The Dynamic Influence of Foreign Direct Investment and Industrial Output on Economic Development in Nigeria: An ARDL Model Analysis

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Abstract- ***Widely acknowledged as essential to economic development are Foreign Direct Investment (FDI) and industrial output, while productivity remains at the heart of how firms and national economies perform. This research examines how FDI and industrial output affect Nigeria's economic development, employing the Autoregressive Distributed Lag (ARDL) model. It investigates if progress in FDI and industrial output has resulted in enduring economic growth, both on their own and through their combined (interactive) effects. The analysis utilises annual time series data comprising 42 observations from 1981 to 2023, sourced from the World Bank's Development Indicators (2023) and the Central Bank of Nigeria's Annual Statistical Reports. As key independent variables, the model includes FDI and industrial output, along with control variables of government expenditure (GOVEXP) and gross fixed capital formation (GFCF). The annual growth rate of real GDP serves as a proxy for economic development. The empirical findings demonstrate that both FDI and industrial output positively influence economic development in both the short term and the long term. While the impact of FDI is statistically significant, the relationship between FDI and industrial output is not statistically significant. Of greater significance is the finding that the interactive (moderated) effect of FDI and industrial output on economic development is negative and statistically insignificant in both the short term and long term. This implies that the synergy between FDI and industrial productivity has not yielded practical improvements in economic performance. The study recommends that the government implement measures to improve, protect and empower domestic industries, support innovation and SMEs, develop infrastructure for industrial growth, encourage innovation and technology adoption, strengthen backwards and forward linkages, and monitor and evaluate FDI-industry outcomes in Nigeria.***

Indexed Terms- ***Economic Development, Foreign Direct Investment, Government Expenditure, Gross Fixed Capital Formation, Industrial Output***

I. INTRODUCTION

For numerous developing countries, including Nigeria, economic development remains a primary objective. It includes enhancements in living standards, income distribution, poverty alleviation, and comprehensive economic transformation. Foreign Direct Investment (FDI) and industrial output are two key factors often linked to this development. Conversely, productivity plays a vital role in the production performance of companies and countries. Raising industrial productivity can elevate living standards as a higher real income enhances people's capacity to buy goods and services, enjoy leisure time, improve education and housing, and support social and environmental initiatives. Businesses can also increase their profitability through productivity growth.

The role of foreign direct investment (FDI) in propelling economic growth and development is becoming increasingly crucial, especially in developing countries. Given that Nigeria is endowed with a wealth of natural resources yet faces serious economic challenges, FDI plays a crucial role in shaping the trajectory of the country's economy. Foreign direct investment comprises external resources, such as technology, managerial and

marketing expertise, and capital. With the inflow of these resources, the recipient economy can expand its productive base and, by implication, grow its domestic economy.

Previously, the Nigerian government had tried to offer foreign investors a healthy environment and generous tax incentives, but the outcome had not been sufficiently motivating. Nigeria continues to require external support in the form of managerial, entrepreneurial, and technical expertise, which often accompanies foreign direct investment.

Recently, foreign direct investment has become the primary source of external resource inflows to developing countries and now plays a remarkable role in globalisation.

Development experts have shown interest in the desirability of foreign investment in an economy and its essence. While some emphasise that although a nation's economic activities can drive growth and development, they caution that exposing an economy to abrupt inflows and outflows can disrupt stable economies and force them to implement fiscal policies that may cause issues for their securities market operations. However, some argue that inflows of foreign investment have aided emerging economies in leveraging research and development from advanced economies, thereby supporting their industrialisation and enhancing manufacturing output. The improvements in the real sector have also attracted further foreign investment.

It is anticipated that foreign direct investment inflow will boost manufacturing sector output, transfer technology, and improve managerial and marketing skills in domestic industries, thereby enhancing their productivity and contributing to the broader economic growth of the host nation (Chenery & Strout, 1966).
A nation's capacity to boost productivity, particularly output per worker, is fundamentally linked to the long-term improvement of its standard of living. As highlighted by Solow (1956) and Romer (1990) in the field of growth theory, productivity growth is a fundamental engine of sustainable economic progress. Dutse et.al (2011) contend that Nigeria's goal of attaining technological progress and enhancing productivity has become increasingly dependent on the influx of Foreign Direct Investment (FDI). It is widely acknowledged that foreign direct investment (FDI) serves as a vital means of channelling capital, technology, and management expertise into developing economies, with the potential to significantly enhance labour productivity and accelerate economic development (UNCTAD, 2023).
Nigeria has historically embraced protectionist policies that limited FDI inflows, similar to many other developing nations (Marin, 2008). Over the last 20 years, however, there has been a shift toward liberalising the investment climate. The government has actively sought foreign direct investment (FDI) through the implementation of investor-friendly reforms and incentives, as well as by making substantial investments in promotional activities aimed at attracting multinational corporations. Yauri (2006) states that this shift in policy led to increased diplomatic and economic interactions, culminating in the establishment of numerous bilateral and multilateral investment agreements aimed at protecting foreign investors and promoting capital inflows.

Recent studies have further confirmed that Nigeria's FDI policies have been the subject of significant scrutiny within the broader macroeconomic framework, particularly in industries such as oil and gas, telecommunications, and manufacturing (World Bank, 2022). However, despite the country's considerable efforts to attract FDI, the success of these efforts in yielding substantial productivity increases and comprehensive economic advancement remains a challenge that necessitates empirical assessment and policy improvement.

Ozuzu and Isukul (2021) emphasise the crucial importance of the industrial sector in promoting economic development. Their findings suggest that investing in Nigeria's industrial output is a crucial mechanism for enhancing productivity growth, thereby supporting long-term economic development. They contend that for economic advancement to be sustained, it is crucial to rejuvenate the industrial base through strategic investments, primarily through foreign direct investment (FDI). Likewise, Nigeria, Africa's largest economy, has shown promise in attracting significant foreign direct investment inflows over the past few decades. Nonetheless, in order to

replicate the industrial success of Asian economies, it is crucial to develop coherent policy frameworks that actively promote FDI in sectors with significant industrial multiplier effects, strengthen domestic capacity, and facilitate technology transfer (UNCTAD, 2023; World Bank, 2022).

Maji and Achegbulu (2016) underscored the possibility of swift and sustainable industrial growth driven by dynamic FDI inflows following this perspective. They highlighted the success stories of nations such as Singapore, Hong Kong, and Thailand, where proactive FDI policies catalysed significant industrial transformations, positioning these countries as some of the most industrialised and economically advanced regions globally.

These investments promote structural change and economic growth in Nigeria's economy by providing financial resources, technical expertise, improved management practices, and access to global markets. Despite the potential benefits, many factors are at play in the complex relationship between FDI and economic growth in Nigeria. Some of the problems that could hinder the effective use of foreign investments include insufficient infrastructure, corruption, political instability, and regulatory challenges.'

Although FDI is believed to create a beneficial cycle of increased productivity, it can also provide essential resources, such as capital, production techniques, and managerial and marketing expertise. Other components encompass advanced product and business practices, development of human capital, and brand access to markets, all of which are crucial for the industrialisation of developing countries.

The focus of Nigeria's economy is predominantly on the oil industry, while the real sector receives minimal FDI inflows, possibly due to sluggish growth in industrial output. Another issue facing the enhancement of Nigeria's industrial output growth is linked to inadequate collaboration between oil sector stakeholders and real sector investors regarding FDI. This lack of synergy may contribute to the industrial sector's low productivity performance.

Likewise, another serious aspect of the issues related to Nigeria's low industrial output performance stems from unwelcoming political and business environments. These environments frequently deter foreign investors due to ongoing interruptions in FDI inflows into Nigeria.

The current unfortunate trend is linked to different anti-social factions, like the Bandits and Boko Haram Sects in Northern Nigeria. In contrast, the Southern region sees the influence of Kidnappers and secessionist groups. The actions of these factions are severely damaging to industrial development and the country's overall economic performance. According to Okoli and Agu, the emergence of these extremists and kidnappers is a significant factor behind capital flight, the low inflow of technology, and Nigeria's poor state of industrialisation, as no rational investor would accept the risk of losing their investments due to local unrest, regardless of the investment's perceived viability.

Consequently, Nigeria failed to establish a conducive and supportive environment for foreign businesses to flourish. It is essential to note that FDI is expected to stimulate growth in the industrial sector, thereby increasing the overall employment level for the entire population and fostering long-term economic development.

This study aims to examine the impact of Foreign Direct Investment (FDI) and industrial output on Nigeria's economic development. It will specifically evaluate FDI's contribution to the country's economic growth by examining its impact on infrastructure development, job creation, and technology transfer through foreign direct investment (FDI) inflows. Additionally, the research will examine how industrial output contributes to economic progress through increased domestic production, value-added activities, and enhanced export capacity. Finally, the study seeks to analyse the combined (synergistic) effects of FDI and industrial output, focusing on how their interaction can jointly promote sustainable economic development in Nigeria. It is anticipated that this integrated analysis will yield more profound insights for policymakers, investors, and development stakeholders regarding the ideal circumstances in

which FDI and industrial growth can support one another in advancing national development.

II. LITERATURE REVIEW

To strengthen the study on the subject matter, the researchers examine the significance of Foreign Direct Investment (FDI) and industrial output on Nigeria's economic development. This is achieved through a comprehensive literature review, which encompasses conceptual, theoretical, and empirical analyses.

2.1 Conceptual Review

Foreign Direct Investment

Foreign Direct Investment (FDI) refers to the movement of capital from international sources into a nation's economy, usually via investments in business activities, infrastructure, or assets, aimed at creating a lasting interest and control.

FDI is viewed as a driving force behind economic growth, offering capital along with technology transfer, management know-how, and entry to global markets. Nigeria's FDI inflows, however, have been volatile due to factors such as inconsistent policies, security issues, and inadequate infrastructure.

According to Alfaro (2017), Foreign Direct Investment (FDI) pertains to the inflow of long-term capital from foreign entities into domestic industries, promoting technology transfer, job creation, and industrial growth. Due to policy instability, insecurity, and infrastructural deficits, FDI in Nigeria has been inconsistent (Adeleye et al., 2023). Studies show that when FDI is directed toward productive sectors such as agriculture and manufacturing, it significantly contributes to economic growth, rather than when it is directed toward extractive industries (CBN, 2023). Recent findings indicate that enhancing Nigeria's business environment could draw in more FDI, which would increase capital formation and GDP growth (World Bank, 2023).

According to neoclassical theory, while FDI affects income growth by increasing the capital-per-person ratio, it does not impact long-term economic growth due to diminishing returns to capital. In contrast, recent endogenous growth theorists (e.g., Romer, 1986, 1990; Lucas, 1988) contend that FDI promotes long-term growth through factors such as research and development (R&D) and human capital. They argue that MNCs can accelerate the development of new intermediate product varieties, enhance product quality, facilitate international R&D collaboration, and introduce new forms of human capital through technology transfer to both affiliates and non-affiliated firms in the host economy.

Industrial Output

Industrial output refers to the total value of goods produced in the industrial sector of a country, encompassing manufacturing, mining, and utilities. The production output is influenced by human capital and financial development. Comprising manufacturing, mining, and construction, industrial output plays a crucial role in diversifying the economy and generating employment (Szirmai, 2020). The industrial sector in Nigeria has not performed well due to inconsistent energy supply, insufficient infrastructure, and excessive reliance on oil revenues (Okafor et al., 2022). Nevertheless, it has been demonstrated that raising capital investment in agro-processing and solid minerals boosts industrial productivity (Nwokoye et al., 2021). The Nigerian Industrial Revolution Plan (NIRP) seeks to rejuvenate the sector; however, financing constraints continue to pose a significant challenge (FMITI, 2023).

Industrial output refers to the aggregate value of products produced by the industrial sector, encompassing manufacturing, mining, and utilities. It acts as a sign of economic well-being and industrial activity. Challenges such as insufficient power supply, restricted access to finance, and infrastructural bottlenecks have hindered Nigeria's industrial sector's contribution to GDP.

Gross Fixed Capital Formation

Gross Fixed Capital Formation (GFCF) measures investments in tangible assets, such as machinery, buildings, and infrastructure, which are essential for sustained economic growth (Jorgenson & Vu, 2019). GFCF in Nigeria has exhibited volatility, driven by fluctuations in oil revenue and limited private-sector involvement (Osinubi et al., 2022). Recent research emphasises that economic growth can be significantly boosted by enhancing GFCF through public-private partnerships (PPPs) and infrastructure development

(Ekpo & Umoh, 2023). GFCF is underscored in essential sectors by the Nigerian Economic Sustainability Plan (ESP) as a means to foster recovery from the pandemic (NBS, 2023).

Gross Fixed Capital Formation measures the net increase in physical assets within an economy, encompassing investments in infrastructure, machinery, and equipment that are essential for production and economic growth.

GFCF serves as a vital element of capital formation, indicating the degree of investment in the economy. It shows the potential for future production and economic development.

Government Expenditure

Government expenditure encompasses all government spending on goods and services, encompassing both capital and recurrent expenditures, to fulfil its economic and social obligations.

Public expenditure is a crucial factor in driving economic growth, particularly in developing economies. Nonetheless, the efficiency of government spending in Nigeria remains a debated issue.

Sustainable economic growth requires the investment of government funds, especially in infrastructure, education, and healthcare (Keynes, 1936). In Nigeria, public expenditure has frequently favoured recurrent over capital spending, which has restricted its developmental impact (Agu et al., 2022). Studies have shown that greater investment in transport and energy infrastructure is associated with higher GDP growth (Okoro & Kalu, 2023). While the 2024 budget suggests an increase in capital expenditure, issues such as corruption and inadequate implementation persist (World Bank, 2023).

Economic Development

Economic development refers to the ongoing improvement of a country's standard of living and economic well-being, encompassing aspects such as income levels, education, healthcare, and job availability. Although Nigeria is the largest economy in Africa, it struggles to translate economic growth into widespread development, as persistent problems such as poverty, unemployment, and inequality persist. According to Todaro and Smith (2021), economic development encompasses more than just GDP growth; it also involves advancements in living standards, education, and healthcare. Nigeria has experienced GDP growth; however, due to uneven capital distribution, poverty, and unemployment levels remain high (UNDP, 2023). Recent studies indicate that inclusive capital formation policies, including financing for SMEs and digital infrastructure, can foster equitable development (Adegboye et al., 2023).

2.2 Theoretical Review

Capital Market Theory

The capital market theory, commonly referred to as the "currency area theory," was developed by Aliber in 1971. According to the hypothesis, flaws in the capital market are supposed to spark foreign direct investment (FDI). Nayak and Choudhury (2014) assert that the difference in currency between the home country and the host country is the primary factor behind FDI. According to Aliber (1970, 1971), currencies of lesser strength are more effective in attracting FDI and capitalising on fluctuations in market capitalisation rates than those of stronger nations. Aliber (1970; 1971) elaborated on this concept by stating that multinational corporations (MNCs) based in countries with strong currencies can borrow at significantly lower interest rates compared to those in countries with weaker currencies.

In contrast to businesses in the target country, this enables companies in the source nation to obtain loans for their overseas investments and subsidiaries with greater ease and at lower interest rates. Certain scholars believed that this capital market theory overlooked essential currency risk management despite its relevance to developed countries such as the US, UK, and Canada. The fundamentals, Lall (1979) produced another work that strongly criticised Aliber's theory. Lall pointed out that countries with less developed capital markets, whether underdeveloped or non-existent, as well as those that heavily regulate foreign exchange rates, do not meet the criteria of Aliber's theory.

Market Imperfection Theories

Hymer (1976) developed market imperfections theories designed to elucidate the behaviour of firms in non-perfectly competitive environments, such as

oligopolistic or monopolistic settings. To engage in FDI, companies require a unique advantage, like advanced technology, to compete internationally against local firms that already possess location-specific benefits. Based on the market disequilibrium hypotheses, FDI is expected to be transitory, functioning as an equilibrating force among segmented markets until equilibrium is re-established and eliminated.

Factor markets, such as labour markets, typically exhibit this disequilibrium, where FDI flows from nations with high labour costs to those with low labour costs. The cost of labour is revealed to be a significant factor influencing FDI.

Theories of market power concentrate on structural imperfections, such as deviations from prices that are purely determined by the market due to the presence of monopolistic or oligopolistic characteristics.

Neoclassical Production Theory

The Neoclassical Production Theory, a significant framework in economic discourse, was formulated to clarify the roles of input components, such as capital, labour, and technology, in the creation of goods and services within an economy. Neoclassical theory, developed as an extension of classical economics in the late 19th and early 20th centuries, emphasises marginal analysis, factor substitutability, and rational behaviour in production choices.

Over the years, Nigeria's FDI inflow has varied in magnitude, predominantly targeting the oil and gas sectors but gradually expanding to manufacturing and other industrial endeavours. According to the neoclassical view, these inflows can contribute to industrial output through capital deepening, production process enhancements, and increased labour productivity.

According to UNCTAD (2023), Nigeria remains a top FDI destination in Africa, but the real industrial gains depend on how effectively this capital is absorbed into productive ventures. In line with the productivity-boosting function of capital, as suggested by the neoclassical model, the industrial sector's adoption of FDI in Nigeria has resulted in advancements in technology, innovation, and business practices.

Furthermore, Solow (1956) emphasised that sustainable long-term growth stems not only from capital accumulation but also from technological progress, an area where FDI can have a significant impact. In Nigeria, where the technological infrastructure often lags, foreign investment can bridge the gaps by introducing modern equipment, management expertise, and innovative processes.

2.3 Empirical Literature Reviews

The review of empirical literature has been conducted in line with the broad variable relationships conducted in this study.

The relationship between foreign direct investment (FDI), industrial output, and economic development has drawn considerable attention from academics and policymakers worldwide in recent years. Numerous empirical studies have examined the impact of FDI and industrial output on Nigeria's economic development separately. These studies highlight the potential of these factors to drive sustainable development, create employment opportunities, and enhance industrial capacity.

Nonetheless, a significant gap in the literature remains. Although numerous researchers have concentrated on the individual impacts of foreign direct investment and industrial output on economic growth, their combined or synergistic effects have received comparatively little attention. This means that there are only a few empirical investigations that have thoroughly examined the joint contribution of FDI and industrial output to Nigeria's economic development. This gap underscores the need for further empirical examination and integrative analysis.

The empirical review is organised into three thematic segments to offer a structured analysis of the existing literature:

Foreign Direct Investment and Economic Development

A substantial body of academic literature has examined the relationship between foreign direct investment (FDI) and economic development, yielding results that can be broadly categorised into two main groups. A considerable number of studies confirm a strong and positive connection between FDI

inflows and economic development, especially in developing nations such as Nigeria.

These scholars argue that sustainable economic growth is primarily driven by liberalising foreign investment policies, facilitating free trade, and promoting the transfer of technological know-how. The advocates contend that the influx of foreign direct investment (FDI) facilitates capital accumulation, skill acquisition, employment generation, and infrastructure development, each of which promotes sustained economic growth.

For example, Jack and Amieye (2025) emphasised that efficient FDI policies can significantly enhance economic development by increasing access to foreign capital and management expertise. In a similar vein, Bredino and Peter (2018) discovered that FDI inflows have a beneficial effect on the productive sectors, which in turn enhances Nigeria's GDP. Additional research, comprising works by Umaru, Gambo, and Pate (2015), Uchechi et al. (2022), and Njoku et al. (2024), demonstrates consistently that when effectively utilised, FDI acts as a catalyst for sustainable and inclusive economic growth.

On the other hand, several researchers dispute the widely accepted view that foreign direct investment (FDI) consistently promotes economic development. According to these researchers, FDI can hinder domestic economic growth under certain circumstances, particularly when it supplants local industries or distorts market competition.

Specifically, it has been observed that over-reliance on foreign investments and goods can lead to the marginalisation of domestic producers, as consumers and governments may prioritise foreign goods and services over locally made products. This trend may jeopardise local entrepreneurship, industrial capacity, and technical innovation, which are essential for sustainable development.

Yeboah et al. (2025), for instance, noted that FDI can promote economic dependency and lead to structural imbalances that are detrimental to domestic production. Likewise, Amade and Oyigebe (2024) argued that the arrival of foreign products often results in the displacement of local industries, which restricts the long-term advantages of FDI. According to Yaqub et al. (2013), FDI can exacerbate economic dualism, where local industries stagnate and foreign enterprises dominate the market, unless it is managed through a strategic industrial policy.

Industrial Output and Economic Development

Two primary schools of thought can be identified in the literature on the relationship between industrial output and economic development.

Some scholars argue that industrial output is crucial to and has a positive impact on economic development. As noted by Wang and Xu (2025), Odukoya (2014), Ezeabasili and Okwu (2019), and Ibitoye et al. (2022), the growth of industrial output, particularly in sectors such as health, manufacturing, and education, serves as a driving force for national development. They contend that a rise in industrial productivity not only boosts employment and income levels but also facilitates technological progress and infrastructure development, which in turn promotes broader economic growth.

Conversely, a second cohort of academics doubts that industrial output alone is a significant factor in development. For example, Adofu et al. (2015) and Kenny (2019) propose that industrial output could have a minimal or even detrimental impact on economic development, particularly in situations characterised by weak institutional frameworks or non-inclusive industrial growth. These researchers emphasise the importance of additional elements, such as financial stability, governance quality, and innovation systems, as being more crucial in shaping economic growth trajectories.

The Combined or Synergistic Effects of Foreign Direct Investment and Industrial Output

An examination of the current empirical literature indicates a notable gap. While many studies have thoroughly investigated the connection between Foreign Direct Investment (FDI) and economic development, as well as the relationship between industrial output and economic development, there has been little focus on analysing the combined or synergistic effects of both FDI and industrial output on Nigeria's economic development. This study aims to address that gap by examining the relationship

between foreign direct investment and industrial output in contributing to Nigeria's overall economic development. By employing a dual-variable approach, this research provides a more comprehensive understanding of how these two significant economic indicators simultaneously affect long-term development outcomes, thereby contributing to the expanding knowledge base of development economics in emerging markets.

III. METHODOLOGY

This study employs econometric approaches and time series data to examine the effect of foreign direct investment and Industrial Output on economic development in Nigeria. The independent variables in this study include foreign direct investment (FDI), Industrial Output (INDOUT), government expenditure (GOVEXP), Gross Fixed Capital Formation (GFCF), and economic growth, which is represented by the rate of change of real GDP, serving as a proxy for the dependent variable (economic development). All these measures are used in the study to achieve this goal.

The study uses annual time series data with 33 observations from 1989 to 2023. Thus, the data's primary sources are the Nigerian Central Bank's statistics report and the World Bank Development Indicators, 2023.

3.2 Model Specification

To illustrate the relationship between The Effect of foreign direct investment and Industrial Output on economic development in Nigeria, we refer to the model developed by Kingsley et al. (2017). In the model, the authors expressed output as a function of foreign direct investment, Industrial output, government expenditure, and other variables. When the model is adapted to the objective of this study, economic development is expressed as a function of foreign direct investment, Industrial Output, government expenditure, and the Inflation Rate. The following linear specification of the econometric model is shown in equation (1) as follows:

ECOGROW = f(FDI, INDOUT, GOVEXP, INF, GFCF) - - - (1)

ECOGROW = f(FDI, INDOUT, FDI*INDOUT GOVEXP, INF, GFCF) - (2)

Where:

ECOGROW = Economic growth: the rate of change of real GDP

FDI = Foreign Direct Investment

INDOUT= Industrial Output

GOVEXP = Government Expenditure

GFCF = Gross Fixed Capital Formation

All the variables are taken as a ratio of GDP

Equation (2) can be further expressed in the functional form as follows:

$$\text{ECOGROW}_t = \beta_0 + \beta_1 \text{FDI}_{1t} + \beta_2 \text{INDOUT}_{2t} + \beta_3 \text{GOVEXP}_{3t} + \beta_4 GFCF_{5t} + \beta_5 INF + \varepsilon_t \quad - \quad - \quad (3)$$

In the same format the effect of the interacted components of Synergistic Effects of Foreign Direct Investment and Industrial Output in equation (2) may be presented as follows:

$$\text{ECOGROW}_t = \beta_0 + \beta_1 \text{FDI}_{1t} + \beta_2 \text{INDOUT}_{2t} + \beta_3 \text{FDI} * \text{INDOUT}_{3t} + \beta_4 \text{GOVEXP}_{4t} + \beta_5 GFCF_{5t} + \varepsilon_t \quad - \quad - \quad (4)$$

Where $\beta_0, \beta_1, \beta_2, \beta_3, \beta_4 \; and \; \beta_5$ are the coefficient to be estimated and ε_t is the stochastic error term. The apriori expected signs of the coefficients are $\beta_1 > 0, \beta_2 > 0, \beta_3 > 0, \beta_4 > 0 \; and \; \beta_5 > 0$. The parameter $\beta_5 > 0$ implies a positive relationship between the dependent variable and the independent variable.

3.5. Sources of data

All the data for this study is secured from the World Development Index (WDI) 20.

Table 1 - Description and Measurement of Variables

Variable	Description and Measurement	Source
ECOGROW	Economic growth serves as the proxy for Economic development. The annual percentage growth rate of real Gross Domestic Product (GDP) is used to measure economic growth. This measure accounts for the value of	WDI

	all goods and services produced domestically, with adjustments made for inflation. It mirrors the economy's general performance.	
INDOUT	The term industrial output denotes the value added within the industrial sector, encompassing manufacturing, mining, construction, and the provision of electricity, water, and gas. Expressed as a percentage of GDP, it reflects the industrial sector's contribution to the total economy.	CBN
FDI	Foreign direct investment consists of the net inflows aimed at obtaining a lasting management interest (10% or more of voting stock) in a business operating within an African country. Appraised as a portion of GDP.	WDI
GOVEXP	The total amount of money that the central government spends on consumption, investment, and transfer payments is known as government expenditure. It is calculated as a proportion of GDP.	CBN

Source: Compiled from WDI and CBN Reports (2023)

The Analytical Framework

The Autoregressive Distributed Lag (ARDL) Model

This research study employs the Autoregressive Distributed Lag (ARDL) Bound Testing Cointegration Technique for the regression analysis of the models in the study. Pesaran et al. (2001) demonstrate that the OLS estimators of the short-run parameters are consistent with those obtained from the ARDL-based estimators. Additionally, the ARDL approach yields super-consistent long-run coefficients even in small sample sizes. Thus, once the standard errors have been modified, the normal asymptotic theory supports making valid inferences on the long-run parameters. The ARDL approach yields reliable and asymptotically regular estimates for the long-run coefficients, regardless of whether the underlying variables are integrated at I(0) or I(1). Hence, the ARDL approach permits the joint specification of a combination of non-stationary and stationary variables in the regression estimation.

The arguments for the use ARDL cointegration technique in this article are specified as follows: First, the ARDL technique can handle the analysis of variable relationship with mixed order of integration with stationarity at level [I(0)] or at first difference [I(1)] or with the combination of both features. Second, the ARDL model can also be deployed to effectively estimate a model that consists of a purely short-term sample situation where the underlying variables have no long-term cointegrating relationship. Third, the ARDL model yields a robust result for both the short-run and long-run relationships simultaneously, without sacrificing any long-run information. Since the macroeconomic variables involved in this study are expected to be non-stationary and may yield a spurious regression, a unit root test will be conducted as a prelude to implementing the ARDL model procedure. Although the ARDL model requires the stationarity pre-test on the variables to ascertain that the data does not contain a variable with an order of integration that exceeds I(1).

The ARDL Model

All variables are defined as previously stated. This study specifies the ARDL models, with model 3 analysing the impact of Foreign Direct Investment and Industrial Output on Economic Development in Nigeria.

$$\Delta ECOGROW_t = \alpha_0 + \beta_{11} FDI_{t-1} + \beta_{21} INDOUT_{t-1} + \beta_{31} GOVEXP_{t-1} + \beta_{41} GFCF_{t-1} + \beta_{51} INF_{t-1} + \sum_{i=1}^{p} \gamma_{1i}\, \Delta \mathrm{FDI}_{t-1} + \sum_{i-0}^{p} \gamma_{2i}\, \Delta INDOUT_{t-1} + \sum_{i-0}^{p} \gamma_{3i}\, GFCF_{t-1} + \sum_{i-0}^{p} \gamma_{4i}\, \Delta GOVEXP_{t-1} + \varepsilon_{1t} \quad - \quad - \quad (Model\ 5)$$

The ARDL model 4 is designed to analyse the interaction of foreign direct investment and industrial output on economic development in Nigeria.

$$\Delta \mathrm{ECOGROW}_t = \alpha_0 + \beta_{11} \mathrm{FDI}_{t-1} + \beta_{21} \mathrm{INDOUT}_{t-1} + \beta_{31} \mathrm{FDI} * \mathrm{INDOUT}_{t-1} + \beta_{41} \mathrm{GOVEXP}_{t-1} + \beta_{51} GFCF_{t-1} + \sum_{i=1}^{p} \gamma_{1i}\, \Delta \mathrm{FDI}_{t-1} + \sum_{i-0}^{p} \gamma_{2i}\, \Delta \mathrm{INDOUT}_{t-1} + \sum_{i-0}^{p} \gamma_{3i}\, \Delta F\mathrm{DI} * \mathrm{INDOUT}_{t-1} + \sum_{i-0}^{p} \gamma_{4i}\, \mathrm{GOVEXP}_{t-1} + \sum_{i-0}^{p} \gamma_{5i}\, \Delta GFCF_{t-1} + + \varepsilon_{1t} \quad - \quad - \quad (Model\ 6)$$

Where Δ is the difference operator and α_0 represent the drift component. The coefficients $(\beta_{11} - \beta_{51})$ shows the long-run relationship. Also, the part of the model with the summation sign $(\gamma_{1i} - \gamma_{5i}$ presents the short-run dynamics of the model. The part of the model with ε_{1t} comprises the serially uncorrelated disturbance term with zero mean and constant variance.

The ARDL approach adopts a bound testing procedure to confirm the existence of a long run cointegrating equilibrium relationship among the variables as developed by Pesaran et al. (2001). The test is configured to rely on the F-statistic value in a Wald test utilising a non-standard distribution. For a decision to be based on the test outcome, a null hypothesis of no cointegration among the study variables $(\gamma_{1i} = \gamma_{2i} = \gamma_{3i} = \gamma_{4i} = \gamma_{5i} = 0)$ is accepted, if the value of the F-statistic is less than the bound critical value, depending on the chosen level of significance. On the other hand, the null hypothesis of no cointegration is rejected if the value of the calculated F-statistic is greater than the bound critical value based on the desired level of significance. When the null hypothesis is rejected, there is a conclusion that a long-run cointegrating equilibrium relationship exists among the variables. However, when the value of the computed F-statistic falls within the lower and upper bounds of the critical table value, the decision on whether the variables have a long-run cointegrating relationship becomes inconclusive. When the value of the F-statistic is less than the critical value and variables have no long-run cointegrating relationship, the investigation ends with the ARDL test for short-run analysis, which involves the execution of the error correction (ECT) model.

3.4. Estimation Procedure

The estimation procedure for this study involves a five-step procedure. The first step is the unit root test, which involves estimating the order of integration using the ADF-Fisher Chi-square statistic. The second step is the ARDL bound cointegration test. The third step involves conducting an impact analysis using the regression procedure of the ARDL approach to establish the short-run and long-run relationships among the study variables. The final step involves model diagnostics tests to determine the reliability of the model, based on tests for serial correlation, heteroscedasticity, normality, omitted variables, and stability.

IV. RESULTS AND DISCUSSION

4.0 Empirical Results and Discussion

4.1 Descriptive Statistics

Descriptive statistics for the study "The Effect of Foreign Direct Investment and Industrial Output on Economic Development in Nigeria" are shown in Table 1. The mean and median, which are measures of central tendency, provide insights into how the data series is distributed.

With a mean of 3.041951 and a median of 3.65 for Economic Growth (ECOGROW), the data appears to be slightly left-skewed. The observation is bolstered by the negative skewness value of -0.81893, which suggests that some extremely low values are pulling the mean downwards.

For Industrial Output (INOUT), the mean value of 29.65408 exceeds the median value of 28.70244, suggesting a right-skewed distribution that may be affected by several high outliers. The average value of Foreign Direct Investment (FDI) is 1.269024, which is greater than the median of 1.09, suggesting a mild right skewness due to the impact of larger values in the dataset. The range, which is determined by subtracting the minimum value from the maximum value, provides insight into the extent of variability. ECOGROW shows considerable variation, with values spanning from -13.13 to 18.17313, indicating that economic growth experienced substantial fluctuations during the observed timeframe.

The normality of the data distributions was evaluated using the Jarque-Bera (JB) test. The JB probabilities for variables like ECOGROW, GFCF, and FDI are below 0.05, which results in rejecting the null hypothesis of normality. On the other hand, INOUT and GOV_EXPD showed JB probabilities exceeding 0.05, suggesting that their data distributions do not significantly differ from normality. As a result, we do not reject the null hypothesis of normal distribution for thesevariables.

These descriptive statistics offer essential insights into the dataset's structure and distribution, which are vital for guiding further econometric analysis.

Table 1: Descriptive Statistics

	ECOGROW	INOUT	GFCF	GOV_EXPD	FDI
Mean	3.041951	29.65408	35.63058	3.876987	1.269024
Median	3.65	28.70244	33.10736	2.106435	1.09
Maximum	15.33	39.24509	89.38613	9.44834	4.28
Minimum	-13.13	18.17313	14.16873	0.911235	0.14
Std. Dev.	5.385503	5.269623	18.96943	2.874733	0.940425
Skewness	-0.81893	-0.12953	1.087484	0.700533	0.927742
Kurtosis	4.620557	2.172529	3.924531	2.017585	3.740716
Jarque-Bera	9.069132	1.284368	9.541464	5.002214	6.818778
Probability	0.010732	0.526142	0.008474	0.081994	0.033061
Sum	124.72	1215.817	1460.854	158.9565	52.03
Sum Sq. Dev.	1160.146	1110.757	14393.57	330.5636	35.37596
Observations	41	41	41	41	41

Source: Author`s Computation (2025)

4.2 Correlation Matrix of Regressors

Table 2 presents the correlation matrix results, detailing the nature and strength of linear relationships between the dependent variable (Economic Growth, ECOGROW) and the independent variables analysed in this study.

ECOGROW and Industrial Output (INOUT) have a correlation coefficient of -0.37357, which reflects a moderate negative relationship. This suggests that during the period under study, there is a correlation between rising industrial output and declining economic growth. This might seem paradoxical, but it could be due to structural inefficiencies, underutilised capacity, or a lack of correlation between industrial performance and macroeconomic outcomes.

Conversely, a positive and statistically significant correlation exists between ECOGROW and Foreign Direct Investment (FDI), evidenced by a correlation coefficient of 0.365528. This suggests that in Nigeria, foreign direct investment has a positive impact on economic growth. Augmented foreign investment is expected to enhance capital formation, introduce innovative technologies, and improve the components of productive capacity crucial for the economy's sustainability and long-term growth.

It is noteworthy that FDI shows a negative correlation with INOUT, having a coefficient of -0.17364. This relationship, however, lacks statistical significance because the associated p-value exceeds the conventional 5% significance threshold. This could suggest that foreign investment is not directly resulting in enhancements in industrial output, potentially due to sectoral misalignment or inefficiencies in directing investments towards productive industrial endeavours. Furthermore, Government Expenditure (GOV_EXPD) exhibits a positive correlation with economic growth, as evidenced by a correlation coefficient of 0.223781. This relationship, albeit not strong, indicates that increased government expenditure could strengthen economic activity and stimulate aggregate demand, therefore fostering growth.

Conversely, the relationship between Gross Fixed Capital Formation (GFCF) and economic growth is characterised by a robust inverse correlation, as evidenced by a coefficient of -0.62375. This inverse correlation may indicate problems such as the misallocation of capital, ineffective public investment, or lagging effects of infrastructure initiatives on productivity. This suggests that a critical assessment of capital investment strategies is necessary to ensure their alignment with growth objectives.

Table 2: Correlation Matrix

	ECOGROW	INOUT	GFCF	GOV_EXPD	FDI
ECOGROW	1				
INOUT	-0.37357	1			
GFCF	-0.62375	0.762399	1		
GOV_EXPD	0.223781	-0.6565	-0.6551	1	
FDI	0.365528	-0.17364	-0.2413	0.200076	1

Source: Author`s Computation (2025)

4.3 Analysis of Unit Root Test

The findings of the unit root tests performed to assess the stationarity characteristics of the time series data utilised in this research are shown in Table 3. As the use of non-stationary variables in regression models can lead to spurious relationships and misleading conclusions, testing for stationarity is a vital initial step in time series analysis.
For this purpose, the Augmented Dickey-Fuller (ADF) test was used. The test outcomes were analysed using the t-statistics, critical values, and probability values. The unit root test results indicate that variables like Economic Growth (ECOGROW), Gross Fixed Capital Formation (GFCF), and Foreign Direct Investment (FDI) are stationary at the level, represented as I(0).
On the other hand, factors like Industrial Output (INOUT) and Government Expenditure (GOV_EXPD) exhibit non-stationarity at the level but become stationary after first differencing, indicating they are integrated of order one, represented as I(1).

The choice of the Autoregressive Distributed Lag (ARDL) model as the suitable estimation technique for this study is corroborated by the mixed order of integration, some variables being I(0) and others I(1). The ARDL approach is well-suited for dealing with series that have different orders of integration, as long as none of the variables is integrated of order two, I(2).

Table 3: Augmented Dickey Fuller Unit Root Test Results and Interpretation

	LEVEL			FIRST DIFFERENCE			
Variables	T-Statistics	Critical Values 5%	P-Values	T-Statistics	Critical Values 5%	P-Values	Order of Integration
ECOGROW	3.244 42	2.93 5001	0.02 44	------	------	------	I(0)
INOUT	-1.6 67 09 3	-2.93 694	0.43 98	-6.2 12 57 8	-2.93 694	0.00 0	I(1)
GFCF	-3.7 76 13 5	-2.93 694	0.00 64	------	------	------	I(0)
GOVEXP	-1.4 68 62 1	-2.93 694	0.53 49	-6.5 96 95 3	-2.93 89	0.00 0	I(1)
FDI	-3.8 23 35 1	-2.93 315	0.00 55	------	------	------	I(0)

Source: Author`s Computation (2025)

Note: * indicates significance at 5 per cent; 95% critical values are reported in parentheses below each test value.

4.4 Lag Order Selection

The lag order selection process outlines the procedure for selecting the lag that is most recommended by various criteria. The results of the lag selection tests for this study are presented in Table 4. The results indicate that the first lag is the most recommended, based on various statistical assessments (LR, FPE, AIC, and HQ). Therefore, this study adopts the third lag across multiple estimation processes.

Table 4. Lag Selection for the Model

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-479 .30 5	NA	8085 6.06	25.48 975	25.70 522	25.56 641
1	-393 .29 8	144.8 542*	3303. 643*	22.27 885*	23.57 168*	22.73 882*
2	-369 .68 9	33.55 038	3819. 301	22.35 203	24.72 222	23.19 532
3	-345 .83 5	27.62 006	4925. 379	22.41 236	25.85 991	23.63 897

Source: Author`s Computation (2025)

ARDL Cointegration and Bound Test of the Effect of Foreign Direct Investment and Industrial Output on Economic Development in Nigeria.

Because the F-statistic for the equation is greater than the I(0) and I(1) bounds, the bound co-integration test result (Table 5) confirmed the existence of a long-run equilibrium relationship between the independent variables, Foreign Direct Investment, Industrial Output, Gross fixed capital formation and Government Expenditure and the dependent variable, Economic development. Table 5 also provides a summary of the F-statistic results and predicted boundaries. Economic development, the dependent variable, and other independent variables appear to have a strong co-integration relationship, as indicated by the data-driven F-statistic value of 5.455236. It surpasses the lower and upper bound critical values of 4.443 and 3.037, respectively, at the 5% significance level.

Table 5: ARDL Cointegration and Bound Test

	10%		5%	
Sample Size	I(0)	I(1)	I(0)	I(1)
			F-Statistic: 5.455236	

35	2.508	3.763	3.037	4.443
40	2.483	3.708	2.962	4.338
Asymptotic	2.26	3.35	2.62	3.79

Source: Author`s Computation (2025

ARDL Short-run Analysis (and ECT) Effects of Foreign Direct Investment and Industrial Output on Economic Development in Nigeria.

The short-run ARDL results of the analysis evaluating the effects of Foreign Direct Investment and Industrial Output on economic development in Nigeria are presented in Table 6. An analysis of the impact of INOUT and FDI on ECOGROW indicates that although it is positive and significant in the first lag, it is not significant in the application. Similarly, GFCF and GOVEXPD have a significant negative impact on ECOGROW. The combined interaction of FDI*INOUT shows a negative impact on ECOGROW in the short run.

Table 6: ARDL Cointegration

Dependent Variable: D(ECOGROW)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
ECOGROW(-1) *	-0.82661	0.152979	-5.40346	0
INOUT**	0.302506	0.23985	1.261232	0.2163
FDI (-1)	8.107923	3.919542	2.06859	0.0467
GFCF**	-0.16181	0.065782	-2.4598	0.0195
GOV_EXPD**	-0.5577	0.295524	-1.88715	0.0682
FDI*INOUT**	-0.20698	0.128419	-1.61176	0.1168
C	-0.96262	6.733767	-0.14295	0.8872
D(FDI)	6.643273	4.145587	1.602493	0.1189
R-squared	0.557268	Mean dependent var		0.4195
Adjusted R-squared	0.460421	S.D. dependent var		4.773 31
S.E. of regression	3.506285	Akaike info criterion		5.523847
Sum squared resid	393.409	Schwarz criterion		5.861623
Log likelihood	-102.477	Hannan-Quinn criter.		5.645977
F-statistic	5.754081	Durbin-Watson stat		1.896699
Prob(F-statistic)	0.000227			
ARDL Error Correction Regression				
COINTEQ*	-0.82661	0.134367	-6.15189	0
D(FDI)	6.643273	1.434371	4.63149	0
Diagnostics				
Heteroskedasticity	F-Stat	2.5243	Prob.	0.0347
Serial Correlation	F-Stat	1.7380	Prob.	0.1931

Source: Author`s Computation (2025)

The results of the ARDL model estimation yield significant insights into the relationship between economic growth (ECOGROW) and the explanatory variables. Industrial Output (INOUT) exhibits a positive effect on economic growth, indicated by a coefficient of 0.302506 and a p-value of 0.2163; nevertheless, this effect is statistically insignificant. This indicates that although industrial output positively contributes to economic growth, its impact is not sufficiently robust to be deemed statistically significant inside the model.

On the contrary, the effect of Foreign Direct Investment (FDI) on economic growth is both positive

and statistically significant, marked by a coefficient of 8.107923 and a p-value of 0.0467. Hence, it can be concluded that a greater inflow of FDI enhances economic performance, likely due to improved capital formation, technology transfer, and productivity.

The error correction term (ECT) is negative, with an absolute value less than one, and is statistically significant, confirming the existence of a long-run equilibrium relationship among the variables. In particular, the ECT coefficient indicates that approximately 83.6% of the disequilibrium in economic growth is rectified each year, underscoring a relatively rapid adjustment speed back to long-run equilibrium following any short-term shocks.

With an Adjusted R-squared value of 0.46, it can be seen that the independent variables in the model account for approximately 46% of the variation in economic growth, indicating a moderate level of explanatory power. Moreover, the F-statistic of 5.754081 and a probability value of 0.0002 affirm the statistical significance of the overall model, indicating that the combined effect of the explanatory variables on economic growth is not attributable to random chance.

Diagnostic assessments corroborate the model's reliability. With a value of 1.8967, the Durbin-Watson statistic indicates that there is no autocorrelation present in the residuals. Further evidence comes from the Breusch-Godfrey Serial Correlation LM Test, which has an F-statistic of 1.7380 and a p-value of 0.1931. This suggests that we do not reject the null hypothesis of no serial correlation. In addition, the Breusch-Pagan-Godfrey heteroskedasticity test yields an F-statistic of 2.5243 and a p-value of 0.0347, indicating that the model can be considered free from heteroskedasticity at the 5% significance level.

ARDL Long-run Analysis Effects of Foreign Direct Investment and Industrial Output on Economic Development in Nigeria.

Table 7 presents the long-run ARDL results of the analysis evaluating the effects of foreign direct investment and Industrial Output on economic development in Nigeria. Foreign direct investment and industrial output have a positive impact in the long run, with coefficients of 9.809 and 0.366, respectively. But industrial Output is not significant (0.2136), and foreign direct investment is significant (0.0461). In contrast, gross fixed capital formation and government expenditure are negative and significant, with the coefficients of -0.19575 and -0.67468, respectively. Their Probability values are 0.0058 and 0.06, respectively.

Table 7: ARDL Cointegration

Dependent Variable: (ECOGROW)				
Variable *	Coefficient	Std. Error	t-Statistic	Prob.
INOUT	0.365959	0.288701	1.267606	0.2136
FDI(-1)	9.808611	4.738304	2.070068	0.0461
GFCF	-0.19575	0.06652	-2.94277	0.0058
GOV_EXPD	-0.67468	0.346799	-1.94544	0.06
FDI*INOUT	-0.2504	0.157951	-1.58527	0.1222
C	-1.16454	8.165524	-0.14262	0.8874
Note: * Coefficients derived from the CEC regression.				

Source: Author`s Computation (2025)

CE = ECOGROW (-1) - (0.365959*INOUT + 9.808611*FDI(-1) - 0.195752*GFCF - 0.674677*GOV_EXPD - 0.250395*FDI*INOUT - 1.164537)

ARDL long-run Interacted Effect of Foreign Direct Investment and Industrial Output on Economic Development.

The test result evaluating the moderating (interaction) effect of Foreign Direct Investment (FDI) and Industrial Output (INOUT) on Economic Growth (ECOGROW) shows a coefficient of -0.25, which is negative and statistically insignificant, with a p-value of 0.1222. This suggests that when the interaction

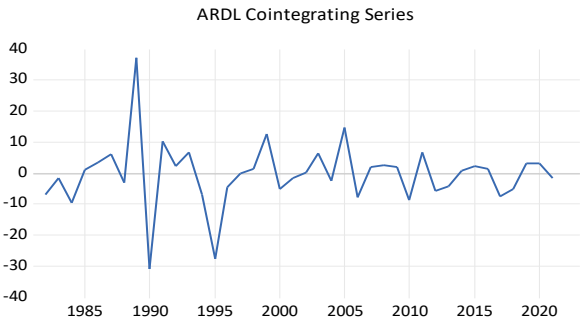
between FDI and INOUT rises by 1%, economic growth diminishes by 0.25%. However, this effect does not achieve statistical significance at the 5% level.

With the coefficient being negative, it appears that the joint effect of industrial output and foreign direct investment could be one of slowing economic growth. This may indicate structural misalignments, inefficiencies in investment allocation, or a lack of synergy between foreign investment inflows and domestic industrial performance.

The p-value of 0.1222 suggests that the interaction term does not possess adequate explanatory power to characterise the long-term relationship between these variables and economic growth. This suggests that while foreign direct investment (FDI) and industrial output may individually impact growth, their combined effect does not substantially enhance the model's ability to predict long-term economic development outcomes in Nigeria.

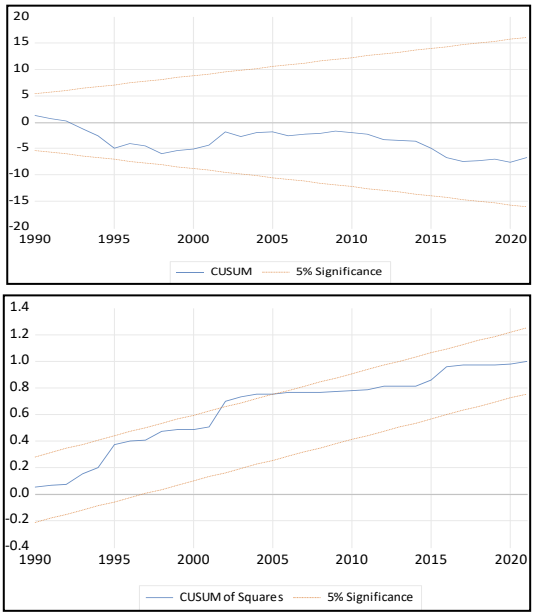
This finding underscores the necessity of ensuring policy alignment, sector coordination, and the establishment of institutional frameworks that can promote a more effective and productive interaction between external investment and domestic industrial capacity.

Cointegrating Series Chart: Foreign Direct Investment and Industrial Output on Economic Development.



CUSUM Stability Test and CUSUM Squared Test for Foreign Direct Investment and Industrial Output on Economic Development.

Figures 1 and 2 display the results of the CUSUM Stability Test and CUSUM squared test on the recursive estimates for Foreign Direct Investment and Industrial Output on Economic Development.



CONCLUSION AND RECOMMENDATIONS

This study examines the impact of Foreign Direct Investment and Industrial Output on Economic Development in Nigeria, while also considering other closely related exogenous variables, including gross fixed capital formation and government expenditure. The study specifically examined the interactive effect of Foreign Direct Investment and Industrial Output on economic development in Nigeria. The ARDL approach was employed for analysing the variables under study, spanning the period from 1981 to 2023. Based on the analysis conducted using the ARDL approach, the study yielded several critical findings. The signs and magnitudes of the coefficients from the analyses form the basis for the study's findings and conclusions.

The study's first significant finding pertains to the connection between Foreign Direct Investment (FDI) and Economic Development in Nigeria. The analyses conducted for both the short and long terms show that FDI has a positive impact on economic development, with some degree of significance. This suggests that while FDI plays a role in Nigeria's economic growth and development, its impact is limited when considering statistical strength. This finding is consistent with earlier empirical

research that has underscored the beneficial impact of FDI on development outcomes in Nigeria. Research conducted by Umaru, Gambo, and Pate (2015), Uchechi et al. (2022), and Njoku et al. (2024) supports the perspective that foreign capital inflows can enhance economic performance by generating jobs, accumulating capital, facilitating technology transfer, and facilitating integration into global markets.

Nonetheless, the research recognises that FDI can have twofold effects. It can, on one hand, stimulate growth; on the other hand, it can marginalise domestic producers if foreign goods and services become dominant in the market. This dominance often results in a preference for imported goods among consumers and governments, which undermines local entrepreneurship, diminishes domestic productive capacity, and stifles innovation, essential elements of sustainable and inclusive development.

The second significant discovery of the research examines how Industrial Output (INOUT) impacts Nigeria's economic development. The empirical findings suggest that the impact of industrial output on economic development is positive in both the short and long term, though it lacks statistical significance. This suggests that although industrial output generally adds to growth, its influence is not significant enough to be deemed impactful within the study's statistical framework.

This discovery is consistent with existing literature that identifies a positive correlation between industrial productivity and economic development. Research by Wang and Xu (2025), Odukoya (2014), Ezeabasili and Okwu (2019), and Ibitoye et al. (2022) suggests that increased industrial activity contributes to job creation, higher income levels, technological advancements, and infrastructure development, all of which are crucial for sustainable economic growth.

The insignificant statistical effect identified in this study suggests that Nigeria's industrial sector may not be currently operating at its optimal potential to generate significant development outcomes. This may be due to factors such as a lack of infrastructure, low value addition, reliance on imported inputs, and erratic industrial policies.

The study's final finding relates to how Foreign Direct Investment (FDI) and Industrial Output (IO) interactively (in a moderated manner) affect Economic Development in Nigeria. The findings show that the interaction's impact is negative and statistically insignificant in both the short term and long term. This implies that the cumulative effect of FDI and industrial output does not play a significant or beneficial role in economic development, whether in the short term or over the long term.

The study concludes that the moderated relationship between foreign investment and industrial output has a discouraging effect on economic development; however, it lacks sufficient strength or statistical significance to influence the dependent variable meaningfully. The absence of a positive and significant interaction effect may suggest a misalignment between foreign investment priorities and industrial sector performance, or it could indicate that structural and institutional bottlenecks impede the synergy between external capital inflows and domestic production capacity.

This result highlights the necessity for policy measures that can more effectively align foreign investments with local industrial strategies, guaranteeing that the influx of foreign capital is utilised to enhance domestic industrial growth and, consequently, promote sustainable economic development.

Consequently, the policy recommendations in this study are based on the analysis and findings.

First and foremost, the government should aim to attract foreign direct investment into productive areas, such as manufacturing, agriculture, and renewable energy, where foreign capital can complement local initiatives and foster industrial growth without displacing domestic producers. Bolster Local Content Policies; It is necessary to strengthen and implement local content regulations that guarantee foreign investors procure inputs locally, utilise local labour, and collaborate with domestic companies. Support and Strengthen Domestic Industries.

Secondly, the Nigerian government should reassess and properly implement the Nigerian Industrial Revolution Plan (NIRP) along with associated

policies, ensuring that industrial growth is driven by strategic planning, investment, and effective oversight.

To boost productivity, reduce production costs, and attract local and international investors to the industrial sector, it is crucial to invest in power supply systems, transport infrastructure, and industrial clusters.

The last recommendation based on the last findings is that the lack of meaningful interaction between FDI and industrial output indicates a need for improved integration, planning, and alignment. Nigeria can transform potential synergy into tangible development outcomes by restructuring the policy environment to promote complementarity rather than disconnection.

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