Nigeria's Macroeconomic Growth And Sectoral Foreign Direct Investment Sensitivity

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Abstract

The role of Foreign direct investment in economic growth's prospects in an economy cannot be overemphasised . An ownership stake in a foreign company or project is known as a foreign direct investment (FDI) and is made by a foreign investor, business, or government. FDI promotse and maintains economic growth in both the investing nation and the recipient nation. It stimulates economic growth through investment in the critical sectors of the economy direct the economy to the path of growth.This work adopted accelerator theory of investment.Our findings show that a unit rise in Gross domestic product (GDP) over the long run results in a 0.883638 decline in foreign direct investment to Nigeria's mining and quarrying industry which is not in consonance with apriori expectation.The coefficient of LPOP(Log of population) is 11.30166, demonstrating that, when all other factors are held constant, a unit increase in population over time results in an increase of 11.30166 units in foreign direct investment into Nigeria's mining and quarrying industries. The coefficient of INFR(Inflation rate) is -0.004723, with all other factors kept constant, a unit increase in the inflation rate results in a long-term drop of 0.004723 units in foreign direct investment to Nigeria's mining and quarrying sector.A unit increase in the exchange rate causes a 0.007461 unit drop in foreign direct investment to the mining and quarrying industry in Nigeria, according to the coefficient of EXR,(Exchange rate) which is -0.007461 when all other factors are held constant. In the long run, a unit rise in the unemployment rate causes a 0.042331 unit increase in foreign direct investment to the mining and quarrying sector in Nigeria, according to the coefficient of UR,(Unemployment rate) which is 0.042331.

Keywords: Nigeria,Macroeconomic Growth,Sectoral Foreign Direct Investment, Sensitivity

INTRODUCTION

Foreign direct investment (FDI) is an ownership stake in a foreign company or project and is made by a foreign investor, business, or government. Typically, it refers to a corporate decision to buy a sizable portion of a foreign company or to buy it altogether in order to expand operations to a new area. FDI may promote and maintain economic growth in both the investing nation and the recipient nation.On the one hand, developing nations have promoted FDI as a way to finance the development of new infrastructure and the creation of jobs for their native

workforce. On the other side, global corporations gain from FDI as a way to increase their market share abroad. FDI is a crucial component of global economic integration since it supports economic growth and establishes strong, long-lasting ties between nations' economies.(Hayes,2022). A topic of significant interest in the field of economics for a long time has been foreign direct investment (FDI), which is an investment made to acquire a long-term interest in businesses operating outside of the investor's country. Many studies have looked into many relevant issues of foreign direct investment (FDI) in both developed and developing countries over the years.

FDI boosts economic growth through the diffusion of technology, the development of human capital, the promotion of exports, the creation of jobs, and productivity growth (Li & Liu, 2005; Liu et al. 2009, Alfaro et al. 2010, Lee 2013, de Mello Jr. 1999, Yao 2006, Ramirez, 2006). Considering the advantages of FDI, the primary focus of research has been on the variables that affect FDI.

Some academics have tried to understand the FDI movement and its contribution to economic growth by focusing on firms and industry-specific characteristics. However, the purpose of this paper is to determine how Nigeria's macroeconomic variables affect the sectoral composition of foreign direct investment (FDI). Nigeria has over the years witnessed fluctuations in the inflow of FDI. For example, in 1970, the FDI was 0.21billion dollars which was about 1.63% of the GDP. Between 1980 to 2015, it grew from -1.15% to 0.63% of the GDP. From 2015 to 2020, the GDP percentage share of the FDI in Nigeria moved to 0.55% representing a total FDI inflow of about 2.39 billion dollars behind India,64.36billion dollars, Indonesia's 19.18Billion dollars, Vietnam's 15.80billion dollars, the Philippine's 6.82 billion dollars, Egypt's 5.85 billion dollars, Republic of Congo 4.02billion dollars and Cambodia 3.62billion dollars (World bank 2022). The import of the above is that Nigeria is a destination point for FDI but the sensitivity of the sectoral FDI has not been properly interrogated as it concerns economic growth in Nigeria.

Investment is a crucial component of economic growth because it increases productivity, production techniques, and capital goods, which in turn promotes capital accumulation (Esubalew, 2014). Investment acts as a catalyst for the building of capital stock as a result.

Foreign direct investment is typically seen as an international corporate partnership that encourages equity holding and proper managerial control in the home country (hence, referred to as FDI) (Sun, Tong & Yu, 2002). The amount of foreign direct investment, however, is not solely determined by multinational corporations; rather, it is considered the result of a game played by the host government and the multinational corporations engaged (Okafor, 2014). This is made feasible by the government's ability to influence policy and the incentives provided to the local economy (Faeth, 2009). These regulations include a wide range of topics, including exchange rate control, tariffs, and trade barriers, as well as limitations on the influx of capital, technology, and other types of investment into the host nation.

The Nigerian government has made efforts throughout the years to entice foreign investment through a variety of measures, from the adoption of some policies to the enactment of some decrees or ordinances. The deregulation of the 1980s (Njogo, 2013), particularly the Structural Adjustment Programme (SAP), which was part of the financial liberalization plan in place at the time and aimed to encourage foreign direct investment in Nigeria, is among the most notable of these initiatives. The foundation of the Nigerian Investment Promotion Commission in the early 1990s, as well as the founding of the Nigerian Investment Promotion Council (NIPC) in 1995, which embraces the fundamental investigation of foreign investment and new businesses in Nigeria, is further initiatives.

Accordingly, the NIPC, which was created in 1995 under the late General Sani Abacha's administration, positioned itself as the one-stop shop for investigating and organizing new commercial ventures and foreign investment in Nigeria. The NIPC is charged with facilitating foreign investment and advocating on behalf of foreign investors to ensure that favourable policies are made. It also makes sure to foster an environment that is conducive to investment so that investors from abroad can view Nigeria as a haven for investment (Njogo, 2013). Over time, there has been some diversification in Nigeria's FDI distribution, especially towards the industrial sector.

The trend analysis of capital inflows into the country reveals that other sub-sectors like manufacturing and service have benefited from FDI inflows, contrary to the conventional belief

that FDI has focused more on the primary sector and particularly the extractive sub-sector (mining and quarrying), as shown in Table 1.1 below. The research's sectoral focus will be on the table's highlighted columns for manufacturing and processing, agriculture, forestry and fishing, trading and business, and the mining and quarrying subsector.

The table 1.1below demonstrates that in the early 1970s, mining and quarrying received the biggest share of inward FDI (57.02%), but that the subsector's percentage share fell in the late 1970s and the 1980s. However, it experienced a fantastic rise in the late 1990s and early 2000s (2000-2004), only to see a fall at an average rate of 21.09 per cent from 2005 to 2017. From an average of 25.29 per cent between 1970 and 1974 to an average of 35.69 per cent between 1985 and 1989, the share of manufacturing and processing FDI climbed. From 1990 to 2017, the manufacturing subsector received 33.75 per cent of the total FDI. The average percentage contribution of fishing, forestry, and agriculture from 1970 to 2017 is 0.55 per cent. Compared to other sectors, this sector has only received a tiny share of total FDI in Nigeria up till 2017. On the other hand, the trading and the commercial sector saw a substantial percentage of FDI between 1970 and 1989. From an average of 16.76 per cent between 1970 and 1974 to an average of 32.01 per cent between 1985 and 1989, the share of trading and business FDI climbed.FDI experienced a substantial fall from 1990 to 1999, with an average share of 4.77 per cent. According to calculations from the Central Bank of Nigeria (CBN) (2017) bulletin, the average trading and business contribution to total FDI from 1970 to 2017 was 7.88 per cent

**Table 1.1 Sectoral Composition of FDI in Nigeria 1970-2017 (%)**

Year	**Mining & quarrying**	**Manufacturing & processing**	**Agriculture, forestry & fishery**	Transport &commu-nication	Building & construction	**Trading & busin-ess**	Miscel-laneous
	(MAQ)	**(MAP)**	**(ADF)**	(TAC)	(BAC)	**(TAB)**	(MS)
1970-1974	57.02%	25.29%	0.86%	0.96%	2.31%	16.76%	2.80%
1975-1979	29.28%	33.60%	2.69%	1.41%	6.63%	20.01%	6.38%
1980-1984	13.50%	37.29%	2.46%	1.39%	7.72%	31.21%	6.45%
1985-1989	19.76%	35.69%	1.31%	1.16%	4.95%	32.01%	5.12%
1990-1994	33.80%	28.62%	1.95%	1.03%	2.99%	4.85%	26.76

							%
1995-1999	43.08%	23.57%	0.89%	0.45%	1.86%	4.68%	25.48%
2000-2004	33.65%	28.83%	0.66%	1.17%	2.43%	7.68%	25.58%
2005-2009	22.55%	40.74%	0.38%	2.08%	2.18%	8.19%	23.87%
2010-2014	21.25%	39.71%	0.48%	2.47%	2.19%	7.92%	25.98%
2015-2017	19.48%	41.28%	0.46%	2.66%	2.17%	7.98%	26.09%
1970-2017	24.67%	37.47%	0.55%	2.05	2.24%	7.88%	25.14%

Source: Author's Computation from Central Bank of Nigeria (CBN) 2017

Particularly for developing economies, FDI is in high demand due to its significance in promoting economic growth and development. However, not all nations gain the same advantages from FDI inflow. While some nations can draw a sizable share of FDI flows, others merely manage to draw a minor share. Empirical analysis revealed that FDI influx into emerging countries has favoured some sectors over others, including oil and gas, communication, air and rail transportation, and construction, to name a few. Other scholars, including Muhammad and Naveed, (2008) believed that the FDI-neglected sectors of agriculture, tourism, and manufacturing held the greatest promise for reducing poverty and accelerating economic growth and development in developing nations because they employ the vast majority of people who live in rural areas and practice subsistence farming. However, these analyses fall short of explaining why FDI has a sectoral nature.

Fig 1.0
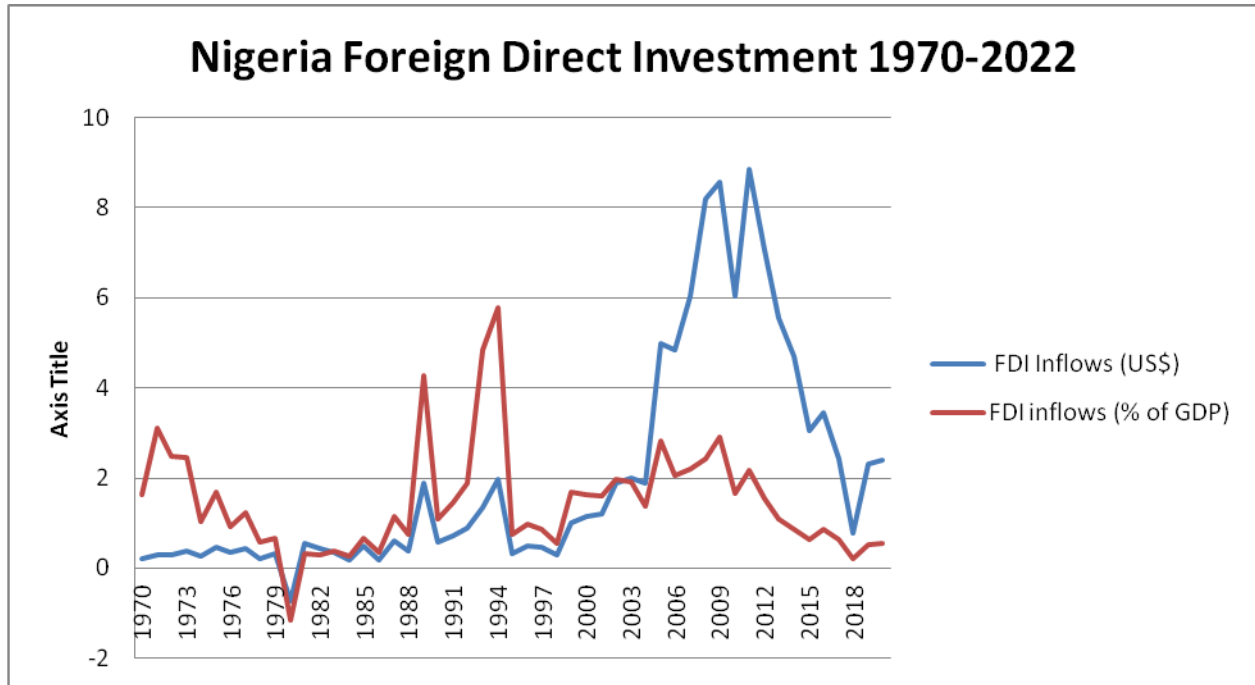
Source: Authors' computation using world bank data 2022.

Fig.1.2 Manufacturing and quarrying, Manufacturing and Processing, Agricultural and forestry Trading and business Sectoral Foreign Direct Investment Trend in Nigeria (1981-2020)

Numerous literary contributions have looked at the existence of macroeconomic variables and how they affect foreign direct investment (Enu, et al., 2013; Duruechi & Ojeigbe, 2015; Asamoah, 2012; Mukhiddin & Jalal, 2012; Bin-Amir, Zaman & Ali, 2012). However, taking into account the contradictory findings in the literature on the topic—Wuhan & Khurshid (2015); Jimoh (2013) found a negative relationship between interest rates and foreign direct investment, while Asamoah (2012) found the opposite; Tamer (2012) found a positive relationship between exchange rates and foreign direct investment, while Abdishu (2000) found the opposite—this is a

mixed picture. Most of these works have not taken into account the disaggregated sensitivity contribution of FDI to the Mining and quarrying sector, Manufacturing and processing, Agricultural and Forestry, and Service and trading business sectors and their contribution to macroeconomic growth in Nigeria.

2.0. Literature Review.

2.1 Theoretical Review.

Bellouni and Alshehry (2018) use the autoregressive distributed lag (ARDL) bounds testing to co-integration approach to examine the causal relationships between domestic capital investment, foreign direct investment (FDI), and economic development in Saudi Arabia for 1970-2015. The robustness of the ARDL long-run estimates is examined using the fully modified ordinary least squares (FMOLS), dynamic ordinary least squares (DOLS), and canonical co-integrating regression (CCR). The findings demonstrate negative bidirectional causation between non-oil GDP growth and FDI, domestic capital investment and non-oil GDP growth, as well as bidirectional causality between FDI and domestic capital investment over the long term. Short-term FDI hurts domestic capital investment, while long-term domestic capital investment hurts FDI. Long-term non-oil GDP growth, FDI inflows, and domestic capital investment are all favourably impacted by both the development of the financial sector and trade openness.

Using monthly and quarterly data for the period spanning from July 1997 to December 2011, Tripathi, Seth, and Bhandari (2015) attempt to determine whether there is a relationship between FDI and six macroeconomic factors—Exchange rate (per $), Inflation (WPI), GDP/IIP (a proxy for Market size), Interest rate (91 days T-bills), Trade Openness, and S&P CNX 500 Equity Index (profitability). They applied advanced econometric techniques, such as Johansen's co-integration test, Vector Auto Regression (VAR), and Impulse Response analysis to test for long-run and short-run dynamic relationships in addition to using the standard techniques, such as ADF and PP Unit root stationarity test, Bi-variate and Multi-variate Regression analysis, and Granger Causality test. The findings demonstrate a strong link between all macroeconomic variables and FDI (except for the Exchange rate).IIP/GDP, WPI, and the S&P CNX 500 Equity Index are Granger causes of FDI inflows into India, according to the results of the causality test,

whereas the same is Granger causes of trade openness. Except for currency rate, all of the macroeconomic factors used in the article have a substantial impact on FDI inflows, and the regression model's overall explanatory power (measured as Adjusted R square) is 75.7%. The findings of Johansen's co-integration test show that FDI and IIP, S&P CNX 500 Equity, Trade Openness, and WPI all have a long-term causal relationship. When compared to other macroeconomic factors, FDI is more influenced by its own lagged values, according to VAR and impulse response function analyses.

The development of recommendations for the analysis and management of foreign investment flows is required due to the complexity and ambiguity of the contribution of foreign direct investment (FDI) to economic growth to maximize their beneficial effects on the economy and avoid negative outcomes. Samborski et al. (2020) employed a mathematical and economic modelling approach to examine how foreign direct investment affects economic growth and how it interacts with domestic direct investment. They suggest categorizing the variables that affect the flow of foreign direct investment into established and developing nations. The authors adjusted the model with foreign direct investment in the form of accumulated foreign capital reserves by including the external effect of foreign direct investment (capital repatriation). To relate the rate of economic growth to the quantity of repatriation based on the effects of supplementing and substituting foreign direct investment for foreign direct investment, an analytical equation for these effects is obtained.

To explore the relationship between FDI and its drivers, Asiamah, Ofori, and Afful (2019) used a causal research design utilizing Johansen's technique to co-integration within the context of vector autoregressive for the data analysis. The study indicated that while the gross domestic product, power generation, and telephone usage (TU) had positive effects on FDI, the inflation rate, exchange rate, and interest rate had statistically significant negative effects on FDI in Ghana. The empirical data produced the following results: The logs of GDP, power output, and telephone usage all had statistically significant beneficial effects on foreign direct investment in Ghana, according to both the long-run and short-run outcomes. The study also discovered that, in both the long and short periods, inflation, interest rates, and logarithmic exchange rates had a negative and significant impact on FDI. This highlights once again how these variables may

impact FDI in Ghana. The log of the exchange rate is the most significant variable for FDI, while electricity production is the least significant variable for FDI, according to the results of the prediction error variance decomposition. The findings of the Granger causality test showed that there is a unidirectional causal relationship between FDI, interest rate, log of GDP, log of the exchange rate, and inflation. However, there was a causal relationship between electricity output, TU, and FDI that went both ways.

Ayomitunde et al. (2020) used the crucial macroeconomic variables that govern the inflows of FDI in Nigeria from 1990 to 2017 to explore the factors that influence foreign direct investment inflows in Nigeria. To achieve this goal, the study employed data from UNCTAD, the World Bank database, and the CBN Statistical Bulletin along with the

Autoregressive Distributed Lag (ARDL) model. The analysis found that the primary factors of FDI inflows in Nigeria are past FDI inflows, market size, exchange rate, and growth rate, as outlined below. These macroeconomic factors significantly and favourably influence FDI inflows to Nigeria. However, the country's high inflation rate deters foreign direct investment.

Iamsiraroj (2016) uses a simultaneous system of equations technique using 124 cross-country datasets for his investigation of the relationship between FDI inflows and per capita income growth. By doing this, it aimed to fill in a large gap in the research on the links between FDI and economic growth, which may have severely underrepresented these dynamic linkages. The findings show that FDI and economic growth are correlated, and vice versa. They regularly support a host country making sizable profits from attracting FDI. The existence of a positive feedback loop shows that FDI aids in economic growth, which in turn attracts FDI inflows and fosters additional growth. Insofar as it supports the significance of foreign investment flows and the actions that should be done to increase FDI levels, this conclusion is helpful.

Abraham and Muazu (2020) used annual panel data spanning the years 1980–2016 from 45 African nations to evaluate the connections between foreign direct investment (FDI), economic growth, and the development of the banking sector. Although there is some ambiguity in the results of the two-system generalized technique of moments, larger FDI is generally linked to higher growth. Thus, the model definition determines the specific impact of FDI on economic

growth. This conclusion is true regardless of the financial sector and economic growth indicators, although domestic credit has a greater dampening effect than private credit

The relationship between export, economic growth, and foreign direct investment in Slovakia is examined by Zuzana (2014). Slovakia's influence on economic growth between 2001 and 2010 was estimated. On quarterly data, the co-integration approach and the vector error correction model were used. The findings support the existence of persistent causal relationships between the variables investigated in Slovakia. The findings show that exports and foreign direct investment have favourable effects on the country's gross domestic product. The widely held belief that foreign direct investment has a favourable impact on a nation's economic growth was demonstrated based on the research methodology and using accessible time series.

Wei, Muhammad, and Qiongxin (2022) investigate the relationship between green financing, foreign direct investment, and GDP using data from 30 Chinese provinces between 2000 and 2019. In the second step, which employs first- and second-generation unit root tests for panel data, only economic growth is discernible using I(2) (0). Due to these factors, we used a Pooled Mean Group, Mean Group, and Dynamic Fixed Effect estimate model together with an autoregressive distributed lag approach. The results revealed that only renewable energy was significant and harmful in terms of greenhouse gas emissions, while FDI was found to be significant and helpful only over the long term. Their research demonstrates the need for greater strategic consideration of how to deploy in the renewable sector while simultaneously expanding methods, advancement, human capital, research, and development that would ultimately improve green finance production and sustainable development.

Tanaya and Suyanto (2022) examined the relationship between foreign direct investment and Indonesian economic growth from 1970 to 2018. Indonesia is one of the top developing nations that receive FDI, making it crucial to research how FDI affects economic growth. Their study uses a modern time-series methodology that includes several unit-root tests, including the Augmented-Dickey-Fuller (ADF), Phillips-Perron (PP), Kwiatkowski-Phillips-Schmidt-Shin (KPSS), and Lee-Strazicich (LS), as well as the Granger causality test and the Auto-Regressive-Distributed-Lag (ARDL) bounds-testing method. The results show that GDP and FDI have both

long- and short-term causal relationships. Contrarily, FDI only has a short-term impact on GDP. The Granger causality test supports the ARDL conclusion that GDP and FDI are causally correlated in a single direction.

The uncertain connection between foreign direct investment (FDI) and economic growth in Kenya from 1980 to 2018 is analyzed by Odhiambo (2022). Two variables, namely the money supply and trade, are employed as intermittent variables to address the omission-of-variable bias that has been identified in some prior studies. This result in a set of multivariate Granger-causality equations. The findings demonstrate that there is a unidirectional causal flow in Kenya from economic development to FDI using the ARDL bounds testing methodology. These findings hold whether causality is investigated in the short run or the long run. Based on these findings, it can be said that Kenya's recent surge in FDI inflows has been substantially fueled by the country's robust economic expansion and responsible macroeconomic policies during the past few decades.

Through the use of a VAR model, Ergashev, Kobilov, and Makhmudov (2021) examined the interactions between foreign direct investment, economic growth, and employment using annual data series from 2000 to 2020. The results of the enhanced Dickey-Fuller test, Granger causality test, and variance decomposition indicate that foreign direct investment positively affects employment and economic growth and that employment positively affects foreign direct investment and economic growth. The relationship between employment and economic expansion is causal in both directions. In the meantime, increased employment may be another benefit of foreign direct investment. In addition, Uzbekistan's job situation may improve as a result of the fast economic growth. Aluko, Ibrahim, and Vo (2021) use data from 41 countries covering the years 2000–2017 to investigate how economic freedom mediates the effect of FDI on economic growth in Africa. The authors use Seo and Shin's (2016) sample-splitting approach and Seo et al (2019) .'s computationally robust bootstrap algorithm. The authors discovered evidence of a threshold for economic freedom where the relationship between FDI and economic growth in Africa splits. More specifically, FDI considerably boosts economic growth in African nations with economic freedom indices above the projected threshold while having no effect on growth in African nations with indices below this threshold.

Cicea and Marinescu (2021) conduct a bibliometric analysis of the scientific output in this field to discover patterns and explain certain events in the context of the economic environment. Using resources made available by the aforementioned database, VOSViewer, and Cite space software, the authors examined 2281 documents from the Scopus database. The research was done on some levels, including a typology of information dissemination, publication topics, geographic and temporal dispersion of documents, and scientific content. Among the findings authors can mention that the connection between foreign direct investment and economic growth is very strong (according to the cluster analysis in VOS-Viewer); consequently, the focus of the authors migrated from general economic aspects of the relationship to the elements of ecology and environmental protection. Going deeper with the analysis, conducting two parallel analyses of the articles with maximum citation burst and keywords with highest citation strength values, some intriguing trends were observed in the relationship between foreign direct investment and economic growth.

Dinh TT-H et al(2019) .'s analysis of quantitative evidence looked at the effects of foreign direct investment (FDI) on economic growth throughout the 2000–2014 period in lower-middle-income developing nations. To guarantee the validity of the results, a variety of econometric techniques are used, including the panel-based unit root test, the Johansen co-integration test, the Vector Error Correction Model (VECM), and the Fully Modified OLS (FMOLS). The findings of this study demonstrate that FDI has a negative short-term effect on the countries in this study, but that it has a positive long-term effect on stimulating economic growth. In explaining the economic growth in these nations, other macroeconomic issues are equally crucial. While overall credit to the private sector hurts economic growth over the short term, the money supply has a favourable impact. In addition, factors such as the money supply, human capital, total domestic investment, and domestic credit for the private sector all contribute to long-term economic growth.

The contribution of institutional quality to economic growth, and particularly the contribution it makes through the channel of foreign direct investments, is examined by Arshad (2019).To assess the direct effects of institutional quality on economic growth and the indirect effects of institutional quality on economic growth through enhancing FDI-induced economic growth, the

author uses a larger dataset of 104 countries and applies the GMM estimation method to dynamic panel data. The author discovered that there is proof that great economic growth is a result of both FDI inflows and high-quality institutional environments. However, only the low- and middle-income countries saw FDI-led economic growth. Better institutional quality was also shown to be increasing the FDI-led economic growth in these countries. An major finding of this study is that FDI was found to hinder economic growth in high-income countries. When endogeneity is controlled for while using individual institutional quality indicators, the results are reliable and consistent.

Empirical Review:

Using time series data, Antwi, Mills, Mills, and Zhao (2013) investigate the relationship between FDI and economic growth in Ghana during the years 1980–2010. The gross national income (GNI), GDP, GDP growth rate, manufacturing value-added, external debt stock, inflation, trade, industry value added, and net inflows of foreign direct investment as a percentage of GDP (FDI ratio). The empirical analysis was carried out utilizing annual data on FDI and other factors for the periods 1980 to 2010 using simple ordinary least square (OLS) regressions. They made use of yearly data from the International Monetary Fund's International Financial Statistics tables. Finding out how closely these factors are related is the aim of this investigation. This leads them to the conclusion that the independent variables GDP, GDPg, GNI, MVA, GDPc, and TRA all have a substantial impact on FDI in Ghana because their corresponding p-values for the t-statistic are less than 5%.

To determine whether FDI has boosted economic growth in Spain, one of the largest recipients of FDI, whose gross domestic product growth was above average but escaped scrutiny, Jorge and Werner (2018) conducted an empirical investigation of the relationship between foreign direct investment and economic growth in Spain using an improved empirical methodology. Spain provided the perfect environment for FDI to manifest its anticipated positive effects on growth throughout the observation period of 1984–2010, during which time FDI increased dramatically. They compare several potential explanatory factors, including the underappreciated contribution of bank loans to the actual economy. The findings are convincing and unambiguous: There is no

proof that the favourable conditions in Spain would cause FDI to drive economic growth. It is also discovered that the introduction of Spain into the EU and the euro has no beneficial impact on growth. The conclusions need a major reevaluation of economics methodology.

The main factors influencing FDI in the Nigerian telecommunications industry were examined by Arawomo and Apanisile (2018). The research used information from 1986 to 2014. The World Development Indicators (WDI) of the World Bank provided annual data on market size, trade openness, government spending, and infrastructure. The Central Bank of Nigeria Statistical Bulletin served as the source for FDI flow into the telecommunications sector, as well as the foreign exchange rate, interest rate, and inflation. Graphs, the t-test, and Autoregressive Distributed Lag were used to evaluate the data (ARDL). The findings indicated that, on the positive side, market size and trade openness (t = 5.75 to 9.05; p 0.05) and, on the converse, inflation and the real interest rate (t = 0.05 to 4.03; p 0.05) are the main predictors of FDI in the sector. The study concludes that market size, trade openness, government spending, inflation, and interest rate are the primary factors influencing FDI flow into the Nigerian telecommunications sector.

Akinlo (2004) looked into how foreign direct investment (FDI) affected economic growth in Nigeria between 1970 and 2001. According to the ECM findings, the impact of private capital and lagged foreign capital on economic growth is minimal and not statistically significant. The findings appear to support the claim that manufacturing FDI may be more growth-enhancing than extractive FDI. The findings also indicate that export has a favourable and statistically significant impact on growth.M2/GDP ratio, a measure of financial development, has a considerable negative impact on growth, possibly as a result of the huge amount of capital flight it causes. The findings also indicate that the labour force and human capital have a sizable beneficial impact on growth. These results point to the necessity of expanding the labour force and implementing education reforms to increase the nation's stock of human capital.

Similar research was carried out between 1981 and 2015 by Emmanuel (2016) utilizing secondary data obtained from the National Bureau of Statistics publications and the Central Bank of Nigeria's statistical bulletin. Multiple regressions were used in the study, and Gretl 1.9.8

econometric software was employed for the analysis. The findings indicated that the gross domestic product is positively and significantly impacted by foreign direct investment. Additionally, it was discovered that the gross domestic product is positively impacted by exchange rates, though not significantly. In contrast to the findings and opinions of certain scholars and other stakeholders who claimed that foreign direct investment has a detrimental impact on the growth of the economy, the study concluded that foreign direct investment has a favourable impact on economic growth in Nigeria.

Using the autoregressive distributed lag estimation technique, Dada and Abanikanda (2021) examine the moderating effect institutional quality has on the foreign direct investment-led growth hypothesis in Nigeria from 1984 to 2018. However, in the majority of the models, the interaction between institutional indicators and foreign direct investment has a considerable impact on economic growth. This suggests that for the country to get the greatest benefits from the growth effect of foreign direct investment, institutions are a crucial absorptive capacity that needs to be enhanced. Therefore, the study concludes that growth and foreign direct investment in Nigeria depend on excellent institutional quality. Nevertheless, from the plethora of previous studies conducted in Nigeria on the role of FDI in economic growth such as (Anowor et al 2013, Arawomo & Apanisile 2018, Akinlo 2004, Emmanuel 2016, Oyegoke &Aras 2021, Dada & Abanikanda 2022) did not disaggregate the contributions of FDI to the critical sectors and their sensitivity to the economy, hence, this present study addresses the lacuna noticed from these previous studies by examining Nigeria's sensitivity to sectoral FDI and macroeconomic growth in Nigeria.

Theoretical Framework

The Acceleratory Theory of Investment serves as the foundation for this research. This hypothesis makes the supposition that investment is solely a function of GDP growth. To put it another way, any change in output will result in a change in capital stock. Thus,

$$K_t - K_{t-1} = v (Y_t - Y_{t-1}) \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (3.1)$$

$$I_{nt} = K_t - K_{t-1} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (3.2)$$

Where:

Yt – Yt-1 = change in output

Int = net investment.

$K_t – K_{t-1}$ = change in capital stock (investment)

V = a positive constant

The aforementioned model will be changed to include the selected variable for analysis as well as other macroeconomic variables in the macroeconomic order other than GDP that has an impact on investment.

Consequently, the equation above may be rewritten as

$K_t – K_{t-1} = F (\Delta Y_t + \Delta POP_t + \Delta INFR_t + \Delta UR_t + \Delta EXR)$

Model Specification:

The functional form of the model

$FDI_{MAQ} = F (GDP, POP, INFR, UR, EXR)$ ………………………………… (3.3)

$FDI_{MAP} = F (GDP, POP, INFR, UR, EXR)$ ………………………………… (3.4)

$FDI_{ADF} = F (GDP, POP, INFR, UR, EXR)$ ………………………………… (3.5)

$FDI_{TAB} = F (GDP, POP, INFR, UR, EXR)$ ………………………………… (3.6)

Where:

FDI_{MAQ} = FDI - Mining and Quarrying

FDI_{MAP} = FDI - Manufacturing and Processing

FDI_{ADF} = FDI - Agriculture, Forestry and Fishing

FDI_{TAB} = FDI - Trading and Business

GDP = gross domestic product

POP = population

INFR = inflation rate

UR = unemployment rate

EXR = exchange rate

β_0 = intercept

$\beta_1 - \beta_5$ = parameters or slopes to be estimated

Estimation Techniques

The ordinary least squares (OLS) method is best suited for this kind of analysis since multiple regression models are used. One of the estimation techniques used for regression analysis is ordinary least squares primarily because it i**s** intuitively appealing.

PRESENTATION AND INTERPRETATION OF RESULTS

The presentation, estimate, and analysis of data are the main topics of this section, which also looks at the link between the variables mentioned and the sensitivity of sectoral FDI in Nigeria to macroeconomic factors.

Table 2. Descriptive statistics

	LFDIMAQ	LFDIMAP	LFDIADF	LFDITAB	LGDP	LPOP	INFR	EXR	UR
Mean	9.868327	10.29490	6.636591	9.049738	25.01028	18.60021	19.51983	82.78627	8.734054
Median	11.00161	10.49908	7.097549	9.299020	24.56026	18.59738	12.87658	92.69335	6.100000
Maximum	11.79120	12.47300	7.935902	10.83475	27.06627	19.06712	72.83550	305.7901	23.90000
Minimum	6.236761	7.441731	4.764735	6.642748	23.48258	18.13941	5.382224	0.610025	1.900000
Std. Dev.	2.054289	1.738432	1.146303	1.33438	1.15002	0.27751	17.4503	80.40635	5.775371

				4	6	7	4		
Skewness	-0.814489	-0.280571	-0.693866	-0.051181	0.583080	0.019261	1.699713	0.713608	0.907176
Kurtosis	1.915900	1.659383	1.900929	1.477466	1.854957	1.819328	4.677255	2.868118	2.895467
Jarque-Bera	5.902794	3.256209	4.831206	3.589907	4.117874	2.151351	22.152624	3.167107	5.091821
Probability	0.052267	0.196301	0.089313	0.166135	0.127590	0.341067	0.000015	0.205245	0.078402
Sum	365.1281	380.9115	245.5539	334.8403	925.3804	688.2079	722.2337	3063.092	323.1600
Sum Sq. Dev.	151.9237	108.7972	47.30442	64.10086	47.61216	2.772564	10962.52	232746.5	1200.777
Observations	37	37	37	37	37	37	37	37	37

Source: Authors' computation.

The preceding displays the variable's face value (s). Each of the variables has 37 observations. The mean of the variables provides averages and illustrates the variability of the variables, as shown, for instance, in the dependent variable in the table above. Up to 9.868327 per cent can be found in LFDIMAQ, 10.29490 per cent in LFDIMAP, 6.636591 per cent in LFDI-ADF, 9.049738 per cent in LFDITAB, 25.01028 per cent in LGDP, 18.60021 per cent in LPOP, 19.51983 per cent in INFR, 82.78627 per cent in EXR, and 8.734054 per cent in UR. The LFDIMAQ, LFDIMAP, LFDIADF, LFDITAB, LGDP, LPOP, EXR, and UR p-values of the Jarque-Bera statistic are greater than 0.05 threshold of significance, showing that the variables are regularly distributed. Only INFR demonstrates that it is not normally distributed when its P values are less than 0.05.

Table 3. Unit Root Test

Variables	ADF Stat at Levels	5% Critical Value	Stationary Level	ADF Stat at First Difference	5% Critical Value
LFDI$_{MAQ}$	-0.124957	-3.580623	NS	-4.632244*	-3.580623
LGDP	-2.909794	-3.540328	NS	-5.615596*	-3.544284

LPOP	-5.592133*	-3.557759	S	-2.940691	-3.562882
INFR	-3.892786*	-3.544284	S	-6.031981*	-3.548490
EXR	-1.213743	-3.544284	NS	-3.803105*	-3.544284
UR	-2.494749	-3.540328	NS	-7.663587*	-3.544284

*Source***:** Authors' computation.

The unit root test for the variables in the first model is shown in Table 4.2. Above. The dependent variable, LFDIMAQ, may be seen to have reached stationary behaviour at the first difference with ADF t-statistics (-4.632244), which is higher than the 5% required limit (-3.580623). At the initial divergence between LGDP and ADF t-statistics (-5.615596), which is higher than the 5% critical limit, LGDP became stationary (-3.544284). A non-stationary time series can be rendered stationary by integrated series by differencing, according to Gujarati and Porter (2007). When the ADF t- statistics are at (-5.592133), which is higher than the 5% threshold value, LPOP is stationary (-3.557759). At levels with ADF t-statistics (-3.892786), which are higher than the 5% critical value, the inflation rate (INFR) remains stationary (-3.544284). The first difference with ADF t-stat (-3.803105), which is more than the 5% threshold value, is when the exchange rate (EXR) became stationary (-3.544284). At the first discrepancy with ADF t-statistics (-7.663587), which is more than the 5% threshold value, the unemployment rate (UR) became stationary (3.544284).

Table.4.Co-integration Test Result.

Variables	ADF-Statistic at Level	ADF 5% Critical Value	P-Value
Residual Term	-2.976752	-3.548490	0.1531

Source: Authors' Computation.

The ADF test results are -2.976752, as indicated in the table above, which is less than the 5% critical value of -3.548490 in absolute terms. Due to this failure to reject the null hypothesis, we conclude that the variables are not co-integrated and follow our decision rule in doing so. This suggests that the regressors and the regressand have no lasting link.

Presentation and Analysis of Ordinary Least Square (OLS) Regression Results.

Table 5.Dependent Variable: LFDI$_{MAQ}$

Variables	Coefficients	Std. Errors	T-statistic	Prob.
CONSTANT	-178.0892	33.32929	-5.343323	0.0000
LGDP	-0.883638	0.299766	-2.947764	0.0060
LPOP	11.30166	2.161568	5.228455	0.0000
INFR	-0.004723	0.010396	0.454342	0.6527
EXR	-0.007461	0.004698	-1.588133	0.1224
UR	0.042331	0.029547	1.432670	0.1620
R^2 = 0.864287	F-Stat =39.48458	Prob. F= 0.000000		
Adjusted R^2=0.842398	Durbin-Watson Stat=0.762150			

Source: Authors' computation.

Constant Term (β_0).

The constant's coefficient is -178.0892. This demonstrates that the coefficient of the constant term reduces by 178.0892 units when the explanatory variables are held constant.

Log of Gross Domestic Product (LGDP):

The coefficient of LGDP is -0.883638, indicating that, on average, with all other model variables held constant, a unit rise in GDP over the long run results in a 0.883638 decline in foreign direct investment to Nigeria's mining and quarrying industry. This deviates from the preconceived notion.

Log of Population (LPOP):

The coefficient of LPOP is 11.30166, demonstrating that, when all other factors are held constant, a unit increase in population over time results in an increase of 11.30166 units in foreign direct investment into Nigeria's mining and quarrying industries. This conforms to a priori expectations.

Inflation Rate (INFR):

The coefficient of INFR is -0.004723, indicating that, with all other factors kept constant, a unit increase in the inflation rate results in a long-term drop of 0.004723 units in foreign direct investment to Nigeria's mining and quarrying sector. This deviates from a priori predictions.

Exchange Rate (EXR):

In the long run, a unit increase in the exchange rate causes a 0.007461 unit drop in foreign direct investment to the mining and quarrying industry in Nigeria, according to the coefficient of EXR, which is -0.007461 when all other factors are held constant. This matches the presumption.

Unemployment Rate (UR):

In the long run, a unit rise in the unemployment rate causes a 0.042331 unit increase in foreign direct investment to the mining and quarrying sector in Nigeria, according to the coefficient of UR, which is 0.042331. This matches what was predicted a priori.

Evaluation of the Regression Result Based on Statistical Criteria

The T-test, F-test, R^2 and R^2 tests were used in this phase of the research to test the statistical parameter. Adjusted to test both the regression's robustness and the predicted parameter's statistical reliability.

T-Test: The decision rule is that we reject the null hypothesis and come to the conclusion that the variable is statistically significant or different from zero if the probability value is less than 0.05. This suggests that Nigeria's mining and quarrying sector's foreign direct investment has a considerable impact on the country's gross domestic product. The likelihood of LPOP (0.0000), which is less than 0.05, demonstrates that the population is statistically significant, i.e., LPOP has a considerable impact on foreign direct investment in the Nigerian mining and quarrying sector. The fact that the probability value of INFR, (0.6527), is more than 0.05, indicates that the inflation rate is statistically unimportant and has little bearing on foreign direct investment in Nigeria's mining and quarrying industry. The probability value of LGDP is (0.0060), which is less than 0.05, demonstrating the statistical significance of the coefficient. The probability value of EXR is (0.1224), which is more than 0.05, demonstrating that the exchange rate is statistically

unimportant, i.e., having no appreciable effects on foreign direct investment to the Nigerian mining and quarrying sector. Since the probability value of UR is more than 0.05 and equals 0.1620, it may be concluded that the unemployment rate is statistically insignificant. This suggests that the unemployment rate has little bearing on foreign direct investment in Nigeria's mining and quarrying industry.

Summary of T-Test Result

Table 6.

Variables	T-Value	Conclusion
CONSTANT	-5.343323	Statistically Significant
LGDP	-2.947764	Statistically Significant
LPOP	5.228455	Statistically Significant
INFR	0.454342	Statistically insignificant
EXR	-1.588133	Statistically insignificant
UR	1.432670	Statistically insignificant

Authors 'computation.

Multi-collinearity

	LFDIMAQ	LGDP	LPOP	INFR	EXR	UR
LFDIMAQ	1.000000	0.615473	0.874598	-0.141488	0.749644	0.487673
LGDP	0.615473	1.000000	0.866114	-0.448922	0.863002	0.485938
LPOP	0.874598	0.866114	1.000000	-0.299318	0.931631	0.507129
INFR	-0.141488	-0.448922	-0.299318	1.000000	-0.354626	-0.422275
EXR	0.749644	0.863002	0.931631	-0.354626	1.000000	0.507747

| UR | 0.487673 | 0.485938 | 0.507129 | -0.422275 | 0.507747 | 1.000000 |

Source: Authors' computation

The correlation matrix, which represents the link between the numerous variables utilized for this analysis, is shown in the table above. Multicollinearity between the employed variables is a concern. Since there is no perfect correlation and the correlation coefficients are less than 1, the multicollinearity between the variables is not a problem. Dropping any of the associated core variables will result in specification bias because they are core variables. Additionally, multicollinearity among these kinds of variables is largely inevitable, according to Blanchard in Gujarati (2013).

Summary, Recommendation and Conclusion.

The study investigates the relationship between Nigeria's macroeconomic performance and sectoral FDI. Examining the sensitivity of sectoral FDI to macroeconomic performance in Nigeria is the main goal of this study. This study's specific goals are to ascertain whether FDI to the agricultural, forestry, and fishery sectors is sensitive to macroeconomic performance in Nigeria, whether FDI to mining and quarrying is sensitive to macroeconomic performance in Nigeria, whether FDI to manufacturing is sensitive to macroeconomic performance in Nigeria, and whether FDI to trading and business is sensitive to macroeconomic performance in Nigeria. To accomplish these goals, we employed pertinent macroeconomic statistics, such as the GDP, population, inflation rate, exchange rate, and unemployment rate (UR). Additionally, an econometric methodology was applied to attain these goals, with the OLS method being the estimation instrument. We used the ADF test procedures to make sure that these variables were appropriate for the intended uses.

The findings demonstrate that the variables become stationary in all situations at most during their initial difference at a 5% level of significance. This implies that every variable employed for the estimation of the given equations is suitable for the analysis. To ascertain whether there is a long-term link between the variables and whether there is an equilibrium relationship between

the variables, the Engel-Granger co-integration test was conducted. According to the 2-t rule of thumb, the research for model one demonstrates that GDP and POP have a substantial impact on foreign direct investment (FDI) in Nigeria's mining and quarrying industry, whereas INFR, EXR, and UR were statistically insignificant.

Policy Recommendations

It is crucial to establish a set of policy recommendations based on the study findings from this effort.

Consequently, we suggest the following:

The government is advised to make enormous investments in the education and health sectors since doing so will result in enormous improvement, growth, and high-quality human capital. The population has a large and beneficial impact on the flow of FDI to all sectors that are taken into consideration. Therefore, the enhanced human resources will not only attract foreign investors but also enable Nigerians to reap the majority of the financial benefits from the country's FDI capital inflow. If there are enough graduates to match the MNEs' needs for human resources, such nations will draw FDI and profit from it. The neglect of agriculture, which has the tremendous economic potential to improve, and the focus on the oil and manufacturing and processing sectors is the cause of the severely negative relationship between GDP and agriculture that is at odds with theoretical expectations. As a result, the government should create investment rules that are advantageous to both domestic and international investors in agriculture. Government should also seek to eliminate numerous barriers that hinder or forbid foreign investors from making investments in the agricultural industry. Since they have a considerable impact on certain sectoral FDI flows, the government should also develop a monetary and fiscal policy or policy mix that will help preserve and control price and exchange rate stability. Therefore, Nigerian policymakers must make sure that macroeconomic policies are created to create an atmosphere that will facilitate increasing FDI inflows.

Conclusion:

The study looked at how sensitive Nigerian sectoral FDI was to macroeconomic performance. The World Bank statistical bulletin and the Central Bank of Nigeria statistical bulletin were used to gather secondary data.FDI in manufacturing and processing (FDIMAP), FDI in agriculture, forestry, and fishing (FDIADF), FDI in trading and business (FDITAB), and FDI in mining and quarrying (FDIMAQ) were all used in the study as dependent variables. The variables in the model are the GDP, the population, the inflation rate, the exchange rate, and the unemployment rate (UR). Regression analysis revealed that the selected sector of research was considerably affected by the investigated macroeconomic variables, although in diverse ways. It was shown that the FDI in the mining and quarrying sector is sensitive to changes in GDP and POP.

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