Sectoral Foreign Direct Investment and Economic Development in Nigeria

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Abstract

This study appraised the effect of sectoral foreign direct investment on economic development in Nigeria from 1981 and 2022. The study proxied economic development by Human Development Index and proxied sectoral foreign direct investment by foreign direct investment to agricultural sector, foreign direct investment to manufacturing sector, foreign direct investment to transport and communication sector, foreign direct investment to service sector and foreign direct investment to oil and gas sector. The study made use of annual time series data and these data were sourced from Central Bank of Nigeria (CBN) Statistical Bulletin, National Bureau of Statistics (NBS) Report, and Word Development Indicators (WDI) of Word Bank. The major technique of data analysis adopted is Autoregressive Distributed Lag (ARDL) technique. The upshots of the study revealed that foreign direct investment to agricultural sector, foreign direct investment to manufacturing sector, foreign direct investment to transport and communication sector, foreign direct investment to service sector and foreign direct investment to oil and gas sector have a favourable and substantial effect on HDI in Nigeria in either short-run or long-run. Owing to the upshots, the study therefore concluded that sectoral foreign direct investment is relatively effective in promoting, improving and sustaining economic development in Nigeria. It was recommended among others that Nigerian government should provide sector-specific incentives i.e. tax holidays, subsidies, and access to land for foreign investors in the agricultural sector. These incentives can attract FDI into agriculture, promoting modernization, increasing productivity, and enhancing food security, which are crucial for sustainable economic development.

INTRODUCTION

When non-resident entities or individuals possess 10% or more of the equity share in a resident entity, in addition to all levels of Fellow Enterprises and Direct Investments with below 10% of shareholding, the investment is classified as a Foreign Direct Investment (FDI) (Farkas, 2022). Many people use the term "multinational enterprise" to describe the types of businesses that make up FDI. Foreign direct investment (FDI) may benefit both the host nation and the multinational enterprise (MNE) at times, and vice versa at others. We need to meet certain requirements before international multinational enterprises find it profitable to join local markets. As a result, the profit must exceed the expenses, which comprise things like transportation, communications, sending employees on assignment overseas, and overcoming linguistic and cultural hurdles. It is essential to determine the benefits for the multinational company that would get direct investments. Ownership, location, and internalisation are the three factors that Dilby (2014) identifies as necessary for a company to discover direct investment incentives (OLI).

African governments are focussing heavily on obtaining FDI due to the lack of resources to fund long-run development and the gloomy outlook for poverty reduction. Attracting FDI has the

potential to help low-income nations close the resource gap, prevent additional debt accumulation, and address the root causes of poverty, as attested by the experience of a small number of rapidly developing East Asian newly industrialised economies (UNCTAD 2004). Foreign direct investment (FDI) has been increasing in many parts of the globe, but it has been trickling down to Africa at a snail's pace. To compensate for the savings and currency deficits caused by a fast pace of capital formation, many emerging nations, comprising African nations, need a large influx of foreign resources. To alleviate its extreme poverty, Africa must also undergo development. However, the continent faces a distinct development issue due to its status as the worlds poorest and its persistent debt load (Egbo, 2018). Foreign direct investment (FDI) can play a crucial role in Africa's development from an economic standpoint because it creates jobs, transfers technology, helps local businesses access global markets, improves administrative practices, and rises product diversity (Umah, 2011).

Comparisons of China and India, two nations that have successfully reduced poverty, provide the strongest evidence for the link between development and this phenomenon. Both nations saw fast economic development and poverty reductions between 1980 and 2000 as a result of their openness to global investment, despite the fact that both nations are home to the vast majority of the world's poor (Nwillima, 2010). Poor leadership (as in Zimbabwe) and pervasive bloodshed (as in Angola, the Congo, Liberia, Sierra Leone, and Sudan) are the real problems in Africa, as attested byUgwuegbe, Okore, and John (2013). Africa needs a long-run strategy of strategic investments if it wants to break through many of the barriers limiting output. Governments should work to enhance their nation's investment environment so that local and international businesses have more chances and incentives to invest wisely, says the 2005 World Development Report.

Statement of the Problem

It is often believed that investments from both inside and outside the nation are crucial to economic progress. Studies that look at the impact of FDI on development from an economic standpoint tend to focus on two main areas: the overall outcome on development (or net welfare) and the specific ways in which FDI affects sectors like trade, employment, technology, entrepreneurship, and even health, infrastructure, and education. The present empirical evidence on the underlying link between FDI and development from an economic standpoint and the related benefits is relatively equivocal, despite the abundance of research on the topic in Nigeria. It seems that FDI has a favourable effect on economic development, but there exist no agreement in the empirical literature on the direction of this effect, therefore FDI might have anunfavourable or favourable effect on economic development. There is also a lack of study on the subject when considering emerging nations like ours. The fundamental motivation for this endeavour is the significance of the problem of economic development for emerging countries, with a focus on Nigeria. These nations have been promoting growth via a variety of means, i.e. laws that seek to attract international investment and facilitate the transfer of technological know-how. It is therefore worthwhile to look at the possibility that the uptick in FDI into the nation during the time period under consideration is responsible for the commencement of development. So, it is only reasonable to wonder if the recent economic development was due to FDI or whether the nation had already reached this level of development before courting FDI. New theoretical frameworks in economic development suggest that developing nations that have been successful in recent years have grown in large part because they have been able to "catch up" technologically. Foreign direct investment (FDI) is a key channel for this process.

As a result, analysing the link between development and FDI is a good fit for a study of improved economic development via technological innovation. Once again, new theoretical advances enable academics to predict and evaluate the long-run and short-run effects of FDI on economic development. Despite the fact that the extractive (oil) sector receives over 60% of Nigeria's FDI, these earlier studies failed to make an attempt to address this issue. So, basically, what these studies did was simulate how Nigeria's natural resources affected the nation's economic development. The majority of previous empirical studies in this field have employed panel data from many nations to determine the correlations between variables. Researchers in Nigeria have come to conflicting conclusions on the role of FDI in driving economic development. It is so difficult to determine the direction of the correlation between FDI and economic development in Nigeria for this reason. Therefore, to determine the causal link and interaction between FDI and economic development, there are few comprehensive nation-specific research studies. Chowdhury and Mavrotas (2010) thus advocated for the conduct of nation-specific research in an effort to establish this cause-and-effect link. Consequently, this is a very compelling reason to do this research.

Aim and Objectives of the Study

The aim of the study is to examine the effect of sectoral foreign direct investment on economic development in Nigeria. The specific objectives are to:

1. Examine the effect of foreign direct investment to agricultural sector on human development index in Nigeria.
2. Determine the effect of foreign direct investment to manufacturing sector on human development index in Nigeria.
3. Evaluate the effect of foreign direct investment to transport and communication sector on human development index in Nigeria.
4. Analyze the effect of foreign direct investment to service sector on human development index in Nigeria.
5. Investigate the effect of foreign direct investment to oil and gas sector on human development index in Nigeria.

LITERATURE REVIEW

Theoretical Review

Dependency Theory

As attested by dependency theory, affluent nations enrich themselves at the cost of poorer states, which are located on the "periphery" of the economic hierarchy. The idea that affluent nations benefit from poor states' integration into the "global system" and vice versa is important to dependence theory. After WWII, academics in Latin America sought to identify the cause of the region's underdevelopment, which led to the formal development of this theory in the late 1960s (Ghosh, 2019). Aremu (2010) argues that unindustrialised nations have fallen into poverty due to a long history of imperial neglect, over-reliance on primary products exported to developed countries, the impediment to independent development strategies owing to indigenous investors the introduction of inappropriate technology to developing nations, laxity on the part of foreign investors (especially when it comes to transferring prices), the international division of labour to their disadvantage, and domestic technology, discriminatory wages, and reliance on foreign aid. Similarly, the impact of FDI from multinational businesses on the economies of developing

nations has been a central concern for dependency theorists. They argue that distortions comprise things like the displacement of domestic businesses, arise in unemployment due to capital-intensive technologies, and a noticeable erosion of political sovereignty. Some further contend that FDIs are imperialistic and exploitative since they force the host nation to rely only on the capital of the home nation. Proponents of dependency theories claim that developing countries cannot expect to gain from the presence of wealthier nations in their economy, whether via FDI or any other medium. This is because of the aforementioned factors.

Electric Paradigm Theory

Integral to this process are the three FDI theories that address location-specific factors: ownership-specific (O), internalisation (I), and location-specific (L). These three factors are crucial to the theory's analysis of FDI levels and patterns. Having an ownership advantage in the host nation that is substantial enough to offset the disadvantage of competing with enterprises in the home nation is necessary, as attested by Sean-Leigh (2007). The benefits, he continued, comprise having global competitive strength over domestic enterprises and efficient manufacturing and marketing. Similarly, Shenkar (2007) outlined the components of ownership advantage as endowments of natural resources, human capital, technology, information, marketing and management abilities, and organisational structures. In their discussion of location advantage, Wall and Ress (2004) said that, regardless of whether it is economic, market, or cultural potential, a company's ownership advantage in foreign markets must lead to higher profitability than in the company's home market. Because it is considered fundamental to their competitiveness, internalisation allows firms to fully utilise the ownership advantage that comes from knowing how to sell a product or provide a service. It also gives them the chance to keep that information secure (Sean-Leigh, 2004).

Empirical Review

Using the variables 1980–2022, Akpobaro and Egbon (2023) employed the Johansen co-integration test, the Vector Autoregressive (VAR) Model Estimation method, and descriptive statistics to analyse the correlation between FDI and economic development in Nigeria. Except for FDIO, which has anunfavourable effect, the research found that GDPGR, FDIO, and FDII all have favourablecorrelations with GDPGR equations when their one-period lags are comprised. The FDII equation demonstrated a favourable association between FDII and GDPGR, FDIO, and its own lagged variables. The only time FDIO's second period lag hurts FDII is the second time it happened previously.

Between 1990 and 2021, Ugoing to and John (2022) conduct an empirical investigation of the correlation between FDI and economic development in Nigeria. This investigation employs secondary data aggregated from a variety of sources, comprising the CBN statistics bulletin. In the study, an OLS was implemented. The results clearly demonstrate a statistically significant and favourable correlation between economic development in Nigeria and FDI. Conversely, there is a statistically insignificant and unfavourable correlation between economic development in Nigeria and outbound foreign direct investment (OFDI). Additionally, the data were stationary at order one (1).

Using the ARDL method, Olasehinde and Ajayi (2022) analysed the 1981–2020 period in Nigeria's economy to determine the correlation between FDI and GDP growth. The upshots showed that the factors put into play had a statistically substantial link down the road. There

were favourable, statistically substantial, and time-dependent effects of real exchange rates (REXCR) and FDI on GDP growth.

The development of the Nigerian economy and the extent to which FDI influenced it were the subjects of Solomon and Tukur's (2022) assessment from 1981 to 2018. The data utilised in the investigation was sourced from the CBNs statistics database. Co-integration by Johansen Test results suggested a long-runcorrelation, and ECM results demonstrated that FDI and trade openness had a substantial and favourable impact on GDP growth in Nigeria during the research period. Conversely, exchange rate results indicated a favourable but insubstantial impact.

Researchers Cookey and Eniekezimene (2020) looked appraised what factors attract FDI to Nigeria. The research employed the ARDL Bounds testing econometric method. The upshots show that trade openness (TOPN) and exchange rate (EXR) are favourable factors that influence FDI in the Nigerian economy. Additionally, the upshots demonstrate that a 1% rise in FDI into the Nigerian economy would need a 0.18 percentage point rise in the exchange rate and a 5.00 percentage point rise in trade openness. When it comes to FDI in Nigeria, however, inflation (INFR) and interest (INTR) are unfavourable factors.

In their 2020 study, Giwa, George, Okodua, and Adediran empirically appraised how FDI flows into Nigeria affect real GDP growth and how these flows can help developing nations achieve Goal-17.3, which is to raise more money from a variety of sources to help them meet their financial needs. For this model, we employed the robust Generalised Method of Moments (GMM) estimation approach, which eliminates the autocorrelation and endogeneity issues with conventional least square. Consistent with theory, the analysis indicated that RGDP is favourably and substantially affected by labour quality. Capital intensity was also shown to have aunfavourable and statistically substantialoutcome on RGDP in Nigeria.

From 1999 to 2013, Adeleke, Olowe, and Fasesin (2019) appraised how FDI affected GDP growth in Nigeria. To find out how FDI affects GDP growth and what kind of connection exists between the two, this research is employing OLS regression analysis as its estimate approach. At the 5% level of significance, the upshots showed a clear correlation between economic development and FDI inflow, suggesting that strong economic performance serves as a favourable signal for FDI influx.

China, India, Iran, Indonesia, and South Africa were the top five developing nations that released greenhouse gases from fuel combustion between 1982 and 2016, and Sarkodie and Strezov (2019) appraised how FDI, economic development, and energy consumption affected these emissions. The research employed a panel quantile regression with non-additive fixed-effects, a U test estimation technique, and panel data regression employing Driscoll-Kraay standard errors. Research has shown that energy usage substantially reduces emissions of greenhouse gases, lending credence to the pollution haven theory. The sustainable development objectives may be more easily attained by developing nations with the assistance of FDI that combines clean technology transfer with better labour and environmental management practices.

Between 1985 and 2014, Omodero and Ekwe (2017) appraised how FDI affected the performance of the Nigerian stock market. For this investigation, the researchers employed multiple regression of least square estimate to examine the data. The model comprised the following variables: RGDP, CPI, Real effective exchange rate, Money supply (M2), Share price index, Treasury bill, and transactions on the Nigerian stock market as variables for FDI. As

attested by the research, FDI has a little unfavourable effect on the economy and the macroeconomic factors that affect the stock market performance in Nigeria.

Between 1981 and 2013, Udeh and Odo (2017) appraised how FDI affected Nigeria's economic development. Data analysis made use of the Pearson Product Moment Correlation Co-efficient. Between 1981 and 2013, researchers in Nigeria discovered, among other things, that FDI and GDP had a substantial, favourable, and statistically substantial link. This means that a rise in FDI into Nigeria, if handled properly, has the potential to boost GDP. Researchers found that FDI has a very favourable and statistically substantial correlation with GDP growth in Nigeria.

From 1981 to 2014, Sunday, Blessing, and Odike (2016) conducted an empirical investigation of how FDI affected the expansion of the Nigerian economy. To examine the impact of these factors on GDP growth, the research employed econometric methods i.e. the unit root test, co-integration, and ECM. The research concluded that FDIsubstantially contributes to the expansion of the Nigerian economy. The authors of the study speculated that the high rate of abandoned government capital projects, which have committed large sums of money but have not yet contributed as much as expected to economic development, might be to blame for GCE's unfavourable effect on the economy. However, the study found the opposite to be true.

From 1990 to 2012, Okonkwo, Egbunike, and Udeh (2015) conducted an empirical investigation on how FDI affected economic development in Nigeria. The research analysed the secondary data employing OLS estimate methodologies. The primary sources of secondary data for this study were the annual report, statement of accounts, and statistics bulletin (CBN) of the CBN. In conclusion, FDI has augmented exports in Nigeria, as the upshots shown that exports take on a favourable sign, suggesting a favourable association between economic development and exports.

The authors Adigwe, Ezeagba, and Francis (2015) established a correlation between FDI, the currency rate, and GDP. The research relied on time series data culled from the CBN Statistical Bulletin between 2008 and 2013. With the help of SPSS version 20.0, we employed Pearson Correlation to test the hypothesis. As attested by the upshots, FDI, exchange rate, and GDP all have a favourable correlation, suggesting that FDI and exchange rate are the primary determinants of GDP growth in Nigeria.

In 2015, Emmanuel reviewed the impact that FDI had on the development of the gross domestic product in Nigeria. We utilised the OLS regression analysis method in an effort to accomplish the task of estimating the model from 1981 to 2013. Eviews 7.0 simplified the process of data analysis. In congruent with the vast study, FDI has a somewhat favourable impact on GDP growth in the short-run, but it does not have any discernable effect on GDP expansion in the long-run.

Using yearly time series data from the Nigerian economy, Saibu and Keke (2014) appraised the effect of FDI on economic development. This research empirically appraised the link between foreign private investment and economic development employing Co-integration and ECM approaches. It then drew policy recommendations owing to the observed association. As attested by the research, prior imbalances in long-runeconomic development (with a feedback of 116%), and foreign private investment (with a feedback of 78%), were substantial. The upshots also showed that a lot of money came into the nation and was not put to good use, yet even that little amount—22% of net capital inflows—made a big difference in Nigeria's economic development.

Evaluation of Literature Reviewed

The impact of FDI on Nigeria's economic development has been the subject of both theoretical and empirical reviews in this chapter. The empirical literature review revealed some gaps in literature/knowledge (content, time, and technique) that this research intends to fill. There have been a lot of studies looking at the correlation between FDI and economic development in Nigeria, but none that broke down FDI into its component parts. Most of these studies either appraised a single year's worth of data, had a very narrow scope, or did not go all the way up to 2023. In terms of technique, the majority of the studies analysed their data without doing pre- and post-estimation tests. Consequently, this research will pivot around the idea that FDI has an outcome on Nigeria's economic progress. The study will use yearly time series data ranging from 1981 to 2023 to have a larger sample of observations for a robust data analysis, and it will disaggregate FDI into FDI into agriculture, manufacturing, transportation, communication, services, and oil and gas. In an effort to arrive at more reliable upshots for effective and efficient policy implementation, this research will econometrically carry out pre-estimation tests, estimation tests, and post-estimation testing.

METHODOLOGY

Research Design

An ex-post facto methodology was employed for this study. The researcher cannot alter the status or direction of the variables employed in an ex-post-facto research design, which is a systematic empirical investigation.

Data Collection Methods and Sources

This research made use of time series data. Sources employed for this data set comprise the the National Bureau of Statistics (NBS) reports, World Bank's World Development Indicators (WDI), and the Statistical Bulletin of the CBN. Credible and trustworthy sources of information were these. The data employed to evaluate this research similarly extended across forty-three (33) years, from 1981 to 2023.

Model specification

The purpose of this research was to analyse how FDI has influenced economic development in Nigeria. Presented below is the model that was the basis of this investigation. Specifying a model entails deciding which internal and external variables will be part of the model and making an a priori prediction about the magnitude and direction of the function's parameters. This research employed an econometric model, which is in agreement with the previous assertion. All three types of the model are thus defined: functional, mathematical, and econometric.

When we express the model in its functional form, we get the following:

$$HDI = f(FDIA, FDIM, FDITC, FDIS, FDIOG) \tag{1}$$

Transforming equation (1) into a mathematical model, we have:

$$HDI = \delta_0 + \delta_1 FDIA + \delta_2 FDIM + \delta_3 FDITC + \delta_4 FDIS + \delta_5 FDIOG \tag{2}$$

Transforming equation (3.2) into an econometric model gives:

$$HDI = \delta_0 + \delta_1 FDIA + \delta_2 FDIM + \delta_3 FDITC + \delta_4 FDIS + \delta_5 FDIOG + \mu_t \tag{3}$$

Where: HDI = Human Development Index, FDIM = Foreign Direct Investment to Manufacturing Sector, FDIS = Foreign Direct Investment to Service Sector, FDIA = Foreign Direct Investment to Agricultural Sector, FDITC = Foreign Direct Investment to Transport and Communication Sector, FDIOG = Foreign Direct Investment to Oil and Gas Sector, δ_0 = constant variable in the model, δ_1- δ_5= Parameters/co-efficient, μ_t = Disturbance or error term

A Priori Expectation: $\delta_1 > 0; \delta_2 > 0; \delta_3 > 0; \delta_4 > 0; \delta_5 > 0$

Data Analysis Techniques

We employed regression analysis to examine and understand the time series data that we collected for this investigation. The unit root test yielded a mixed result of I(0) and I(1), thus the ARDLapproach was employed instead. The purpose of an ARDL model is to examine the interrelationship of variables over the long and short-run. Co-integration captures the long-run connection, which indicates a stable equilibrium between variables in the long run. Departures from the long-run equilibrium and adjustment processes are the main foci of the short-run connection.

DATAANALYSIS AND DISCUSSION OF UPSHOTS

Descriptive Analysis

The upshots of the descriptive analysis are presented as follow:

Table 1: Descriptive Statistics

	HDI	FDIA	FDIM	FDITC	FDIS	FDIOG
Mean	0.479762	403.6381	1812.758	456.2295	455.5895	1416.050
Median	0.463000	421.7500	1579.550	447.3100	450.2350	178.8250
Maximum	0.581000	900.5000	4013.550	962.5400	845.5900	6854.330
Minimum	0.410000	21.80000	198.6300	63.71000	34.85000	2.900000
Std. Dev.	0.039753	309.9406	1183.080	279.5699	255.6234	1913.050
Skewness	0.569519	0.130501	0.533122	0.145653	-0.069196	1.170601
Kurtosis	2.644572	1.528109	2.175967	1.716619	1.637294	3.286726
Jarque-Bera	2.491535	3.910525	3.177832	3.030871	3.283212	9.736018
Probability	0.287720	0.141527	0.204147	0.219712	0.193669	0.007689
Sum	20.15000	16952.80	76135.85	19161.64	19134.76	59474.09
Sum Sq. Dev.	0.064794	3938590.	57386854	3204533.	2679076.	1.50E+08
Observations	**42**	**42**	**42**	**42**	**42**	**42**

Source:*Computation by researcher (E-views 12), 2025.*

Table 1 above illustrates that the HDI in Nigeria recorded a mean average of 0.48% from 1981 to 2022, with a maximum value of 0.58% and a minimum value of 0.41% per annum. The standard deviation of 0.04% suggests a low level of dispersion from the mean. The table illustrates that FDI in the agricultural sector (FDIA) in Nigeria has a mean average of N403.64 billion during the period 1981–2022, with a maximum value of N900.5 billion and a minimum value of N21.8 billion per annum. The standard deviation of N309.94 billion suggests a low level of dispersion

from the mean. Furthermore, the mean value of FDI in the manufacturing sector (FDIM) was N1812.76 billion, with the maximum and minimum values being N4013.55 billion and N198.630 billion, correspondingly. Nevertheless, the standard deviation of N1183.08 billion suggests a minimal degree of dispersion from the mean. In addition, the mean value of FDI in the transport and communication sector (FDITC) was N456.23 billion, with a maximum value of N962.54 billion and a minimum value of N63.71 billion. Nevertheless, the standard deviation of N279.57 billion suggests a minimal degree of dispersion from the norm. In addition, the service sector's FDI had a mean value of N455.59 billion, with a maximum and minimum value of N845.59 billion and N34.85 billion, correspondingly. The standard deviation of N255.62 billion suggests a high degree of dispersion from the mean. Finally, the oil and gas sector's FDI had a mean value of N1416.05 billion, with a maximum and minimum value of N6854.33 billion and N2.9 billion, correspondingly. The standard deviation of N1913.05 billion suggests a high degree of dispersion from the mean.

Trend Analysis
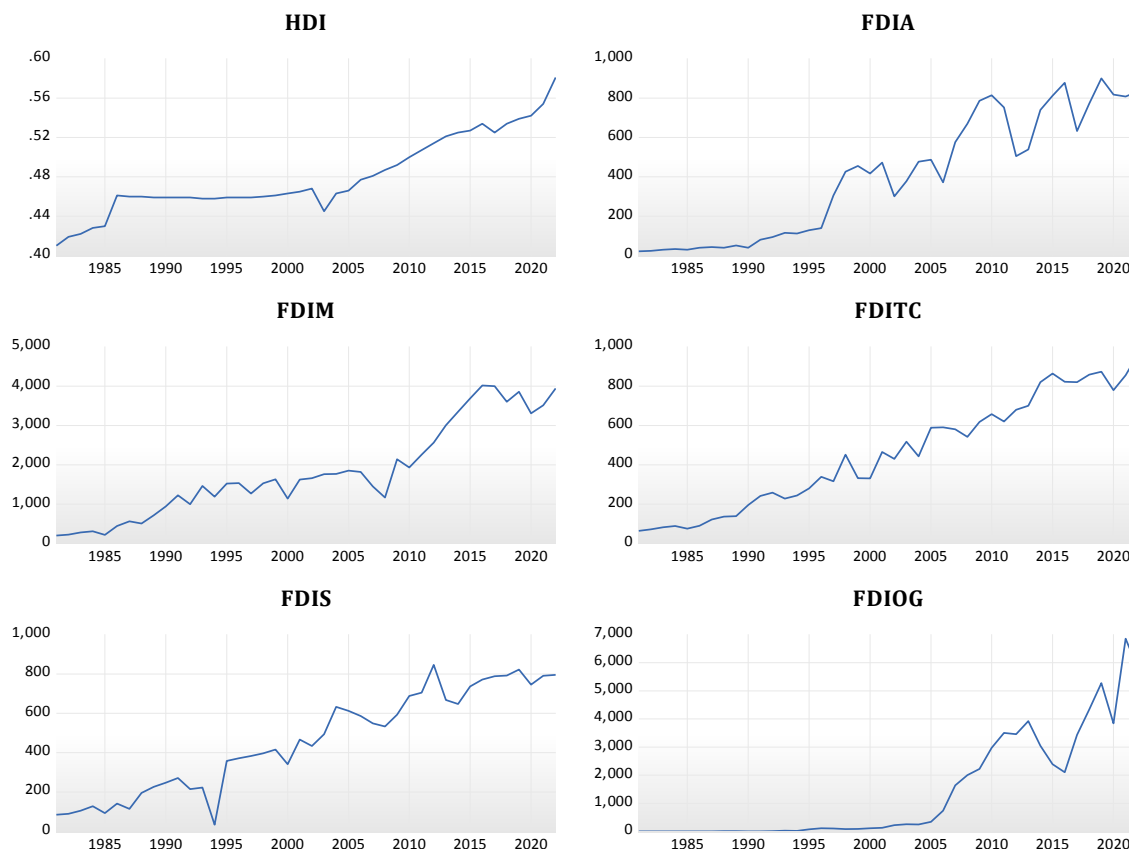
Source: *Computation by researcher (E-views 12), 2023.*

Figure 1: Line Graphs Showing the Trends in Research Variables

The trends of the HDI, FDI to the agricultural sector (FDIA), FDI to the manufacturing sector (FDIM), FDI to the transport and communication sector (FDITC), FDI to the service sector (FDIS), and FDI to the oil and gas sector (FDIOG) in Nigeria are presented in the figure that can be found above. As attested by the figure, the HDI, FDI to the agricultural sector (FDIA), FDI to the manufacturing sector (FDIM), FDI to the transport and communication sector (FDITC), FDI to the service sector (FDIS), and FDI to the oil and gas sector (FDIOG) do, for the most part,

follow the same trends or patterns in the low levels of inconsistent upward and downward movement

Pre-Estimation Tests

Unit Root Test

In an effort to mitigate this undesirable consequence, the data representing variables in this study were subjected to a stationarity test by evaluating the presence or absence of a unit root employing ADF. The table below provides a summary of the results:

Table 2: Augmented Dickey-Fuller (ADF) Test Results

Variables	At Levels		At First Difference		Remark	Order of Integration
	ADF	Mackinnon Critical Value @ 5%	ADF	Mackinnon Critical Value @ 5%	Stationary @	
$InHDI_t$	0.135887	-2.935001	-6.725650	-2.936942	1st Difference	I(1)
$InFDIA_t$	-1.698995	-2.935001	-6.750928	-2.936942	1st Difference	I(1)
$InFDIM_t$	-8.750106	-2.936942	-	-	Level	I(0)
$InFDITC_t$	-2.208763	-2.936942	-8.202701	-2.936942	1st Difference	I(1)
$InFDIS_t$	-1.800113	-2.936942	-10.45427	-2.936942	1st Difference	I(1)
$InFDIOG_t$	-0.839890	-2.935001	-6.022622	-2.936942	1st Difference	I(1)

Source:*Computation by researcher (E-views 12), 2025.*

The upshots of the ADF Unit Root Test, which are shown in Table 2, suggest that the ADF test statistics, which measure the amount of FDI to the manufacturing sector (FDIM), are higher in absolute value than the critical value at a level of significance of 5%. The conclusion that can be drawn from this is that FDI to the manufacturing sector (FDIM) remained unchanged at the level, and as a result, it was integrated at the order zero level, also known as I(0). However, the ADF test statistic for the HDI, FDI to agricultural sector (FDIA), FDI to transport and communication sector (FDITC), FDI to service sector (FDIS), and FDI to oil and gas sector (FDIOG) are all higher in absolute value than the critical values. This is the case for all of these statistical measures. Because of this, it can be deduced that the HDI, FDI to the agricultural sector (FDIA), FDI to the transport and communication sector (FDITC), FDI to the service sector (FDIS), and FDI to the oil and gas sector (FDIOG) were all stationary at the first difference, and as a result, they were integrated at the first order (I(1)). Conversely, considering that all of the variables were stationary at level and at first difference, which means that they were mixed of integrated at order zero [I(0)] and integrated at order one [I(1)], we proceed to establish or ascertain the

existence or nonexistence of a long-run cointegrating correlation among the variables in the equation by employing the ARDL bounds co-integration test.

Lag Selection Criteria

The lag selection criteria result is presented in Table 3:

Table 3:   Lag Selection Criteria

Lag	LogL	FDIM	FPE	AIC	SC	HQ
0	-1177.964	NA	4.65e+19	62.31389	62.57245	62.40588
1	-1049.352	209.8405	3.65e+17	57.43958	59.24954*	58.08355
2	-1023.987	33.37475	7.39e+17	57.99932	61.36068	59.19527
3	-985.4859	38.50128	9.86e+17	57.86768	62.78044	59.61560
4	-909.5645	51.94621*	3.22e+17*	55.76655*	62.23071	58.06645*

Source:*Computation by researcher (E-views 12), 2025.*

As attested by the Akaike Info Criterion (AIC), the ideal lag length that would lead to a substantialco-integration result is lag four. As a consequence of this, further following studies were carried out employing the optimal lag length four. Table 3 shows the information that leads to this conclusion.

BoundsCo-integration Test

The upshots of the Boundco-integration test are presented in Table 4 below:

Table 4:Bounds Co-integrationTest

Null Hypothesis: No Long-Run Correlations Exist				
Critical Value Bounds				
T-statistic	Value	Significance	I(0)	I(1)
F-statistic	4.284596	10%	2.08	3
K	5	5%	2.39	3.38
		1%	3.06	4.15

Source:*Computation by researcher (E-views 12), 2025.*

The estimated F-statistic (4.284596) is more than the upper limit critical value (4.15) at a 5% substantial level, thereby rejecting the null hypothesis (H0), as attested by the upshots of the limit co-integration test in Table 4. That the variables are cointegrated is the implication here. Thus, there is enough data to conclude that HDI, FDI to agriculture (FDIA), FDI to manufacturing (FDIM), FDI to transportation and communication (FDITC), FDI to services (FDIS), and FDI to oil and gas (FDIOG) are all cointegrated over the long-run. To suit the ARDL model, however, long-runcorrelations with mixed stationarity orders are required. Estimating an ARDL of order 2, 4, 1, 4, 2, 3 allowed us to go on to the long run co-efficient.

Short-Run Autoregressive Distributed Lag (ARDL) Analysis

Utilising the ARDL error correction approach, we assessed the short-run dynamic link between sectoral FDI and economic development in Nigeria. The upshots are presented in Table 5:

Table 5: Result of Short-Run ARDL Co-efficient

Dependent Variable = $InHDI_t$				
Variable	**Co-efficient**	**Std. Error**	**t-Statistic**	**Prob.***
$D(InHDI_{t-1})$	-0.398845	0.164829	-2.419746	0.0278
$D(InFDIA_t)$	0.045257	0.010525	4.299906	0.0006
$D(InFDIA_{t-1})$	-0.003113	0.010072	-0.309059	0.7613
$D(InFDIA_{t-2})$	0.010904	0.010184	1.070728	0.3002
$D(InFDIA_{t-3})$	-0.023946	0.009812	-2.440514	0.0267
$D(InFDIM_t)$	0.059720	0.018847	3.168660	0.0060
$D(InFDITC_t)$	0.101641	0.022674	4.482800	0.0004
$D(InFDITC_{t-1})$	-0.133858	0.023975	-5.583215	0.0000
$D(InFDITC_{t-2})$	-0.090964	0.022474	-4.047448	0.0009
$D(InFDITC_{t-3})$	0.026816	0.013114	2.044817	0.0577
$D(InFDIS_t)$	0.010996	0.006204	1.772328	0.0954
$D(InFDIS_{t-1})$	0.012796	0.008438	1.516534	0.1489
$D(InFDIOG_t)$	0.001357	0.007314	0.185514	0.8552
$D(InFDIOG_{t-1})$	-0.000314	0.007141	-0.043948	0.9655
$D(InFDIOG_{t-2})$	0.018309	0.007551	2.424718	0.0275
CointEqM(-1)*	-0.170520	0.027196	-6.270107	0.0000

Adjusted R-squared = 0.592106; Durbin-Watson stat = 1.959423

Source:*Computation by researcher (E-views 12), 2025.*

FDI in Nigeria's agricultural sector has a favourable and substantial influence on the nation's HDI, as attested by the upshots of the short-run ARDL in Table 5. The fact that the p-value (0.0006) isbelow 0.05 and the co-efficient value (0.045257) of FDI in the agriculture sector is favourable is proof of this. In the short-run, this means that the HDI will rise by 0.045257 points for every one unit rise in FDI to the agricultural sector and fall by the same amount for every one unit decline. FDI in Nigeria's manufacturing sector is favourably and substantially correlated with the nation's HDI, as attested by the upshots of the short-run ARDL in Table 4.6. The favourableco-efficient value of FDI in the manufacturing sector (0.059720) and the p-value (0.0060)—both of which are below 0.05—provide proof of this. Here we find that in the short run, a 0.059720 decline in the HDI will result from a 0.059720 rise in FDI to the manufacturing sector for every unit of investment, and vice versa. FDI in Nigeria's transport and communication

sector favourably and substantially affects the nation's HDI, as attested by the short-run estimations of the ARDL model (Table 4.6). FDI in the transport and communication sector has a favourableco-efficient value (0.101641) and a p-value (0.0004) that is below 0.05, indicating this. This means that in the short run, the HDI will decline by 0.101641, if FDI to the transport and communication sector declines by one unit, and by the same amount, if FDI to the transport and communication sector rises by one unit. Table 4.6 shows that FDI in the service sector influences Nigeria's HDI in a favourable but insubstantial way, as attested by the short-run estimations of the ARDL model. The favourableco-efficient value of 0.010996 for FDI in the service sector and the p-value of 0.0954, both of which are larger than 0.05, provide proof of this. Here we can see that in the short run, a one unit rise in FDI to the service sector will result in a 0.010996 rise in the HDI, and a one unit decline will lead to a 0.010996 decline. Table 4.6 shows that FDI in the oil and gas industry has a favourable and statistically substantial influence on Nigeria's HDI, as attested by the short-run estimations of the ARDL model. The favourableco-efficient value of FDI in the oil and gas industry at lag two (0.018309) and its p-value (0.0275), which is below 0.05, provide support of this. What this means is that in the short run, the HDI will rise by 0.018309 points for every one unit rise in FDI to the oil and gas sector, and it will fall by the same amount for every one unit decline. Additionally, the agricultural, manufacturing, transport and communication, service, and oil and gas sectors account for 59% of the short-run systematic variation in the HDI, as attested by the Adjusted R-squared (Adj. R2) value of 0.592106. The error term, which represents unknown factors outside the model, accounts for 41% of the total variation. Finally, when any deviations from the long run equilibrium are rectified in the current period, the pace of adjustment is 17%, as shown by the co-efficient of CointEq(-1)* at -0.170520. Meaning that changes in FDI to the agricultural, manufacturing, transport and communication, service, and oil and gas sectors take a while for the HDI to reflect.

Long-Run Autoregressive Distributed Lag (ARDL) Analysis

The ARDL approach was employed to estimate the long-run dynamic correlation between economic development in Nigeria and sectoral FDI. The upshots are presented in Table 6:

Table 6: Result of Long-Run ARDL Co-efficient

Dependent Variable = $InHDI_t$				
Variable	**Co-efficient**	**Std. Error**	**t-Statistic**	**Prob.***
$InFDIA_t$	0.027425	0.011941	2.296720	0.0355
$InFDIM_t$	0.020827	0.007911	2.632853	0.0181
$InFDITC_t$	0.187992	0.455099	0.413079	0.6850
$InFDIS_t$	0.044797	0.017083	2.622331	0.0185
$InFDIOG_t$	0.065535	0.019989	3.278597	0.0047
C	-0.962651	0.711606	-1.352787	0.1949

Source:*Computation by researcher (E-views 12), 2025.*

The long-run ARDL upshots in Table 6 indicate that FDI in the agricultural sector has a substantial and favourableoutcome on the HDI in Nigeria. The favourableco-efficient value (0.027425) of FDI in the agricultural sector and its p-value (0.0355), which is below 0.05, serves as evidence of this. This suggests that a 0.027425 rise in the HDI will result from a unit rise in FDI in the agricultural sector, while a 0.027425 decline in FDI in the agricultural sector will result in a 0.027425 decline in the HDI in the long-run. The long-run ARDL upshots in Table 4.6 also indicated that the HDI in Nigeria has a favourable and substantialcorrelation with FDI in the manufacturing sector. The favourableco-efficient value (0.020827) of FDI in the manufacturing sector and its p-value (0.0181), which is below 0.05, serve as evidence of this. This suggests that a 0.020827 rise in the HDI will result from a unit rise in FDI in the manufacturing sector, while a unit decline in FDI in the manufacturing sector will result in a 0.020827 decline in the HDI in the long-run. Additionally, the long-run estimates of the ARDL model in Table 6 demonstrated that FDI in the transport and communication sector has a favourable and non-substantial effect on the HDI in Nigeria. The favourableco-efficient value (0.187992) of FDI in the transport and communication sector and its p-value (0.6850) are indicative of this, as they are both greater than 0.05. This suggests that a one-unit rise in FDI in the transport and communication sector will result in a 0.187992 rise in the HDI, while a one-unit decline in FDI in the same sector will result in a 0.187992 decline in the HDI in the long-run. Furthermore, the long-run estimates of the ARDL model in Table 6 demonstrated that FDI in the service sector has a substantial and favourableoutcome on the HDI in Nigeria. The favourableco-efficient value (0.044797) of FDI in the service sector and its p-value (0.0185) are indicative of this: both are below 0.05. This suggests that a unit rise in FDI in the service sector will result in a 0.044797 rise in the HDI, while a unit decline in FDI in the service sector will result in a 0.044797 decline in the HDI in the long-run. Finally, the long-run estimates of the ARDL model in Table 6 demonstrated that FDI in the oil and gas sector has a substantial and favourableoutcome on the HDI in Nigeria. FDI in the oil and gas sector has a favourableco-efficient value of 0.065535, and its p-value is 0.0047, which is below 0.05. This is evident. This suggests that a one-unit rise in FDI in the oil and gas sector will result in a 0.065535 rise in the HDI, while a one-unit decline in FDI in the oil and gas sector will result in a 0.065535 decline in the HDI in the long-run.

Post-Estimation Tests

This study conducted diagnostic test to determine how reliable and valid the result analyzed above
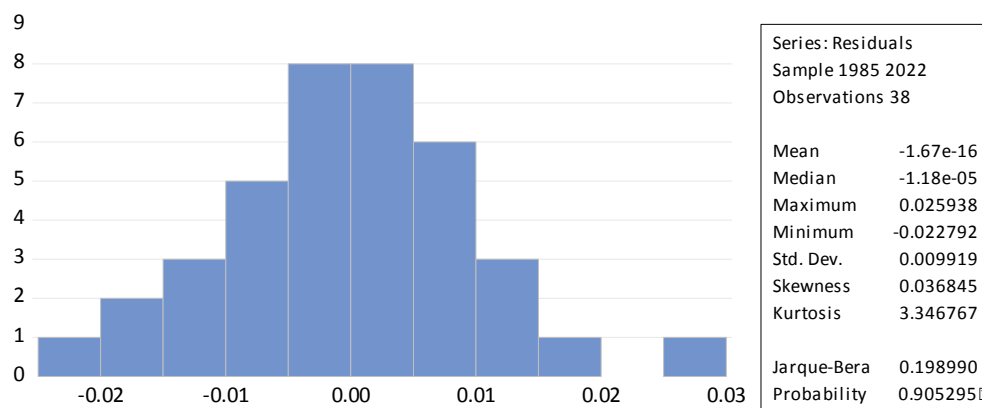
Normality Test

Figure 2: Normality Test Result

In an effort to test the null hypothesis of normal distribution, Jarque-Bera statistics were utilised. Because the probability value (0. 905295) of Jarque-Bera statistics is higher than 5 percent in figure 1, we are able to maintain the null hypothesis and come to the conclusion that the residuals from the estimations were distributed in a normal fashion.

Serial Correlation Test

Table 7: Breusch-Godfrey Serial Correlation LM Test Result

F-statistic	DF	P-Value	Decision
0.859194	F(2,14)	0.4447	The null hypothesis of no serial correlation is retained

Source:*Computation by researcher (E-views 12), 2025.*

When testing the null hypothesis that there exist no serial correlation, the Breusch-Godfrey Serial Correlation LM test was utilised. The significance threshold for this test was set at 5 percent. As a result of the fact that the probability value of the Breusch-Godfrey Serial correlation LM test is more than 5 percent, we are able to maintain the null hypothesis and come to the conclusion that there exist no serial correlation in the estimates.

Heteroscedasticity Test

Table 8: Breusch-Pagan-Godfrey Heteroscedasticity Test Result

F-statistic	DF	P-Value	Decision
0.551332	F(21,16)	0.8998	The null hypothesis of homoscedasticity is be retained

Source:*Computation by researcher (E-views 12), 2025.*

In an effort to test the null hypothesis that there exist no heteroskedasticity at a level of significance of five percent, the Breusch-Pagan-Godfrey Heteroscedasticity Test was utilised. As a result of the fact that the probability value of the Breusch-Pagan-Godfrey Heteroscedasticity statistics is larger than 5 percent, we are able to maintain the null hypothesis and come to the conclusion that the model does not have the issue of heteroskedasticity.

Ramsey RESET Test

Table 9: Ramsey RESET Test Result

F-statistic	DF	P-Value	Decision
0.684597	1, 15	0.4210	The null hypothesis of the model being correctly specified is retained

Source:*Computation by researcher (E-views 12), 2025.*

To test the null hypothesis of a properly defined model at a level of significance of five percent, the Ramsey RESET test was utilised. We continue to adhere to the null hypothesis and come to the conclusion that the model is well stated since the probability value of Ramsey RESET statistics is more than 5 percent, which is 0.6982.
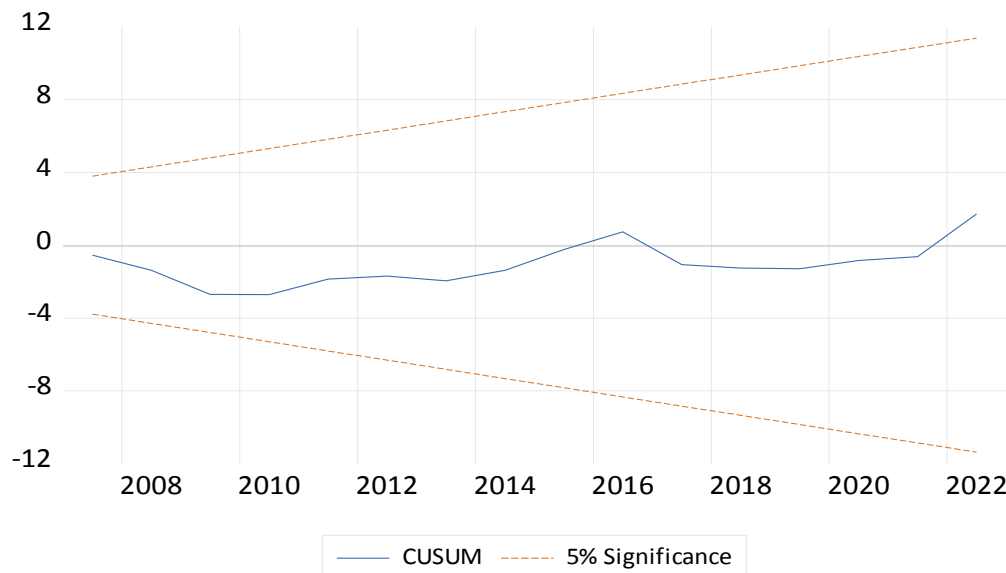
Stability Test

Figure 3: Cumulative sum (CUSUM) test

In the research, the cumulative sum (CUSUM) test was devised in an effort to guarantee that the ECM is a good match for the data. The choice on whether or not to accept the co-efficient estimates is owing to whether or not the displayed CUSUM statistics fall under the 5% significance threshold in the test. The CUSUM plot is shown to be within the 5% threshold of significance in Figure 4.3, as seen by the two red lines which are shown in the figure. Clearly, this demonstrates that the model is reliable and not erroneous.

Discussion of Results

This study showed that FDI in the agricultural sector has a favourable and substantial impact on the HDI in Nigeria, both in the short-run and the long-run. There is a connection between this discovery and the studies that Adeleke, Olowe, and Fasesin (2019) conducted. The upshots of the research conducted by Adeleke, Olowe, and Fasesin (2019) indicate that economic development is directly connected to the inflow of FDI. Furthermore, the researchers discovered that this correlation is statistically substantial at the 5% level. This suggests that a strong performance of the economy is a favourable signal for the influx of FDI. In addition, the upshots of this research showed that the HDI in Nigeria has a substantial favourable link with FDI to the manufacturing sector (FDIM) both in the short run and in the long run. Eniekezimene and Cookey (2020) had previously discovered that manufacturing FDI had a beneficial influence on manufacturing capacity utilisation in Nigeria. The outcome demonstrated that this conclusion was consistent with the upshots of the previous study. In addition, the upshots of this study revealed that FDI to transport and communication sector (FDITC) has substantialfavourable short-run correlation with HDI in Nigeria but has non-substantialfavourable long-run correlation with HDI in Nigeria.. There was a correlation between the outcome and the prior discoveries that Udeh and Odo (2017) had discovered. As attested by the upshots of Udeh and Odo's (2017) research, there was a robust and favourable correlation between FDI and GDP in Nigeria between the years 1981 and 2013. Moreover, the upshots of this research demonstrated that FDI to service sector has favourable and non-substantial short-run influence on HDI in Nigeria but has a favourable and

substantial long-run effect on HDI in Nigeria. There is a connection between this discovery and the discoveries that Olasehinde and Ajayi (2022) discovered. As attested by the upshots of Olasehinde and Ajayi (2022), the research that they conducted revealed that FDI has both favourable and substantial short-run and long-run effects on the GDP of Nigeria. In conclusion, the upshots of this research indicated that FDI in the oil and gas industry had a favourable and considerable impact, both in the short-run and the long-run, on the HDI in Nigeria. Therefore, the consequence of this is that arise in FDI to the oil and gas industry will lead to a rise in the HDI, but a drop in FDI to the oil and gas sector would lead to a fall in the HDI in both the short run and the long run. There is a connection between this result and the discoveries that Ugoing to and John (2022) discovered. Within the scope of their research, Ugoing to and John (2022) discovered that there was a favourable correlation between the amount of FDI in the oil and gas industry and the rate of economic development in Nigeria.

CONCLUSION AND RECOMMENDATIONS

Conclusion

The literature has identified sectoral FDI as a critical factor in Nigeria's economic development, as it facilitates growth, generates employment opportunities, transfers technology, and develops infrastructure. This study has empirically appraised the impact of FDI on the economic development of Nigeria in recognition of the critical role that sectoral FDI plays in the economy. The study concludes that sectoral FDI is relatively effective in promoting, enhancing, and sustaining economic development in Nigeria, owing to the upshots.. This investigation's conclusions and upshots necessitate the subsequent proposals:

Initially, the Nigerian government should offer sector-specific incentives, comprising tax vacations, subsidies, and access to property, to foreign investors in the agricultural sector. These incentives have the potential to attract FDI into agriculture, thereby fostering modernisation, increasing productivity, and improving food security—all of which are essential for the development of a sustainable economy.

Secondly, the government should implement policies that mandate foreign investors to participate in technology transfer and skills development. By forging collaborations with regional enterprises, this endeavour will not only enhance the manufacturing sector's efficacy but also foster industrial expansion and employment opportunities.

Thirdly, in an effort to enhance the sector's appeal to foreign investors, the Nigerian government should prioritise infrastructure enhancements, particularly in the areas of transportation and communication. This should encompass the revision of regulatory frameworks to guarantee transparency and the facilitation of business operations.

REFERENCES

Adelegan, J.O. (2022). Foreign direct investment and economic development in Nigeria: A Seemingly Unrelated Model. *African Review of Money, Finance and Banking, Supplementary issue of Savings and Development* 5–25. Milan, Italy.

Adeleke, K. M., Olowe, S. O.,&Fasesin, O. O. (2019). Impact of Foreign Direct Investment on Nigeria Economic Growth. *International Journal of Academic Research in Business and Social Sciences*, 4(8), 234-248.

Adigwe, P. K., Ezeagba, C. E.,& Francis, N. P. (2015) Effect of foreign direct investment on economic growth in Nigeria. *European Journal of Research and Reflection in Management Sciences,* 3(5), 28-34.

Akpobaro, O.L.,&Egbon, P. C. (2023). Impact of foreign direct investment on economic growth in Nigeria *EPRA International Journal of Economics, Business and Management Studies (EBMS)*, *10*(8), 142-151.

Anyanwu, J. C. (1993). *Monetary economics: Theory policy and institution*. Onitsha: Hybrid Publishers Ltd.

Anyanwu, J. C. (2011), *Determinants of foreign direct investment inflows to Africa*, 1980-2007, Working Paper Series N° 136, African Development Bank, Tunis, Tunisia.

Aremu, J. A. (2010). *Foreign Direct Investment and Performance*. Paper delivered at a workshop on Foreign Investment Policy and Practice organized by the Nigerian Institute of Advanced Legal Studies, Lagos on 24 March.

Ariyo, A. (2018). *Investment and Nigeria's economic development. In investment in the development process proceedings of Nigerian economic society annual conference 1998*, pp. 389–415. Ibadan, Nigeria.

Auty, R. M. (2014). Sustaining development in mineral economies: *The Resource Curse Thesis*. London: Routledge.

Cookey, I. F., & Eniekezimene, F. A. (2020). Studying Determinants of Foreign Direct Investment in Nigeria: An Empirical Investigation. *Asian Journal of Economics, Business and Accounting,17*(2), 73-84.

Emmanuel, O. (2015). Foreign direct investment and economic growth in Nigeria: Evidence from Bounds testing and ARDL Models. *Journal of Economics and Sustainable Development,6*(13), 205-212.

Giwa, B. A, George, E. O.,&Okodua, H. (2019). *Causal nexus between foreign direct investment, capital intensity, labour quality and economic growth in Nigeria*. Proceedings of the 33rd international business information management association conference. IBIMA. (7282-9).

Okonkwo, R. I., Egbunike, F. C.,& Udeh, F. N. (2015). Foreign direct investment and economic growth in Nigeria. *Developing Country Studies,4*(9), 47-52.

Olasehinde, I. O.,& Ajayi, C. F. (2022). Foreign direct investment and Nigerian economic growth. *JATSS*, *4*(3), 313-327

Omodero, C. O.,&Ekwe, M. C. (2017). Impact of foreign direct investment (FDI) on the stock market performances in Nigeria (1985-2014), *Applied Finance and Accounting*, *3*(1), 36-48.

Saibu, O.,& Keke, N. A. (2014). real output effects of foreign direct investment in Nigeria. *Journal of Behavioural Economics, Finance, Entrepreneurship, Accounting and Transport, 2*(1), pp 1-7.

Sean - Leigh, S. (2007). *Do conventional FDI theories explain why multinational enterprise conduct foreign direct investment in Thaliand?*. A dissertation M.Sc international Business. Retrieved from edisetations. Retrieved from Nothingham.acuk /946/1/07/msc/ix.s3.pdf on October 20, 2013.

Shenkar, O. (2007). *Foreign direct investment: theory and application.* Retrieved fromwww.sagepub.com. upmdata/18594 chapters 3pdf on November 13, 2013.

Sunday, E. A., Blessing, M. V.,&Odike, A. I. (2016). Foreign direct investment and economic growth in Nigeria: An empirical investigation. *International Journal of Economics and Business Management,2*(5), 55-66.

Ugonna, E. B.,& John, C. E. (2022). Foreign direct investment and economic growth in Nigeria. *Int. J. Business Management, 5*(11), 38-51.

Ugwuegbe, S. U., Okore, A. O.,& John, O. O. (2013). The impact of foreign direct investment on the Nigerian economy. *European Journal of Business and Management*, *5*(2), 25-34.

Umah, K. E (2011). The impact of foreign private investment on economic development of Nigeria. *Nigeria Journal of Economics and financial Research*, *1*(3), 9-15.

Wall, S. &Reess, B. (2004). *International business* (2nd ed.). Essexs, UK: prentice Hall.