JETMASE

Journal of Emerging Trends in Management Sciences and Entrepreneurship
Volume 4(2), Pages 32-47, December 2022
ISSN: 2384-762X
https://www.jetmase.com

Sectoral Output and Foreign Direct Investment in Nigeria

ASIAGWU, Harriet[1*], EGUNGWU, Ikenna C.[2], NMORSI, Japhet[3]
[1&2]Department of Banking and Finance, Chukwuemeka Odumegwu Ojukwu University, Anambra State,
[3]Department of Marketing, Delta State University of Science and Technology, Ozoro.
E-mail: ucheharriet@gmail.com[1*], E-mail: ikennaegungwu@yahoo.com[2],
E-mail: japhnmorsi@gmail.com[3]

ABSTRACT: This study empirically investigated sectoral output and foreign direct investment in Nigeria. To achieve this objective, relevant data spanning from 1981–2021 were sourced from the Central Bank of Nigeria (CBN) Statistical Bulletin, the World Bank Data Base, and the United Nations Conference on Trade and Development (UNCTAD) for the period under review. Descriptive statistics and other analytical tools were used for test for the study. Foreign Direct Investment (FDI) was used as the dependent variable, while the agricultural, mining and quarrying, manufacturing, construction, trade, transportation, information and communication, financial and insurance, education, human health, and social services sectors' output were used as the independent variables. Based on the analysis, all the variables were stationary at their respective levels; the variables granger cause each other since there is unidirectional causality. Based on the overall level of significance, the variables were statistically significant. The study therefore concludes that sectoral output in Nigeria attracts foreign direct investment that will boost economic growth and development in the country. The study recommended that the government should encourage the activities of all the sectors reviewed during the period of study in Nigeria to enhance investment frontiers in the key sectors of the economy, which will lead to economic growth and development.

Keywords: FDI, Agriculture, Mining and Quarrying, Manufacturing, Financial and Insurance

INTRODUCTION:

Foreign direct investment (FDI) is a direct investment into production or business in a country by an individual or company from another country, either by buying a company in the target country or by expanding operations of an existing business in that country. That is, foreign direct investment is an investment in the form of controlling ownership in a business in one country by an entity based in another country (Macaulay, 2012; Ikenze, Aondokaa, Ogbonna & Adoms, 2020).

Stakeholders in emerging and developing economies usually anticipate that FDI inflow will bring the much-needed capital, new technologies, marketing techniques, and management skills (Amoo, 2018; Borensztein, De Gregorio, & Lee, 1998; Okegbe, Ezejiofor & Ofurum, 2019; Uwazie, Agwemma & Eze, 2015).

Foreign investment inflow is perceived to have a positive impact on the economic growth of a host country through various direct and indirect channels (Olokoyo, 2012; Onu, 2012; Adeleke, Olowe & Fasein, 2014; Alabi, 2019; Giwa, George, Okodua & Adediran, 2020). There is a direct positive link between export growth and the growth of an economy. This increase in exports can be traced back to the level of investment, which can be either domestic or foreign in most cases (Chowdhury & Mavrotas, 2005; Omankhanlen, 2011; Adigwe, Ezeagba & Udeh, 2015; Saibu & Keke 2014; Akinyemi, 2018).

Because of the overwhelming benefits of FDI, the Nigerian government and those of other developing economies are paying closer attention to the potential inherent in attracting high levels of FDI to their economies. Hence, successive governments in Nigeria have been trying to attract high FDI to the country through various economic strategies. For instance, the introduction of the Structural Adjustment Programme (SAP) in 1986, which had multifaceted liberalisation as its core objective culminated in attracting capital flows into Nigeria while at the same time enhancing its efficient allocation in the private sector (Central Bank of Nigeria, 2005). In addition, it seems right to argue that FDI can convey greater knowledge spillovers to host economies. The capacity of a host country to take advantage of and benefit from these externalities might be inhibited by its domestic economic conditions, which include an undeveloped financial market and unregulated domestic industries. Also, to the extent that a large proportion of FDI arrives through mergers and acquisitions, it is more beneficial for the host economy to also have a well-functioning stock market. This has the tendency to increase the sources of finance available to firms and, by extension, play a major role in creating linkages between local and external investors.

Hence, an important issue of concern that has been largely neglected in recent empirical studies is whether domestic firms benefit from their foreign counterparts or not. Response to this issue, among others, is important for a better understanding of the link between FDI and economic growth and extends the frontier of knowledge in the subject matter. Although there is evidence linking FDI and economic growth in Nigeria (Anichebe, 2019; Egbo, Onwumere, & Okpara, 2011; Awa, 2021),

they discovered that foreign direct investment had a positive and significant impact on economic growth. There are few empirical studies on the relationship between sector link effects and FDI flows to the country. Although Ajibola, Isiaka, Ogunleye, and Adeyemi (2018), who studied foreign direct investment and economic growth in Nigeria, revisited a sector level analysis and found that there is a proper need for diversification from the oil sector to non-oil sectors.

Most of these studies have only focused on the impact of oil FDI on economic growth in Nigeria, based on the fact that the oil sector attracts major FDI in Nigeria. Given the unhealthy gap between oil FDI and non-oil FDI on Nigerian economic performance, more research on the sector-level impact of oil and non-oil FDI inflows in Nigeria is needed, as well as access to the link between oil FDI and non-oil FDI to Nigerian economic growth. There have been very few studies on the sector level impact of FDI in Nigeria, and the analysis of disaggregated sectoral FDI has gone unattended, making it impossible to provide an in-depth and extended overview of the leading potential sectors to the economy. However, this study tends to expand the existing knowledge from 1981–2020, apply more robust techniques of analysis, and include more sectors of the Nigerian economy.

Furthermore, because the dependent variable cannot act alone in a study focused on growth and fund investment, the study introduces the country's specifics of inflation. It is against this backdrop that this study want to investigate sectoral output and foreign direct investment in Nigeria.

LITERATURE REVIEW

Foreign Direct Investment: A foreign direct investment (FDI) is the purchase of an interest in a company by a company or an investor located outside its borders. It is a category of cross-border investment in which an investor resident in one economy establishes a lasting interest in and a significant degree of influence over an enterprise resident in another economy. FDI boosts the manufacturing and services sectors, which results in the creation of jobs and helps reduce unemployment rates in the country. Increased employment translates to higher incomes and equips the population with more buying power, boosting the overall economy of a country.

Sectoral Output: It is the output of an industry at a given level of aggregation that

only reflects deliveries outside of the industry. Sector output is the output of an integrated industry. Sectoral output for an industry or combination of industries (a "sector") is the value of its output sold outside that sector. It is usually calculated as the value of the sector's gross output minus the value of shipments within the sector from one establishment to another.[

Agriculture sectors: Agriculture is the practise of cultivating plants and raising livestock. Agriculture is broadly divided into four sectors in Nigeria: crop production, fishing, livestock, and forestry. Crop production remains the sector's largest segment, and it accounts for about 87.6% of its total output. This is followed by livestock, fishing, and forestry at 8.1%, 3.2%, and 1.1%, respectively. Agriculture remains the largest sector in Nigeria, contributing an average of 24% to the nation’s GDP over the past seven years (2013–2019). In addition, the sector employs more than 36% of the country’s labour force, a feat that ranks the sector as the largest employer of labour in the country.

Mining and Quarrying: Mining and quarrying are the processes of extracting naturally occurring stone or minerals from the earth, such as coal, ores, crude petroleum, and natural gas. To encourage foreign investment into the mining industry, Nigeria offers holders of a mineral title guaranteed free transfer of funds through the Central Bank of Nigeria and a three-year tax holiday.

The manufacturing sector is part of the goods-producing industries sector group. The manufacturing sector in Nigeria is comprised of thirteen activities: oil refining, cementing, food, beverages, and tobacco, textiles, apparel, and footwear, pulp paper and paper products, chemical and pharmaceutical products, non-metallic products, plastics, and rubber products, electrical and electronic, basic metals (iron and steel), motor vehicles and assembly, and other manufacturing. The manufacturing industry in Nigeria is an economic sector that contributes approximately 10% of total GDP (gross domestic product) each year. The Nigerian manufacturing sector is dominated by the production of cement and building materials, food and beverages, tobacco, chemicals and fertilizers, wood, and textiles. Out of all, only 3 subsectors (food & beverage, cement, and textile) account for 77% of manufacturing output, generating the greatest value. Also, breweries and flour mills contribute well to the manufacturing sector.

Construction Sector: The key sectors in the Nigerian construction market are commercial construction, industrial construction, infrastructure construction, energy and utilities construction, institutional construction, and residential construction.

Trade is a basic economic concept involving the buying and selling of goods and services, with compensation paid by a buyer to a seller, or the exchange of goods or services between parties. Trade can take place within an economy between producers and consumers. International trade allows countries to expand markets for both goods and services that otherwise may not have been available.

Transportation and storage: This includes road transport, rail transport and pipelines, water transport, air transport, transport services, and postal and courier services.

Information and Communication: Telecommunications and Information Services, Publishing, Motion Pictures, Sound Recording and Music Production, Broadcasting It is a broader term for Information Technology (IT), which refers to all communication technologies, including the internet, wireless networks, cell phones, computers, software, middleware, video-conferencing, social networking, and other media applications and services enabling users to access, retrieve, store, transmit, and manipulate information in a digital form.

Financial and Insurance (Financial Institutions, Insurance): A financial institution is an organization that provides services that people need to manage their money. Financial institutions include different types of banks and credit unions. Insurance companies are a type of "non-bank" financial institution that sell policies that provide protection from various kinds of risks.

Education sector: This is a group of institutions whose primary purpose is to provide education to children and young people in educational settings. Education is a powerful agent of change and improves health and livelihoods, contributes to social stability, and drives long-term economic growth. Education is also essential to the success of every one of the 17 sustainable development goals.

Human Health and Social Services: This involves activities of nurses, midwives, physiotherapists, or other paramedical practitioners in the fields of optometry, hydrotherapy, medical massage, occupational therapy, speech therapy, chiropody, homeopathy, chiropractic, acupuncture, etc. for the treatment of ill health and medical conditions in hospitals, health centres and in the community. Social care is the care and support of vulnerable people, usually in the community.

Exogenous Growth Theory

The theory states that economic growth arises due to influences outside the economy. The underlying assumption is that economic prosperity is primarily determined by external, independent factors as opposed to internal,

interdependent factors. The concept of exogenous growth grew out of the neoclassical growth model. Robert Solow and Trevor Swan first introduced the neoclassical growth theory in 1956. The theory states that economic growth is the result of three factors: labor, capital, and technology. While an economy has limited resources in terms of capital and labor, the contribution of technology to growth is boundless. Also, Findlay (1978) developed Solow's model and assumed that the growth rate of technology diffusion is an increasing function of FDI. By distinguishing between inputs into foreign capital (a developed country) and domestic capital (a developing country), he argues that an increase in foreign capital increases domestic capital. Hence, this study is hinged on the exogenous growth theory, which says that only internal support is not sufficient for the development of an economy but that external support such as FDI is needed.

Empirical Review:

Adeleke et al (2014) studied the impact of foreign direct investment on Nigerian economic growth between 1999 and 2013, using gross domestic product as the dependent variable and direct foreign investment, exports, and exchange rate as proxies for independent variables. Employing ordinary least squares as the analytical tool, they found that economic growth is directly related to inflow of foreign direct investment and that it is also statistically significant at the 5% level, which implies that a good performance of the economy is a positive signal for inflow of foreign direct investment. This implies that foreign direct investment is an engine of economic growth.

Adigwe et al (2015) investigated the effect of foreign direct investment on Nigerian economic growth between 2008 and 2013, using gross domestic product as the dependent variable and foreign direct investment and exchange rate as the independent variables. They adopted the Pearson coefficient as the analytical tool and revealed that economic growth in Nigeria is directly related to foreign direct investment and exchange rate.

Alabi (2019) investigated the impact of foreign direct investment on economic growth in Nigeria between 1986 and 2017, using GDP as the dependent variable and foreign direct investment, interest rate, real exchange rate, and domestic investment as independent variables. The study used descriptive statistics, the ADF unit root test, and the OLS method as analytical tools, and discovered that foreign direct investment was positive and significant.

Anichebe (2019) investigated the Effect of Foreign Direct Investment on Economic Growth in Nigeria from 1981 to 2017, using real GDP as the dependent variable and net inflow of foreign direct investment as a share

of GDP, the real effective exchange rate, gross fixed capital formation as a share of GDP, trade openness, and total expenditure on education as a share of GDP as proxies for independent variables. Foreign exchange rate and gross fixed capital formation both have positive relationships with economic growth, while trade openness and expenditure on education have a strong negative effect on economic growth. It was also concluded that foreign direct investment has a long-term impact on economic growth in Nigeria.

Ajibola et al. (2018) conducted a sector-level analysis of foreign direct investment and economic growth in Nigeria between 1986 and 2009, using the growth rate of gross domestic product as the dependent variable and FDI in the agricultural sector, FDI in the mining sector, FDI in the oil sector, FDI in the manufacturing sector, FDI in the telecommunications sector, and degree of openness as proxies for independent variables. Given the positive significant growth impact of FDI in the telecommunications sector and the negative significant growth impact of FDI in the manufacturing sector, the strategy for attracting and managing FDI in Nigeria must be sector-specific, and the National Bureau of Statistics must maintain a database of FDI on a sectoral basis.

Ikenze et al. (2020) used the ADF stationarity test, co-integration, and OLS to investigate FDI and Economic Growth in a Developing African Economy: A Study of FDI Inflows to Different Sectors of Nigeria from 1986 to 2018, using Real Gross Domestic Product as a dependent variable and Foreign Direct Investment inflows in Agriculture, Foreign Direct Investment inflows in the Banking Sector, and Foreign Direct Investment inflows in Manufacturing as independent variables.

Okegbe et al. (2019) investigated Foreign Direct Investment (FDI) and Nigerian Economic Growth between 2000 and 2017, using GDP as the dependent variable and foreign direct investment on the financial sector, oil sector, and non-oil sector as independent variables, and discovered that foreign direct investment on the financial sector, oil sector, and non-oil sector has positively and significantly affected GDP in Nigeria.

Bank-Ola, Akintaro, & Adediwura (2020) investigated Foreign direct investment and manufacturing output in Nigeria: an ARDL approach from 1986-2018. Foreign direct investment, trade openness, gross fixed capital formation and inflation on consumer prices were the independent variables while manufacturing output was the dependent variable. Auto-Regressive Distributed Lag (ARDL) model was employed. The results of the study showed that foreign direct investment has a positive effect on the

country's manufacturing output. Inflation on consumer prices also has a positive effect, whereas trade openness and gross fixed capital formation were negative on manufacturing output; a concluded that a positive though insignificant relationship between foreign direct investment and manufacturing output in Nigeria while the reverse holds for trade openness and gross fixed capital formation.

Bashir (2020) studied Services Sector FDI-Growth Nexus in Nigeria: Does Liberalization Policy Matter? From 1981-2018, dependent variable was Real GDP while independent variables: Services sector FDI (SFDI), Exchange rate (EXR), Openness to trade (OPT), Consumer price index (CPI), Total employment of services Sectors (SEREM), Gross fixed capital formation (GFCFGDP), Services sector liberalization (SERLIB). The study employed vector error correction (VEC) model which is a special case of the VAR, Augmented Dickey-Fuller (ADF) and the Phillips-Perron (PP), this study also considers the Kwiatkowski-Phillips-Schmidt-Shin (KPSS) and found that that services FDI could only play a significant role in Nigeria's growth when there is no change in government policy or intervention.

Awa (2021) studied the Influence of foreign direct investment on economic growth in Nigeria from 1989-2019, using Real Gross Domestic Product (RGDP) dependent variable and Foreign Direct Investment (FDI), and Exchange Rate (EXR) as independent variables, the study employed Ordinary Least Square (OLS) method and found that FDI has positive and significant influence on real economic growth. EXR also has positive and significant impact on economic growth in Nigeria.

Oyegoke & Aras (2021) examined Impact of Foreign Direct Investment on Economic Growth in Nigeria from 1970-2019 using Gross Domestic Product (GDP) dependent variable and Foreign Direct Investment inflow and Foreign Direct Investment outflow as independent variables, ADF unit root test, OLS regression, Breucsh-Godfrey serial correlation LM test were employed as the methodology, the revealed that shows FDI inflow has a positive impact on the economy which implies that the developmental goal of foreign investment in developing countries is evident in Nigeria.

Uteh, Yisa, Ojo & Ibrahim, (2022) investigated Drivers of agricultural foreign direct investment and It's impact on food production in Nigeria between 1975-2017, using Agricultural Foreign Direct Investment (AFDI), Food Production Index (FPI) as dependent variabls while Gross Domestic Product (GDP), government

expenditure on agriculture (GEA), openness of the economy to foreign trade (TRDOPEN), rate of inflation (INFLATIO) and real exchange rate of the host country's currency (REXCHRAT) as Dependent variables, Descriptive analysis, stationarity analysis with Augmented Dickey Fuller and Philip Perrons' unit root tests, co-integration test with Autoregressive Distributed Lag Bound test, Autoregressive Distributed Lag-Error Correction Model analysis were the methodology employed and revealed that FDI inflow had significant positive impact on agricultural sector in Nigeria.

METHODOLOGY

Ex-post-facto research design, which demonstrates the relationship between the independent and dependent variables, is employed for the objective of this study and for proper data collection and analysis. The study is focused on Nigeria, with data spanning the years 1981–2021, a period of 41 years. This study used secondary data from the Central Bank of Nigeria Statistical Bulletin (CBN) and the World Bank Data Base for the period under review. Hypotheses are tested using descriptive statistics, the Augmented Dickey Fuller (ADF) test, Granger causality, the Johansen co-integration test, and the OLS method. The statistical software used in this study is E-Views 9.0.

Model Specification:

The chosen sectoral output indicators are agriculture, mining and quarrying, manufacturing, trade, transportation, information and communication, financial and insurance, education, human health, and social services. The functional relationship between sectoral output and foreign direct investment in Nigeria is expressed as follows:

Foreign Direct Investment in Nigeria by sector (agriculture, mining and quarrying, manufacturing, trade, transportation, information and communication, finance and insurance, education, human health, and social services).

FDI = *f*(OAg, OMQ, OMan, OT, OTran, OIC, OFI, OEdu, OHHSS)

$$FDI_t = \beta_0 + \beta_1 OAg_t + \beta_2 OMQ_t + \beta_3 OMan_t + \beta_4 OCon_t + \beta_5 OT_t + \beta_6 OTran_t + \beta_7 OIC_t + \beta_8 OFI_t + \beta_9 OEdu_t + \beta_{10} OHHSS_t + U$$

Where:

FDI = Foreign Direct Investment
OAg = Agricultural Output
OMQ = Mining and Quarrying Output
OMan = Manufacturing Output
OCon = Construction Output
OT = Trade Output
OTran = Transportation Output
OIC = Information and Communication Output
OFI = Financial and Insurance Output
OEdu = Education Output
OHHSS = Human Health and Social Services

U = Stochastic disturbance or error term

RESULTS AND DISCUSSION:

Table 4.2: Descriptive Statistics Result

	FDI	OAG	OMAN	OMQ	OCON	OT	OTRAN	OIC	OFI	OEDU	OHHSS
Mean	2.568049	8473.149	4196.550	6688.638	1154.331	5328.871	443.5324	2930.507	1260.426	646.5739	242.2483
Median	1.870000	5024.540	3568.690	6572.890	764.3300	2742.340	264.5100	821.7200	1202.820	355.8300	160.2300
Maximum	8.840000	18738.41	6684.220	9323.750	2680.220	11697.59	1059.270	11227.07	2586.280	1519.660	508.6300
Minimum	0.190000	2303.510	2898.470	4096.990	335.7600	1662.300	170.2800	209.0300	254.9900	242.5600	113.4600
Std. Dev.	2.557724	5702.712	1324.625	1422.085	832.2380	3876.321	283.1426	3511.067	665.1235	468.0736	142.5514
Skewness	1.100770	0.496468	0.836965	0.132909	0.844848	0.637686	0.625757	0.950271	0.024843	0.916615	0.810828
Kurtosis	3.026465	1.687839	2.083277	2.134502	2.070111	1.660950	1.883890	2.414813	1.905474	2.165569	1.965194
Jarque-Bera	8.281109	4.625634	6.222475	1.400399	6.354600	5.841869	4.803816	6.755606	2.050779	6.930726	6.321848
Probability	0.015914	0.098982	0.044546	0.496486	0.041698	0.053883	0.090545	0.034122	0.358657	0.031262	0.042387
Sum	105.2900	347399.1	172058.6	274234.2	47327.57	218483.7	18184.83	120150.8	51677.48	26509.53	9932.180
Sum Sq. Dev.	261.6780	1.30E+09	70185244	80893078	27704803	6.01E+08	3206789.	4.93E+08	17695573	8763714.	812836.5
Observations	41	41	41	41	41	41	41	41	41	41	41

Source: Extracted from E-View 9 Output Result.

The descriptive statistics of the variables considered in our analysis are shown in the table above. Between 1981 and 2021, the average Foreign Direct Investment (FDI), Agricultural Output (OAg), Manufacturing Output (OMan), Mining and Quarrying Output (OMQ), Construction Output (OCON), Trade Output (OT), Transportation Output (OTRan), Information and Communication Output (OIC), Financial and Insurance Output (OFI), Education Output (OEdu), and Human Health and Social Services (OHHSS) are 2.568049, 8473.149, 4196.550.

All the variables are positively skewed and their distributions are normal since they possess a skewness of 1.100770, 0.496468, 0.836965, 0.132909, 0.844848, 0.637686, 0.625757, 0.950271, 0.024843, 0.916615, and 0.810828, which are greater than zero.

FDI is **mesokurtic** since it has a kurtosis value of 3.026465. While the distributions of OAG, OMAN, OMQ, OCON, OT, OTRAN, OIC, OFI, OEDU, and OHHSS were flat peaked and had kurtosis of 1.687839, 2.083277, 2.134502, 2.070111, 1.660950, 1.883890, 2.414813, 1.905474, 2.165569, and 1.965194, which are less than 3, they are **platykurtic.**

The Jarque-Bera statistic (JB) for FDI, OMAN, OCON, OT, OIC, OEDU, and OHHSS provides enough evidence to reject the null hypotheses of normality since the p-values of the JB statistic are less than 0.05 for 0.015914, 0.044546, 0.041698, 0.053883,

0.034122, 0.031262, and 0.042387, respectively. While the Jarque-Bera statistic (JB) for OAG, OMQ, and OFI provides enough evidence to accept the null hypotheses of normality, the p-values of the JB statistic of 0.098982, 0.496486, 0.090545, and 0.358657 are greater than 0.05.

Table 4.2: SUMMARY OF ADF UNIT ROOT TEST

Variables	ADF Test Statistics	Mackinnon Critical Value @ 5%	P-Value	Oder of integration	Remark
FDI	-7.058880	-2.938987	0.0000	1(1)	STATIONARY
OAG	-4.964172	-2.938987	0.0002	1(1)	STATIONARY
OMAN	-4.634595	-2.938987	0.0006	1(1)	STATIONARY
OMQ	-5.720101	-2.938987	0.0000	1(1)	STATIONARY
OCON	-8.681059	-2.941145	0.0000	1(2)	STATIONARY
OTRAN	-7.808484	-2.938987	0.0000	1(1)	STATIONARY
OT	-8.681059	-2.941145	0.0000	1(2)	STATIONARY
OIC	-7.249747	-2.941145	0.0000	1(2)	STATIONARY
OFI	-7.125890	2.938987	0.0000	1(1)	STATIONARY
OEdu	-3.171110	-2.943427	0.0299	1(0)	STATIONARY
OHHSS	-6.420047	-2.941145	0.0000	1(2)	STATIONARY

Source: Extracted from E-View 9 Output Result.

OEdu is stationary at level 1(0); FDI, OAG, OMAN, OMQ, OTRAN, and OFI, respectively, are stationary at first difference 1(1); OCON, OT, OIC, and OHHSS, respectively, are stationary at second difference 1(2).

Table 4.4 Result of Johansen Co-integration test

Date: 12/10/22 Time: 01:46
Sample (adjusted): 1983 2021
Included observations: 39 after adjustments
Trend assumption: Linear deterministic trend
Series: FDI OAG OMAN OMQ OCON OT OTRAN OIC OFI OEDU OHHSS
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.990210	775.8021	285.1425	0.0000
At most 1 *	0.976319	595.3733	239.2354	0.0000
At most 2 *	0.965125	449.3928	197.3709	0.0001
At most 3 *	0.874622	318.5097	159.5297	0.0000
At most 4 *	0.855921	237.5294	125.6154	0.0000
At most 5 *	0.746407	161.9710	95.75366	0.0000
At most 6 *	0.669928	108.4620	69.81889	0.0000
At most 7 *	0.500713	65.23272	47.85613	0.0005
At most 8 *	0.455954	38.14429	29.79707	0.0044
At most 9	0.261798	14.40418	15.49471	0.0725
At most 10	0.063682	2.566191	3.841466	0.1092

Trace test indicates 9 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Source: Extracted from E-View 9 Output Result.

The result of the Johansen co-integration test presented above indicates nine co-integration equations. The result, therefore, confirms the existence of co-integration among the variables. Consequently, we can conclude that there is a long-run relationship between sectoral output and foreign direct investment in Nigeria. Thus, our null hypotheses were rejected and alternative hypotheses accepted.

TABLE 4.5: GRANGER CAUSALITY TEST

Pairwise Granger Causality Tests
Date: 12/10/22 Time: 02:42
Sample: 1981 2021
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
OAG does not Granger Cause FDI	39	0.35335	0.7049
FDI does not Granger Cause OAG		0.95206	0.3960
OMAN does not Granger Cause FDI	39	0.42830	0.6551
FDI does not Granger Cause OMAN		3.54178	0.0401
OMQ does not Granger Cause FDI	39	3.82128	0.0318
FDI does not Granger Cause OMQ		0.84639	0.4378
OCON does not Granger Cause FDI	39	0.62439	0.5416
FDI does not Granger Cause OCON		11.2842	0.0002
OT does not Granger Cause FDI	39	1.84130	0.1741
FDI does not Granger Cause OT		8.58929	0.0010
OTRAN does not Granger Cause FDI	39	0.26216	0.7709
FDI does not Granger Cause OTRAN		2.27616	0.1181
OIC does not Granger Cause FDI	39	13.5615	5.E-05
FDI does not Granger Cause OIC		3.24295	0.0514
OFI does not Granger Cause FDI	39	0.97066	0.3891
FDI does not Granger Cause OFI		3.25687	0.0508
OEDU does not Granger Cause FDI	39	1.23007	0.3049
FDI does not Granger Cause OEDU		42.7653	5.E-10
OHHSS does not Granger Cause FDI	39	0.69585	0.5056
FDI does not Granger Cause OHHSS		6.64505	0.0037

Source: Extracted from E-View 9 Output Result.

OAG does not granger causes FDI (0.7049 > 0.05), FDI does not Granger Cause OAG (0.3960 > 0.05) hence, there is no causality; OMAN does not Granger Cause FDI (0.6551 > 0.05) while FDI Granger Cause OMAN (0.0401 < 0.05), hence, there is unidirectional causality; OMQ Granger Cause FDI (0.0318 < 0.05) while FDI does not Granger Cause OMQ (0.4378 > 0.05) hence, there is unidirectional causality; OCON does not Granger Cause FDI (0.5416 > 0.05) while FDI Granger Cause OCON (0.0002 < 0.05), hence, there is unidirectional causality; OT does not Granger Cause FDI (0.1741 > 0.05) while FDI Granger Cause OT (0.0010 > 0.05) hence, there is unidirectional causality; OTRAN does not Granger Cause FDI (0.7709 < 0.05) while FDI does not

Granger cause OTRAN (0.1181 < 0.05) hence, there is no directional causality; OIC does not Granger Cause FDI (5.E-05 > 0.05) while FDI Granger Cause OIC (0.0514 < 0.05) hence, there is unidirectional; OFI does not Granger Cause FDI (0.3891 > 0.05) FDI Granger Cause OFI (0.0508 < 0.05) hence, there is no direction; OEDU does not Granger Cause FDI (0.3049 > 0.05) while FDI does not Granger Cause OEDU (5.E-10 > 0.05) hence, there is no direction; OHHSS does not Granger Cause FDI (0.5056 > 0.05) while FDI Granger Cause OHHSS (0.0037 < 0.05) hence, there is unidirectional.

TABLE 4.6: OLS

Dependent Variable: FDI
Method: Least Squares
Date: 12/10/22 Time: 02:46
Sample: 1981 2021
Included observations: 41

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-3.006181	2.522964	-1.191528	0.2428
OAG	0.000483	0.000284	1.699332	0.0996
OMAN	-0.000212	0.000314	-0.673313	0.5059
OMQ	0.000256	0.000239	1.069959	0.2932
OCON	0.000514	0.001809	0.284213	0.7782
OT	0.002199	0.000502	4.380920	0.0001
OTRAN	-0.000838	0.004611	-0.181832	0.8569
OIC	-0.000956	0.000523	-1.828963	0.0774
OFI	-0.003207	0.000995	-3.222423	0.0031
OEDU	-0.023248	0.004154	-5.596118	0.0000
OHHSS	0.043742	0.028853	1.516035	0.1400

R-squared	0.907601	Mean dependent var	2.568049
Adjusted R-squared	0.876801	S.D. dependent var	2.557724
S.E. of regression	0.897755	Akaike info criterion	2.846370
Sum squared resid	24.17889	Schwarz criterion	3.306109
Log likelihood	-47.35060	Hannan-Quinn criter.	3.013782
F-statistic	29.46774	Durbin-Watson stat	2.577636
Prob(F-statistic)	0.000000		

Source: Extracted from E-View 9 Output Result.

$$FDI_t = \beta_0 + \beta_1 OAG_t + \beta_2 OMAN_t + \beta_3 OMQ_t + \beta_4 OCON_t + \beta_5 OT_t + \beta_6 OTRAN_t + \beta_7 OIC_t + \beta_8 OFI_t + \beta_9 OEdu_t + \beta_{10} OHHSS_t + U$$

Thus, using the absolute values of all the variables, the estimated parameters of the regression model is:

$$FDI = -3.006181 + 0.000483OAG - 0.000212OMAN + 0.000256OMQ + 0.000514OCON + 0.002199OT - 0.000838OTRAN - 0.000956OIC - 0.003207OFI - 0.023248OEdu + 0.043742OHHSS + U$$

From the coefficient of regression, the estimated model shows that there exist positive relationship between FDI, OAG, OMQ, OCON, OT and OHHSS; hence, the

estimated result revealed that a unit change in OAG, OMQ, OT and OHHSS will attract more of FDI and will boost economic growth of Nigeria by value of 0.000483%, 0.000256%, 0.000514%, 0.002199% and 0.043742% respectively. While OMAN, OTRAN, OIC, OFI and OEDU has negative relationship with FDI indicating that a unit change in OMAN, OTRAN, OIC, OFI and OEDU will lead to a decrease in economic growth by 0.000212%, 0.00838%, 0.000956%, 0.003207% and 0.02324% respectively, thereby making the sectors less attractive for more FDI inflow.

The coefficient of determination (R^2) is R^2 = 0.907601 which is 90.7601%. This implies that about 90.76% of the total variation of the model were accounted for by the independent variables while 9.24% was unexplained and has been taken care of by the stochastic disturbance term or error term U during the period studied.

The Durbin-Watson statistic shows that there is absence of autocorrelation or serial correlation in the residual as its value of 2.577636, approximately 2.58 which is greater than the Durbin-Watson value of 2 (2.58 > 2).

The F-statistic of the regression output stood at 29.46774. This implies that the regression plane is statistically significant.

Comparing Sign P-values with the chosen level of significance (0.05), it is observed that P-value 0.0001, 0.0031 and 0.0000 for OT, OFI and OEDU are less than the chosen level of significance (0.05), while the P-values 0.0996, 0.5059, 0.2932, 0.7782, 0.8569, 0.0774 and 0.1400 for OAG, OMQ, OMAN, OCON, OTRAN, OIC and OHHSS respectively are greater than 0.05 chosen level of significance. But for the overall level of significance, Prob.(F-Statistic) 0.000000 is less than the 0.05 level of significance; indicating that all the independent variables can jointly influence the dependent variable for the period under review; hence, our null hypotheses are rejected and alternative accepted.

CONCLUSION AND RECOMMENDATION

Based on the analysis, there exists a long-run relationship between sectoral output and foreign direct investment in Nigeria. All the variables were stationary at their respective levels; the variables granger causes each other since there is unidirectional causality. The Johansen co-integration test indicates nine co-integration equations. The result confirmed the existence of co-integration among the variables. Therefore, there is a long-run relationship between sectoral output and foreign direct investment in Nigeria. A Durbin-Watson statistic of approximately 2.58 showed the absence of autocorrelation or

serial correlation in the model specified. R^2 = 0.907601 implies that about 90.76% of the total variation in the model was accounted for by the independent variables.

Based on the overall level of significance, Prob. (F-Statistic) 0.000000 is less than the 0.05 level of significance, indicating that all the independent variables can jointly influence the dependent variable for the period under review; hence, the variables were statistically significant. The study therefore concludes that sectoral output in Nigeria attracts foreign direct investment that will boost economic growth and development in the country.

Recommendation:

The study recommends that the government should encourage the activities of the agricultural, mining and quarrying, manufacturing, construction, trade, transportation, information and communication, financial and insurance, education, human health, and social services sectors of Nigeria to enhance investment frontiers in the key sectors of the economy, which will lead to economic growth and development.

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