82672443	9.780750771	8.938359908	2.099708632	-0.771107959
2008	10.92062308	9.913575415	9.02178795	2.07396261	-0.819993663
2009	10.79229293	9.932206851	9.183304516	2.17283636	-0.721455978
2010	10.96375698	9.78004585	8.959859901	2.176951757	-0.754857627
2011	11.06458373	9.946506956	8.912096904	2.187132785	-0.795337488
2012	11.09470501	9.849415372	9.184728129	2.197280558	-0.774906196
2013	11.1224265	9.745299192	9.088999439	2.196760932	-0.776698795
2014	11.14643396	9.67152723	9.207982767	2.200173482	-0.78124574
2015	10.99874674	9.486312701	9.156913526	2.2842961	-0.773421574
2016	10.86650881	9.648236333	9.115623084	2.403964258	-0.772936002
2017	10.92349294	9.54444003	9.109300702	2.485423434	-0.7556404
2018	11.00983053	9.300483563	9.140149504	2.485840186	-0.772013163