

Institutional Sequencing: Prioritizing Sectoral Performance to Unlock FDI Gains of Governance Reforms in Nigeria's Oil and Gas Industry

Lawal-Arogundade, Samod¹, Majekodunmi Waheed Oladipo^{2*} & Bakare, I.A.O³

^{1,2,3}Department of Economics, Faculty of Social Sciences, Lagos State University, Ojo, Lagos, Nigeria.

*Correspondence: Majekodunmi Waheed Oladipo, +2348036945065, majeesky@gmail.com

ARTICLE INFORMATION	ABSTRACT
Article history: Published: August 2026 Keywords: Institutional Sequencing Sectoral Performance FDI Governance Oil and Gas Investment Governance Index (OGIGI) JEL Classifications: F21, Q32, Q17, P48.	This paper investigates the "reform paradox" in Nigeria's oil and gas industry, where landmark legislations like the Petroleum Industry Act (2021) have yet to fully catalyze the desired foreign direct investment (FDI) despite the sector's strategic role in providing over 80% of government revenue. Drawing on a dual-theoretic integration of Institutional Quality Theory and the Eclectic (OLI) Paradigm, the study explores whether governance complements sectoral economic performance to shape FDI inflows. Adopting an ex post facto quantitative design, the research utilizes the Threshold Autoregressive Distributed Lag (TAR-ARDL) approach and Granger causality tests to analyze the regime-dependent nature of governance effectiveness. A central contribution of this work is the introduction of a novel, monetary-based Oil and Gas Investment Governance Index (OGIGI), which measures the efficiency of converting imported capital into productive upstream investment, offering a more objective alternative to traditional perception-based indices. The empirical results reveal a complex conditional complementarity: while isolated governance reforms exhibit a negative long-run impact on FDI ($\beta = -5.625$)—likely due to initial regulatory compliance costs—the interaction between governance and sectoral output is positive and highly significant ($\beta = 5.551$). This demonstrates that governance acts as a conditional amplifier, enhancing the sensitivity of FDI to sectoral performance. Furthermore, bi-directional causality between the governance-output interaction and FDI underscores a rapid short-run feedback loop. The study concludes that FDI attractiveness in rentier states is regime-dependent and explicitly argues for institutional sequencing. Policy efforts must prioritize stabilizing sectoral productivity and production reliability alongside or prior to broad governance overhauls to effectively "unlock" sustainable FDI gains and avoid the growth tragedies typical of poorly sequenced reforms in resource-dependent economies.

1. Introduction

Nigeria's oil and gas industry holds strategic importance as the lifeblood of the Nigerian economy, driving nearly 80% government revenue, 90-95% of foreign exchange earnings since 1970 (Iledare, 2007), employment, export earnings (reaching \$48.17 billion in 2025 from the initial \$45.51 billion in 2024), industrialization, investment flows and GDP growth, with oil GDP averaging 5-9% pre- and post-COVID. As a strategic sector, Nigeria's oil and gas industry needs to attract quality FDI for capital inflows, technology transfer, and economic growth. Attracting quality FDI into Nigeria's oil and gas industry under strong institutional frameworks ensures that foreign capital is anchored locally. High-quality investors are more likely to comply with transparent tax regimes, reinvest profits into the local economy, and operate under governance standards that prevent the siphoning of resource wealth (Bhujabal et al., 2024). However, despite the strategic roles of the oil and gas industry in Nigeria's economic ecosystem, and the implementation of landmark legislation such as the recent Petroleum Industry Act (2021) designed to ensure institutional unbundling and regulatory clarity in the governance of the industry, Nigeria's oil and gas industry is still enmeshed in reform paradox as existing evidence suggests that these legislations have not made the desired impact in the industry due to misalignment of interest between political actors and stakeholders, host community's resistance, and transitional implementation challenges (Omokaro et al, 2025). Disturbingly, the sector's contribution to Nigeria's economic performance (e.g., revenue generation, share in real GDP, export earnings, etc.) has slumped in recent years, attributed to a wide array of challenges spanning institutional, structural, economic, and technical issues. The oil and gas industry's underperformance pulls down Nigeria's GDP growth due to its reduced contribution to national output, among others (NESG, 2022).

Furthermore, notwithstanding the institutional unbundling meant to address structural conflicts of interest, acting simultaneously as a commercial partner, a policy advocate, and an informal regulator, Conflicts and regulatory overlap have further been cited by Dike, Ehie & Okachi-Dike (2023) as a key impediment to PIA (2021)'s success story. Moreover, the PIA (2021) has not effectively resolved the perennial governance problems in the sector as corruption still dominates the industry value chain, oil theft and revenue leakages result in billions lost annually and elite dominance and capture and weak accountability structures dampen the efficiency of governance mechanisms in the sector. These endemic governance issues have led to the proliferation of transaction costs, operational risks and uncertainty (Majekodunmi, 2026).

Conventional FDI and governance theories assume a linear, homogenous and positive relationship between governance and FDI across sectors and countries. However, this assumption ignores the possibility that the impact of FDI may vary from sector to sector or country to country based on structural and institutional conditions, especially the quality of governance. Even though some studies introduced governance variables as control variables in their econometric models, this inclusion does not position governance as a central mechanism or conditioning factor, thereby underexplaining the true role of governance in shaping economic outcomes via the FDI mechanism. Arising from this loophole, the interactive, complementary and mediating roles of governance in the FDI-economic performance nexus remain insufficiently examined. Going by this fundamental empirical loophole, the interactive, complementary and mediating roles of governance in the FDI-economic performance nexus remain insufficiently examined.

Arising from the foregoing, this paper's objective is to establish whether governance complements the oil and gas industry's sectoral economic performance to shape FDI inflow into the sector, that is, to establish the regime-dependent nature of governance effectiveness in attracting capital, utilizing the Threshold ARDL (TAR) approach combined with mediation analysis. The paper is organized into eight sections. Following the introduction, section 2 critically examines the theoretical framework to situate the theoretical basis of the discourse, while justifying the dual-theoretic approach adopted for the study. Section 3 is centered on a review of existing empirical studies related to the study with a view to identifying the research gap the present study seeks to fill. Research methodology is highlighted in Section 4, while the results of the empirical estimation of the models are presented and interpreted in Section 5. Discussion of findings is the kernel of Section 6. The conclusion is presented in Section 7 and the paper closes with policy implications and recommendations in Section 8.

2. Theoretical Framework

2.1 Institutional Quality Theory

The institutional quality theory has its foundation in new institutional economics (North, 1990; Acemoglu, Johnson & Robinson, 2001) and it stresses that governance institutions are mediating channels for determining whether resources become a curse or blessing (Acemoglu & Robinson, 2012).

In its basic form, the theory contends that the primary driver of a country's economic performance and developmental outcomes is the quality of its institutions. This theoretical perspective suggests that the way and manner a country is governed is far more crucial to its long-term prosperity or stagnation than its available natural resources or physical capital alone. North (1990) defines institutions as "the rules of the game" in a society. He maintained that institutions provide the incentive structure of an economy. He further argues that those structures shape the direction of economic change as they evolve. This implies that economic performance, especially FDI outcomes, is primarily determined by the quality and enforcement of institutions (e.g. rule of law, property rights, contract enforcement, etc) rather than resource endowments alone. Thus, governance quality in Nigeria's oil sector directly affects investor confidence and risk perception.

More significantly, the institutional quality theory is relevant to this discourse from several perspectives. From an FDI perspective, the theory clearly explains why it is governance quality and institutional effectiveness that determine FDI inflows into resource-rich economies, and not merely natural resource endowment. In Nigeria, persistent governance challenges have historically raised transaction costs and investment risks in the oil and gas sector. By specially emphasizing institutional quality, the theory clarifies why MNCs evaluate not only geological prospects but also several key governance indices before committing capital.

Also, the institutional quality theory is relevant to the current research because it aligns properly with the study's sector-specific focus. A unique feature of the oil and gas industry is its vulnerability to governance failures due to its rent-intensive nature, technical complexity, and strategic importance. Thus, the theory highlights how weak regulatory oversight and poor governance can distort incentives, encourage corruption and rent-seeking, and erode investor confidence, which ultimately undermines both FDI inflows and sectoral performance. This makes the theory particularly suited to analyzing Nigeria's oil and gas industry, where governance shortcomings remain a critical policy constraint.

2.2 Eclectic/OLI Paradigm

The Location Theory, commonly referred to as the Ownership, Location and Internalization Paradigm (OLI Framework hereinafter) or the Eclectic Paradigm, is credited to Dunning (1977), with key refinements in 1980, 1988, 1993, 2000 and 2001. The theory emerged in response to several economic, theoretical, and global business factors, one of which is that institutional quality theory overemphasized the role of governance institutions with its domestic, state-centric focus, while relegating firm-level strategies to the background (Narula & Dunning, 2000).

The fundamental argument of the eclectic/OLI paradigm is that the level and structure of a firm's foreign value-adding activities will depend on satisfying three conditions: (i) unique and sustainable ownership of specific advantages compared to other firms (Ownership Advantages – "O"); (ii) the extent to which the company perceives it is useful to add to its O advantages rather than to sell them to other foreign firms (Internalization Advantages – "I"); and (iii) the extent to which companies are interested in creating, accessing or utilizing their "O" advantages in a foreign location (Location Advantages – "L"). The theory further argues that the combination of these three classes of advantages can be used to analyze the determinants of FDI from the perspectives of location endowments, the level of control over foreign investment, and the types of ownership advantages firms must possess and/or develop to successfully engage in international production.

In view of its key expositions, the OLI/Eclectic is considered the most powerful theoretical framework for analysing FDI, governance and economic performance in Africa's oil and gas industry (Dunning, 1993; Jenkins & Thomas, 2002; Asiedu, 2004; Asiedu & Lien, 2011, Ezeoha & Cattaneo, 2012, etc). The novelty of the eclectic/OLI paradigm could be attributed to its unique feature of simultaneously integrating firm-level competencies (Ownership), country/sector context (Location) and the choice of governance/entry mode (Internalization), which are the three levels that the level and direction of interaction between governance and FDI to produce economic performance. Also, the theory is relevant in the context of this paper because FDI inflows in the oil

and gas sector is influenced by resource-seeking (location) plus MNC's ownership factors (advanced offshore technology, managerial know-how, etc.), and internalization factors, which explain why international oil companies prefer long-term contractual arrangements such as JVs, PSCs or wholly-owned projects rather than licensing.

Particularly more relevant in the context of this study is the eclectic/OLI paradigm's complementarity with other theoretical perspectives. One of the novelties of the OLI paradigm is its thoroughness as it systematically analyses the key factors that drive investment decisions of MNCs in a resource sector. The theory represents a standout approach in its simultaneous consideration of firm-specific capabilities, host country characteristics, and strategic organizational choices. This unique feature allows integration with complementary theories. Meyer (2009) suggested an institution-based view of FDI that merges institutional theory with the OLI framework. He contended that location advantages and the choice of entry mode are highly influenced by the quality of institutions, especially in transition and developing economies.

2.3 Dual-Theoretic Integration

To put the theoretical framework for this study in a proper perspective, the study adopts a combination of the institutional quality theory and the eclectic/OLI paradigm as the underlying theoretical framework. Peng (2003, 2009) provided a basis for this theoretical integration as he argued that, in emerging economies, institutional frameworks often override traditional OLI considerations in determining FDI success and, therefore, the OLI framework should be combined with institutional quality theory for greater theoretical flexibility. The argument in favour of the OLI institutional framework has also been advanced by Cuervo-Cazurra & Genc (2008, 2011), who argued that home and host country institutional quality shape FDI patterns. They further argued that weak and/or ineffective institutions create both constraints and opportunities for MNCs, thereby necessitating an integrated OLI-institutional framework to explain foreign investment in high-corruption environments.

Taking the lead from the perspectives above, this study chooses theoretical flexibility by integrating the eclectic/OLI paradigm with the institutional quality theory to strengthen the analytical rigour of the study, while maintaining coherence through the OLI organizing frameworks. The two theories are fused as the theoretical groundwork for this study since the multifarious governance challenges that have perennially beset Nigeria's oil and gas industry (corruption, regulatory unpredictability, policy inconsistency, institutional weakness, insecurity, militancy and vandalism, etc.) directly affect location advantages and thus FDI attractiveness. The OLI paradigm alone is not all-inclusive in the context of Nigeria's oil and gas sector because it wrongly assumes that the institutional environment is as static as location advantages, ignoring how FDI outcomes and economic performance are shaped by the dynamic nature of institutional quality.

Accordingly, integrating institutional quality theory with the OLI paradigm addresses this gap by revealing how governance structure mediates the relationship between FDI and economic performance in Nigeria's oil and gas industry. The fusion is theoretically robust because institutional quality acts as a conditioning variable that determines whether the OLI advantages result in quality FDI and positive economic performance. Moreover, the fusion is methodologically powerful as it allows a careful examination of both the determinants of FDI and the mechanism (institutional quality) through which FDI shapes economic performance, thereby offering a complete causal chain from investment decisions to developmental outcomes. This approach offers policy-relevant and evidence-based insights on simultaneously attracting quality FDI and strengthening the governance structure to ensure that FDI translates into all-inclusive economic benefits.

3. Review of Empirical Literature

Scholars have sought to untangle the intricate relationship between governance, institutional frameworks, and the economic outcomes of the resource sector and the quest has generated a vast body of empirical literature. Early scholarship frequently treated institutions as a homogenous, aggregate variable, often concluding that a generalized lack of strong governance inevitably triggers a "resource curse" that deters high-quality FDI (Stevens & Dietsche, 2008). However, contemporary empirical inquiries have increasingly challenged this monolithic view, shifting the focus from broad institutional quality to the specific dynamics of institutional sequencing: the deliberate ordering of governance reforms to maximize economic outcomes. Evidence has shown that prioritizing sectoral performance (targeted regulatory clarity, operational efficiency, and contract enforcement) within the host industry is a sine qua non to unlock the broader benefits of macroeconomic governance reforms and attract sustainable FDI (Brunnschweiler & Bulte, 2008). This section attempts to review the progression of these empirical debates, critically examining the global and domestic evidence on institutional quality, investor behavior, and the strategic necessity of sequencing reforms within the petroleum sector.

A study by Bonnie et al. (2012) has found a significant nexus between institutional quality and FDI to reinforce theoretical postulation. The authors examine the effect of the institutional quality of 164 countries from 1996 to 2006 on FDI levels and volatility, utilizing panel data using OLS regression and using econometric models appropriate for panels. Empirical findings show that good institutional quality matters to FDI and further provide evidence that institutional quality has a positive and significant effect on FDI. The authors concluded that if there are institutional determinants of FDI volatility, and if such volatility is linked to lower economic growth, then the usual policy prescription of attracting FDI into countries by offering the "correct" macroeconomic environment would be ineffective without a commensurate effort on institutional reform.

Relatedly, Levy and Fukuyama (2010) challenged the standard holistic "good governance" paradigm by introducing a comparative structural model of institutional sequencing. Their analysis established that initial state-capacity enhancements act as a more powerful initial platform for economic take-off than the immediate implementation of complex, broad-based accountability mechanisms. The authors argued that choice in institutional sequencing is inherently bound by country-specific historical and political constraints. For resource-exporting developing nations, establishing a "governance focal monopoly" in which elite consensus secures and coordinates sector-specific property rights is a necessary temporal precursor to the highly advanced, democratic "good governance" institutions observed in mature market economies.

Similarly, Kaznacheev (2017) conducted a cross-country comparative empirical analysis focusing on mineral and hydrocarbon-exporting developing nations to evaluate how varying institutional sub-components influence macroeconomic outcomes. The study explicitly decoupled resource abundance (the total stock of natural capital) from resource dependence (the ratio of resource exports to GDP). Evidence demonstrated that institutional deficiencies (weak property rights and erratic sector-specific regulation) drive the systemic rent-seeking and contract manipulation often mischaracterized as an inevitable "resource curse. It further revealed that resource economies featuring robust economic freedoms, predictable business regulations, and protected property rights successfully bypass the Dutch Disease, actively converting resource abundance into a magnet for high-fidelity, diversified FDI.

A related study by Akya (2024) examines the nexus between natural resource endowments, FDI and capital flight in Nigeria from 1986 to 2022 utilizing a Structural Vector Autoregressive (SVAR) framework. The empirical findings proved that while natural resource capacity exerts a strong, positive initial pull factor on resource-seeking FDI inflows, the eventual outcome is heavily dictated by institutional quality. The study further demonstrated that poor institutional frameworks transform legitimate FDI inflows into a mechanism for illicit capital flight rather than domestic capital formation. Thus, in the absence of target-sequenced administrative reforms that improve the rule of law and ease of operations, broad macro-level governance reforms fail to retain sectoral FDI benefits.

Furthermore, in an aggregated and disaggregated sector-level analysis across African economies, including Nigeria, Ileola-Gold (2025) used Poisson Pseudo Maximum Likelihood (PPML) and panel quantile regressions to decompose the impact of formal and informal institutions on FDI scale. The empirical results revealed a significant sector-specific divergence: while macro-political and formal socioeconomic institutions heavily influence manufacturing and service-oriented FDI, their direct impact on primary extractive sectors (mining, oil, and gas) is frequently muted or statistically insignificant. This institutional decoupling lends empirical support to the premise of institutional sequencing, suggesting that general political democratisation or broad governance overhauls do not automatically translate into economic gains within the oil and gas sector. Instead, specialized, sector-specific institutional transparency and regulatory efficiency must be prioritized to de-risk FDI and secure domestic growth linkages.

It can be concluded that while the literature recognizes the distinct roles of governance and sector performance, there remains a critical empirical gap regarding institutional sequencing. Existing empirical studies largely treat institutional quality as a homogenous, static variable. Little to no empirical evidence explicitly models the chronological priority or order of execution, that is, whether stabilizing industry-specific operational structures (sectoral performance via the Petroleum Industry Act (2021) frameworks) must statistically precede broader national governance or anti-corruption overhauls to optimally capture and retain FDI gains. This paper addresses this specific loophole within the context of Nigeria's oil and gas sector.

4. Methodology

4.1 Research Design

The study adopted an ex post facto research design within a quantitative econometric framework. The choice of ex post facto as the anchor research design was justified on the fact that governance quality indicators, FDI inflows, and economic performance and developmental outcomes are historical realities that cannot be experimentally manipulated by the researcher, but are examined post hoc to establish trends and relationships (Kerlinger & Lee, 2000). Also,, ex post facto frames the research within a scientifically rigorous design that integrates theory with observable empirical realities.

Similarly, the quantitative econometric approach was utilized because it enables an accurate measurement of relevant variables and in-depth statistical analysis of the complex triadic nexus between governance, FDI and economic performance in Nigeria's oil and gas sector. Essentially, this approach permits robust and well-validated econometric models (e.g. ARDL, VECM, OLS, FMOLS or GMM) to empirically test theoretical postulations and establish the causal linkages between the variables of interest.

4.2 Model Specification

The paper's objective is to determine whether governance complements the oil sector's economic performance to shape FDI inflow into the industry. To capture the complementary effects of institutions and sectoral output, the model incorporates governance-economic performance (OGIGI * RGDP) interaction term to test the moderating effect of governance quality on FDI inflows into Nigeria's oil and gas industry. The model is presented as follows:

$$FDI_t = \gamma_0 + \gamma_1 RGDP_t + \gamma_2 INFR_t + \gamma_3 (RGDP_{ogt} * OGIGI_t) + \gamma_4 PETAX_t + \gamma_5 OILR_t + \mu_t \quad (1)$$

The dependent variable FDI_t represents foreign direct investment inflows into the oil and gas sector at time t . The model includes an interaction variable to capture the complementary relationship between governance and economic performance in the oil and gas industry ($RGDP_{ogt} * OGIGI_t$). Thus, γ_3 is expected to be $\gamma_3 > 0$ because a combination of effective governance and sound sectoral performance is expected to be positively related to FDI inflows since it signals stability, credibility, and profitability, thereby reinforcing investor confidence and attracting higher and more sustainable FDI inflows.

Equally, macroeconomic conditions are captured using market size (RGDP) and infrastructure (INFR), with coefficients γ_1 and γ_2 , respectively, representing their effect on attracting FDI inflows. The coefficients are expected to be positively related to FDI inflows because market size and infrastructure are important absorptive capacity (AC) that attracts quality FDI inflow. MNCs are usually more willing to commit capital when they are certain that the host economy's systems can support exploration, production, environmental management, and revenue security, making absorptive capacity a key location advantage in attracting FDI.

Furthermore, the oil and gas sector-specific indicators include the petroleum tax rate (PETAX) and the domestic economy's oil reserves (OILR), reflecting fiscal incentives and production capacity. $PETAX_t$ shows how government regulations and fiscal incentives influence investment attractiveness, and, thus $\gamma_4 > 0$ is expected. Significantly, oil reserves (OILR) is introduced into the model as a sector-specific variable because MNCs perceive large and proven oil reserves as an indicator of resource availability, long project life, and scale economies, signalling economic viability for them in view of their already existing ownership advantages such

as capital, managerial expertise and technology. γ_0 is the intercept, γ_0 captures the persistence of past FDI, γ_1 to γ_5 measure the impact of specific governance, macroeconomic, sectoral, and policy indicators, and μ_t is the stochastic error term capturing unobserved factors.

4.3 Data Sources, Measurement and Definition of Variables

To ensure that the empirical validity and policy implications arising from this study are enhanced and strengthened, this study employed a quantitative approach to provide a comprehensive understanding of the interplay between the relevant variables. The secondary data utilized consisted of annual time series data on relevant variables related to governance, FDI, and economic performance, drawn from reputable national and international sources.

To enhance the methodological and analytical robustness of the study and ensure that a realistic measure of governance is obtained, a monetary-based proxy to measure governance is introduced in this study and it is the Oil and Gas Investment Governance Index (OGIGI). It was constructed as a composite indicator combining capital importation and upstream capital expenditure using a weighted aggregation approach. This approach is consistent with established index number and composite indicator theory (Booyesen, 2002; Nardo et al., 2005; Land, 2021). The OGIGI is a composite monetary proxy for governance and the justification for the introduction of a composite index for governance was that it provided objective and reproducible measures of governance compared to the perception-based assessments (Ross, 2015 and World Bank, 2019).

Furthermore, previous studies have adopted an investment efficiency and resource governance approach by employing similar ratios or index-based constructions in econometric models. For instance, Dubla-Norris et al (2011) constructed a public investment efficiency index from macroeconomic investment ratios to test growth and governance outcomes. In a similar manner, Vashney et al (2012) developed and utilized a corporate governance index from observable firm-level variables to assess its effects on investment performance. An innovative transition from the generic measure of governance, such as the World Bank's World Governance Indicators (WGIs) to the Oil and Gas Investment Governance Index (OGIGI) is a significant advancement of this study. A major justification for utilizing OGIGI is its reproducibility and objectivity: it is constructed from observable, performance-based monetary data - the ratio of upstream capital expenditure to capital importation. This follows the methodology of Ross (2015) and the World Bank (2019), who argue that objective measures are more reproducible and less prone to the "perception bias" inherent in WGI. Also, OGIGI is preferred because it captures the absorptive capacity of Nigeria's oil and gas industry. Unlike the WGI's abstract 0-1 scale, the OGIGI functions as a direct metric for absorptive capacity. A ratio of 1.000 suggests a full transmission of imported capital into productive upstream activity, whereas WGI indicators cannot differentiate between capital that is productively deployed and capital lost to "leakages" or "elite capture".

In the context of this study, the OGIGI was constructed to measure the efficiency with which foreign capital inflow into Nigeria's oil and gas industry are converted into upstream productive investment and it is derived as the ratio of upstream capital expenditure to capital importation into the sector, capturing the ability of national institutions to transform external resources into tangible sectoral outcomes. A ratio of 1.000 suggests a full transmission of imported capital into productive upstream activity, while 0.000 reflects a total failure of governance to absorb investment.

The general functional form of the index was specified as:

$$OGIGI_t = w_1 CI_t + w_2 UCE_t \quad (2)$$

where $OGIGI_t$ represents the Oil and Gas Investment Index at time t , CI_t denotes capital importation, UCE_t represents upstream capital expenditure, and w_1 and w_2 are weights such that $w_1 + w_2 = 1$.

Following standard practice in composite index construction, weights were assigned based on the relative importance of each component. Upstream capital expenditure was given a higher weight because it directly reflects productive investment in exploration and production activities, while capital importation captured external financing inflows. Thus, the operational form of the index was expressed as:

$$OGIGI_t = 0.4(CI_t) + 0.6(UCE_t) \quad (3)$$

To ensure comparability and avoid scale distortion, the variables were transformed into ratio form before aggregation. This is consistent with methodological recommendations in the literature, which emphasize normalization as a necessary step in composite index construction to ensure that variables measured in different units can be meaningfully combined (Greco et al., 2019; OECD et al., 2008). The normalized specification is given as:

$$OGIGI_t = 0.4 \left(\frac{CI_t}{CI_{base}} \right) + 0.6 \left(\frac{UCE_t}{UCE_{base}} \right) \quad (4)$$

This formulation produced a ratio-based composite index that captures relative changes in investment intensity over time. Contemporary methodological studies further confirm that such aggregation approaches are appropriate for long time series analysis, particularly in macroeconomic and sectoral investment studies where structural changes occur over time (Land, 2021; Mazziotta & Pareto, 2024).

From a rigorous econometric perspective, the generic WGIs pose several challenges to model validity and estimation. One important constraint is multicollinearity, which makes it difficult to isolate individual effects of such indicators as the Rule of Law, Government Effectiveness, Control of Corruption, etc. However, the OGIGI circumvents these estimation challenges by acting as a single performance-based proxy, streamlining model specification and reducing the risk of omitted variable bias. One of the standard econometric requirements for utilizing the Autoregressive Distributed Lag (ARDL) framework effectively for over 50 years is that variables must be transformed into quantifiable economic inputs. Thus, the OGIGI allows for the linearization of non-linear relationships and enables estimated coefficients to be interpreted as elasticities, providing a more precise measurement of how a 1% improvement in governance efficiency impacts sectoral GDP.

In summary, the Oil and Gas Investment Governance Index (OGIGI) utilized in this study allowed for a direct empirical test of the dynamic relationship between FDI, governance and economic performance of Nigeria's oil and gas industry, while simultaneously maintaining methodological rigour aligned with the best practices in international investment and resource governance research.

Table 1: Data Source, Measurement and Definition of Variables

Data	Identifier/Abbreviation	Sources	Definition	Measurement
FDI inflows into the oil and gas industry.	FDI	NNPC, NBS, CBN	Monetary values of FDI inflows into Nigeria's oil and gas industry over time.	Net oil and gas FDI inflows in US dollars or as a % of GDP in constant US Dollars.
Oil and Gas Gross Domestic Product	GDPog	CBN, NBS.	Composite or individual indicators; annual time series	Percentage Share of Oil and Gas Sector in aggregate GDP
Oil and Gas Investment Governance Index	OGIGI	Constructed by the author	The efficiency with which foreign capital inflows into Nigeria's oil and gas sector are converted into upstream productive investments.	Ratio of upstream capital expenditure to capital importation into the sector.
Oil Reserves	OILR	OPEC	Estimated quantity of proven and commercially recoverable crude oil in Nigeria under existing economic and technological conditions	Nigeria's total proven crude oil reserves are measured in billion barrels (bbl).
Gross Domestic Product	GDP	WDI, CBN	Annual percentage change in real GDP measured at constant prices to control for inflation effects.	Monetary value of GDP measured in constant naira term, adjusted for inflation to capture changes in real economic output over time.
Inflation	INFR	CBN	Persistent rise in the general price level in the economy, which may affect FDI inflows, operational cost and overall economic performance of Nigeria's petroleum sector.	Annual percentage change in Consumer Price Index.
Petroleum Tax	PETAX	CBN	Fiscal charges imposed by the government that are payable on profits, production, or operations of firms operating in Nigeria's oil and gas industry	Total government revenue from petroleum-related taxes, expressed as a percentage of GDP.
Interaction between Oil and Gas GDP and Governance	RGDPog × OGIGI	Constructed by the author	Product of normalized RGDPog and OGIGI values	Constructed by the author.

Source: Researchers' computation based on time series data.

4.4 Econometric Model Estimation Technique

The Auto-regressive Distributed Lag (ARDL) bounds testing approach was selected as the main model estimation technique for this paper because the data utilized exhibited mixed orders of integration (I(0) and I(1)), even after controlling for structural breaks. This mixed-order integration supported the use of the Autoregressive Distributed Lag bounds testing framework for subsequent analysis. This approach allowed for the simultaneous estimation of long-run relationships and short-run adjustments.

In specific terms, the Threshold ARDL analysis was introduced to effectively capture the complex, nonlinear, and transmission-driven nature of the relationship between FDI, governance, and economic performance in Nigeria's oil and gas industry. That is, to determine whether the effect of FDI on economic performance changes when it crosses a certain critical governance level (threshold). It was introduced to capture the fact that economic relationships among variables are often non-linear and the effect of FDI on economic performance may differ at low or high levels of governance.

5. Presentation and Interpretation of Results

This paper aims to evaluate whether governance complements sectoral economic performance in attracting foreign investment into Nigeria's oil and gas industry and the results of the empirical estimation of the econometric model are presented and interpreted in the following subsections.

5.1 Structural Break Test

The analysis of structural breaks in time series data is essential for understanding how the underlying relationships evolve. Using Bai and Perron's (2003) technique, the study employed the sequential test in this investigation for numerous breaks at unknown breakpoints.

Table 2: Bai and Perron Multiple Structural Break Test Results

Break No	Test Statistic (supW(τ))	5% Critical Value	Date
F(1 0)	34.07	3.44	2000
F(2 1)	34.07	3.44	2017
Estimation Breakpoint			
No	2		

Time period	18		
Trimming	0.15		

Source: Researchers' computation based on regression results.

The results of the Bai and Perron multiple structural break test indicate the presence of significant structural changes in the model over the study period. The reported $\sup W(\tau)$ test statistic of 34.07 for both $F(1|0)$ and $F(2|1)$ is far greater than the 5 percent critical value of 3.44, leading to the rejection of the null hypothesis of no structural break. This confirms that the series experienced two statistically significant break points, which occurred in the years 2000 and 2017. With a trimming parameter of 0.15 and a time span of 18 observations, the findings suggest that the relationship among the variables was not stable throughout the period under review, and that important economic, governance regime or policy shifts (e.g. transition to democratic governance, the passage of the PIGB, etc.) likely altered the underlying structure of the model during those identified years.

5.2 Cointegration Analysis

Having confirmed the presence of a combination of $I(0)$ and $I(1)$ variables in the unit root results, the existence of a stable long-run relationship between FDI, governance, and oil and gas sector economic performance is examined using the ARDL lag bounds testing procedure developed by Pesaran, Shin, and Smith (2001). This technique is appropriate for the present study because it accommodates variables integrated of different orders, provided none is integrated of order two. Its flexibility in simultaneously estimating short-run dynamics and long-run equilibrium relationships makes it particularly suitable for analysing the interaction between governance, sectoral performance, and foreign investment inflows within Nigeria's oil and gas industry.

Table 3: ARDL Bound Test Results.

	10%		5%		1%	
Sample Size	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
			F-Statistic: 16.1702			
45	2.458	3.647	2.922	4.268	4.030	5.598
50	2.435	3.600	2.900	4.218	3.955	5.583
Asymptotic	2.260	3.350	2.620	3.790	3.410	4.680
			t-Statistic: -3.4430			
Asymptotic	-2.570	-3.860	-2.860	-4.190	-3.430	-4.790

NOTES: $I(0)$ and $I(1)$ represent lower and upper critical bounds for the ARDL bounds test, corresponding to stationary and non-stationary series. The F-statistic and t-statistic are calculated to test the null hypothesis of no long-run relationship. Trend type for all models: Unrestricted constant (Case 3). Sample size corresponds to the number of observations used in the ARDL estimation.

Source: Researchers' computation based on regression results.

Table 3 reports the ARDL bounds test results under the unrestricted constant specification and shows an F-statistic of 16.1702, which is far above the upper bound critical values at the 10 percent, 5 percent, and 1 percent levels. For a sample size close to 50 observations, the 1 percent upper bound $I(1)$ value is 5.583, and since 16.1702 greatly exceeds this threshold, the null hypothesis of no long-run relationship is decisively rejected. This provides strong evidence of cointegration among the variables in the model, indicating that they share a stable long-run equilibrium relationship. Although the t-statistic of -3.4430 falls between the lower and upper bounds at the 5 percent level, the ARDL decision rule relies primarily on the F-statistic, which clearly confirms the existence of a long-run relationship. Consequently, it is appropriate to proceed with estimating the long-run coefficients and the associated error-correction model.

5.3: Lag Length Criteria

The results of the lag length selection criteria for the model is presented below:

Table 4: VAR Lag Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-879.8930	NA	4.32e+08	36.91221	37.14611	37.00060
1	-693.6426	318.1777	836583.2	30.65178	32.28908	31.27052
2	-666.6517	39.36181	1306740.	31.02715	34.06786	32.17624
3	-593.6261	88.23928	338249.2	29.48442	33.92852	31.16385
4	-484.2242	104.8434*	23826.15*	26.42601*	32.27351*	28.63579*

NOTES: LR = sequential modified LR test statistic; FPE = Final Prediction Error; AIC = Akaike Information Criterion; SC = Schwarz Criterion; HQ = Hannan-Quinn Criterion. * indicates the lag order selected by the respective criterion.

Source: Researchers' computation based on regression results.

Table 4 presents the VAR lag order selection criteria for the model specification. The results show that most of the information criteria consistently select an optimal lag length of 4 periods. This convergence justifies the choice of a maximum lag of, ensuring an appropriate balance between model adequacy and parsimony while minimizing the risk of overfitting. The selected lag structure, therefore, provides a robust foundation for subsequent estimation and inference.

5.4 Short-run and Long-run ARDL Estimation

The study employs the Autoregressive Distributed Lag (ARDL) approach developed by Pesaran, Shin, and Smith to estimate both short-run dynamics and long-run equilibrium relationships. This methodology is particularly suitable because the variables under investigation display a combination of stationary and non-stationary behavior, as indicated in Table 5.

Table 5: Summary of ARDL Estimates. Dependent Variable: LFDIlog

Variable	Coefficient	Std. Error	t Statistic	Prob.
Long Run Coefficients				
LGDPOG(-1)	0.509335	0.305923	1.664914	0.1032
LOGIGI	-5.624641	1.183688	-4.751793	0.0000
LOGIGI LGDP(-1)	5.551368	1.468546	3.780179	0.0005
D2	0.062315	0.154542	0.403224	0.6888
PETAX(-1)	-0.000130	0.000837	-1.558553	0.1264
Short Run Dynamics				
ECM(-1)*	-0.168533	0.015912	-10.59157	0.0000
D(LGDPOG)	-0.083299	0.041640	-2.000458	0.0528
D(LOGIGI LGDP)	0.545696	0.115090	4.741492	0.0000
D(LOGIGI LGDP(-1))	-0.076324	0.069772	-1.093907	0.2811
D(LOGIGI LGDP(-2))	0.159636	0.109884	1.452774	0.1547
D(LOGIGI LGDP(-3))	0.548148	0.127783	4.289693	0.0001
D(PETAX)	-0.000650	0.000834	-7.786695	0.0000
D(PETAX(-1))	0.000787	0.000701	1.122603	0.2688
D(PETAX(-2))	-0.000924	0.000698	-1.322367	0.1942
D(PETAX(-3))	0.000622	0.000695	8.951996	0.0000
C	0.532789	0.053169	10.02058	0.0000
R-squared	0.888059			
Adjusted R-squared	0.857804			
F statistic	29.35303			
Prob F statistic	0.000000			
Durbin Watson stat	2.209824			

Source: Researchers' computation based on regression results.

The ARDL results reported in Table 6 indicates a robust model explaining variations in firm-level FDI in Nigeria's oil and gas sector. The adjusted R-squared of 0.858 suggests that approximately 86 percent of short-run fluctuations in FDI are explained by past output, governance quality, their interaction term, petroleum taxation, and structural break dummies. The overall model is jointly significant, as reflected by the F-statistic of 29.353 with a probability value of 0.000, confirming the adequacy and relevance of the specification. The Durbin-Watson statistic of 2.210 is close to the benchmark of two, indicating no serious autocorrelation and supporting the reliability of the estimated coefficients.

In the long run, Oil and Gas Investment Governance Index (OGIGI) exhibits a negative and statistically significant effect on FDI ($\beta = -5.625$, $p = 0.000$), implying that weak and ineffective governance structure conditions hinder FDI in the sector. The interaction term between governance and oil and gas output is positive and highly significant ($\beta = 5.551$, $p = 0.001$), indicating that governance amplifies the responsiveness of FDI to sectoral performance. Lagged output shows a positive but statistically insignificant coefficient ($\beta = 0.509$, $p = 0.103$), suggesting that past sector performance alone does not strongly drive long-run FDI by oil and gas multinationals. Other controls, including structural break dummies and lagged petroleum tax, are statistically insignificant in the long run. In a similar vein, the short-run dynamics reveal a rapid adjustment toward the long-run equilibrium. The error correction term is negative and highly significant ($\text{ECM} = -0.169$, $p = 0.000$), indicating that approximately 17 percent of short-run deviations from the long-run equilibrium are corrected each period. This outcome confirms the stability of the long-run relationship. Contemporaneous changes in the interaction term LOGIGI LGDPOG exert a positive and highly significant effect on FDI ($\beta = 0.546$, $p = 0.000$), and its third lag is also strongly positive ($\beta = 0.548$, $p = 0.000$), highlighting persistent short-run responsiveness. Changes in petroleum taxation have mixed short-run effects, with the contemporaneous coefficient negative and significant ($\beta = -0.00065$, $p = 0.000$) and the third lag positive and highly significant ($\beta = 0.00062$, $p = 0.000$), reflecting complex fiscal influences on investment timing. Taken together, the results demonstrate that FDI in Nigeria's oil and gas sector is shaped by both long-run governance conditions and sectoral economic performance as well as short-run adjustment dynamics, with the interaction between governance and sectoral output playing a key role in attracting FDI. The significant ECM confirms a stable long-run equilibrium, while the short-run coefficients underscore the importance of policy timing, sectoral performance, and institutional/governance factors in driving FDI flows.

Table 6: Pairwise Granger Causality Tests

Null Hypothesis	F-Statistic	Prob.	Mode of Causality
LGDPOG does not Granger-cause LFDIOG	0.50664	0.6059 0.2546	No Causality
LFDIOG does not Granger-cause LGDPOG	1.41034		
LOGIGI does not Granger-cause LFDIOG	4.71257	0.0139 0.2741	Unidirectional Causality
LFDIOG does not Granger-cause LOGIGI	1.33210		
LOGIGI_LGDPOG does not Granger Cause LFDIOG LFDIOG does not Granger Cause LOGIGI LGDPOG	6.02469 6.55070	0.0048 0.0032	Bi-directional Causality
PETAX does not Granger-cause LFDIOG	3.16298		
LFDIOG does not Granger-cause PETAX	1.47490	0.0518 0.2396	Unidirectional Causality

Source: Researchers' computation based on regression results.

Table 6 presents the pairwise Granger causality results assessing short-run predictive relationships between firm-level FDI in Nigeria's oil and gas sector (LFDIOG), sector output (LGDPOG), governance quality (LOGIGI), and the interaction term (LOGIGI_LGDPOG). The findings indicate that past values of sector output (LGDPOG) do not significantly predict FDI (F-statistic = 0.507, $p = 0.606$), nor does FDI Granger-cause output (F-statistic = 1.410, $p = 0.255$), suggesting no short-run predictive link between oil and gas sectoral output and foreign investment flows. Governance quality (LOGIGI) exhibits unidirectional causality toward FDI ($F = 4.713$, $p = 0.014$), while the reverse is not significant ($F = 1.332$, $p = 0.274$), indicating that improvements in governance are predictive of short-run changes in FDI.

The interaction term LOGIGI_LGDPOG shows bi-directional causality with FDI ($F = 6.025$, $p = 0.005$; $F = 6.551$, $p = 0.003$), implying strong short-run feedback between governance-enhanced sectoral output and FDI. This empirical outcome suggests that improvement in governance quality (regulatory effectiveness, government accountability, contract enforcement, security of life and protection of property rights, etc.) rapidly stimulates the oil and gas sector's economic performance, which in turn attracts additional FDI inflows in the short run. Petroleum taxation (PETAX) shows unidirectional causality toward FDI (F-statistic = 3.163, $p = 0.052$), with the reverse being insignificant ($F = 1.475$, $p = 0.240$), suggesting that fiscal policy exerts a short-run influence on investment decisions. Summarily, these results reveal that short-run FDI flows respond primarily to governance quality, the interaction between governance and sectoral output, and marginally to petroleum taxation, while sector output and structural breaks do not exhibit significant predictive power in the immediate term.

5.5 Post Estimation Test

Following the estimation of the ARDL models and Granger causality tests, post-estimation diagnostics were carried out to verify the robustness of the results. These procedures are intended to examine the distribution of residuals, check for heteroskedasticity and autocorrelation, and assess the stability of the estimated coefficients over the sample period.

Table 7: Model Diagnostics Tests

Test	Statistic	Value	Df	Probability	Remarks
Wald Test	F-statistic	406.135	(2, 32)	0.0000	Rejected
	Chi-square	812.270	2	0.0000	Rejected
Breusch–Godfrey Serial Correlation LM Test	F-statistic	0.502	(2, 30)	0.6102	Not rejected
	Obs*R-squared	1.555	2	0.4595	Not rejected
Breusch–Pagan–Godfrey Heteroskedasticity Test	F-statistic	0.697	(15, 32)	0.7684	Not rejected
	Obs*R-squared	11.822	15	0.6925	Not rejected
	Scaled explained SS	17.419	15	0.2945	Not rejected
Ramsey RESET Test	t-statistic	0.344	31	0.7333	Not rejected
	F-statistic	0.118	(1, 31)	0.7333	Not rejected
	Likelihood ratio	0.183	1	0.6690	Not rejected

Source: Researchers' computation based on regression results.

Table 7 presents the post-estimation diagnostic results for the ARDL model, assessing model adequacy, serial correlation, heteroskedasticity, and functional form. The Wald test strongly rejects the joint null hypothesis of the imposed restrictions ($F = 406.135$, $p = 0.000$; Chi-square = 812.270, $p = 0.000$), confirming that the coefficients under test are jointly significant. The Breusch–Godfrey LM test shows no evidence of serial correlation, with an F-statistic of 0.502 ($p = 0.610$) and ObsR-squared of 1.555 ($p = 0.460$), indicating that residuals are uncorrelated and the chosen lag structure is appropriate.

Similarly, the Breusch–Pagan–Godfrey heteroskedasticity test fails to reject the null of constant variance, with an F-statistic of 0.697 ($p = 0.768$) and ObsR-squared of 11.822 ($p = 0.693$), supporting homoskedasticity and reliability of standard errors. The Ramsey RESET test confirms correct functional form, as neither the t-statistic (0.344, $p = 0.733$) nor the F statistic (0.118, $p = 0.733$) indicates misspecification. Collectively, these diagnostics demonstrate that the estimated ARDL model is robust, well-specified, and yields credible inferences for both short-run and long-run relationships in the oil and gas sector.

5.6 CUSUM and CUSUMSQ Test Results

The stability test results assess the consistency of the estimated parameters over the sample period and verify whether the model remains structurally reliable over time

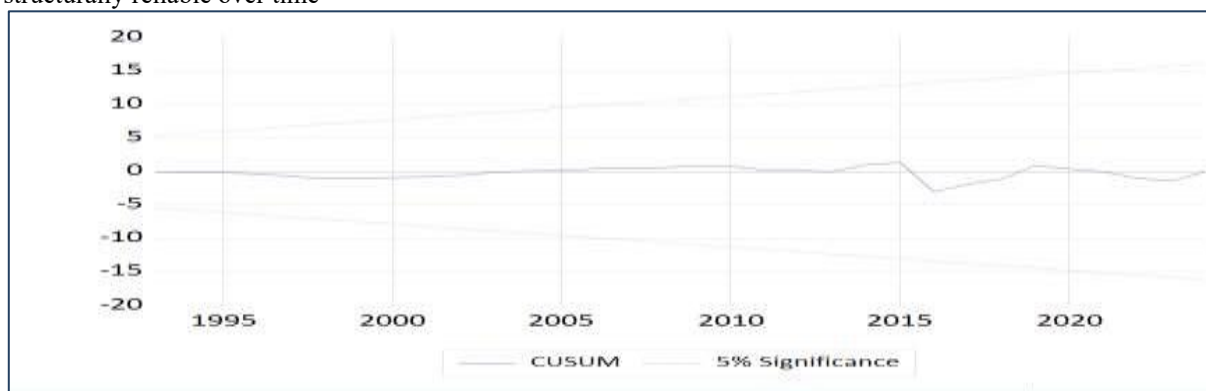


Figure 1: CUSUM Test Results, Source: Researchers' design based on regression results.

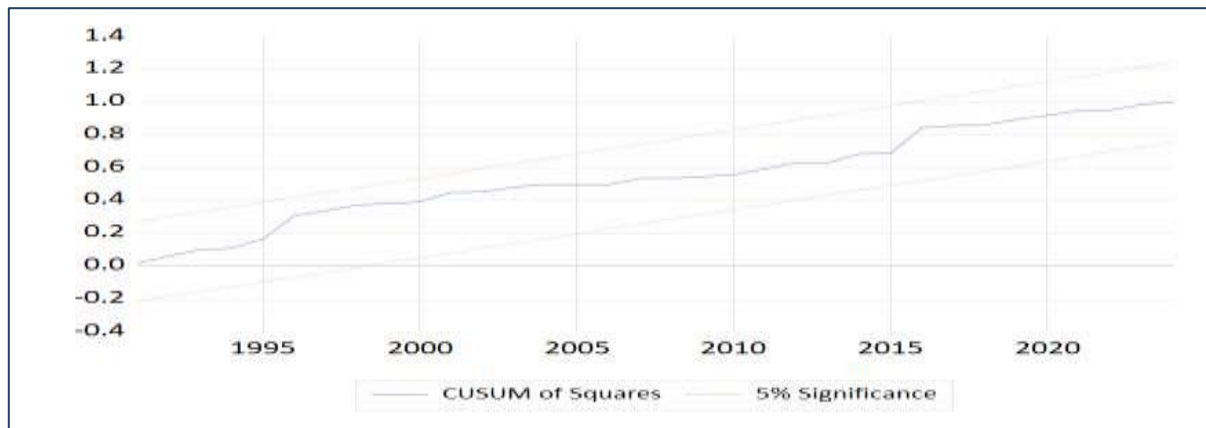


Figure 2: CUSUMSQ Test Results, Source: Researchers' computation based on regression results.

The CUSUM and CUSUM of squares plots in Figures 1 and 2 demonstrate parameter stability across the entire estimation period. In both tests, the cumulative sum line (blue) and the cumulative sum of squares line remain well within the 5% critical bounds (orange lines) throughout the sample, with no crossings or departures that would indicate structural instability or parameter variation. The CUSUM plot hovers close to zero with only minor fluctuations, while the CUSUM of squares line rises steadily but stays below the significance threshold, confirming that the model coefficients do not shift in a way that would undermine the reliability of the long-run and short-run estimates. This outcome provides reassurance that the ARDL results are robust over time and are not distorted by unidentified breaks or regime changes, a key requirement for credible inference in time-series analysis of resource-dependent economies (Pesaran et al., 2001; Brown et al., 1975).

6. Discussion of Findings

The Threshold ARDL results yield a more refined empirical understanding. It shows that in the long run, governance quality alone negatively impacts FDI, yet when interacted with economic performance proxied by sectoral output, it significantly amplifies the FDI response to economic performance. In the short run, adjustment toward equilibrium is rapid and the lagged interaction terms remain strongly positive. Pairwise Granger causality tests reveal unidirectional effects from governance and the interaction term to FDI, confirming the relevance of institutional and governance conditions for FDI dynamics. The model demonstrates robustness, with an adjusted R^2 of 0.858 and an F statistic of 29.35 ($p = 0.000$), supporting the overall specification.

In the long run, the negative coefficient on governance ($\beta = -5.625$, $p < 0.001$) indicates that strengthening of governance structure, when isolated from sector performance, tends to be associated with lower levels of FDI inflows into the oil and gas sector. One plausible explanation is that stringent governance reforms may initially impose compliance costs, regulatory strictness, or transparency requirements that some foreign investors perceive as restrictive, particularly when such reforms are implemented without clear transitional arrangements (Busse & Hefeker, 2007; Alesina et al., 2018). This result parallels the findings by Asiedu (2021), who observed that in certain African resource contexts, governance improvements may not immediately attract more FDI unless complemented by investor-friendly institutions that reduce transaction costs and policy uncertainty. It conforms with the theoretical view of the eclectic/OLI paradigm that governance quality becomes a location-specific advantage when it creates a stable and efficient investment environment for foreign firms.

Despite the negative direct effect of governance, the positive and statistically significant interaction term ($\beta = 5.551$, $p = 0.001$) reveals an important complementary dynamic: governance enhances the sensitivity of FDI to sectoral economic performance. In other words, governance quality strengthens the positive relationship between oil and gas sectoral output and FDI inflows. This supports the view that improved institutional environments can enhance investor confidence in resource-rich settings when the economic fundamentals are strong (Globerman & Shapiro, 2003). Good governance can reduce political and regulatory risks, improve contract enforcement, and provide clearer policy signals, thereby making favorable economic conditions more attractive to foreign capital (Busse & Hefeker, 2007; Hansen & Rand, 2006). The positive interaction effect is consistent with studies showing that governance acts as a conditional amplifier rather than a standalone driver of FDI, aligning with Alfaro et al. (2010), who argue that institutional quality enhances the productivity effects of investment under conducive economic conditions.

Interestingly, the short-run dynamics further deepen this interpretation. The error correction term ($ECM = -0.169$, $p = 0.000$) is negative and highly significant, indicating that approximately 17% of short-term deviations from the long-run equilibrium are corrected within one period. This suggests a relatively rapid adjustment process, confirming the stability of the long-run relationship. The observed strong positive effects of lagged interaction terms indicate that governance improvements have cumulative beneficial effects when combined with sector output growth over time. Such cumulative effects are consistent with empirical evidence suggesting that institutional improvements often take time to influence investment decisions and must operate alongside macroeconomic growth (Kinda, 2010; Ayanwale, 2007).

Granger causality results revealing unidirectional causality from governance and the interaction term to FDI indicate that past changes in governance and its interaction with economic performance significantly forecast future FDI inflows, but not vice versa. This aligns with scholars who have emphasized the predictive importance of institutional quality for investment flows in resource-dependent economies (Busse & Hefeker, 2007; Asiedu, 2011). It further underscores the notion that governance, when interpreted in interaction with economic performance, becomes a salient determinant of investor expectations and decisions. This aligns with the theoretical predictions of the institutional quality theory, especially the new institutional economics framework developed by

North (1990), which holds that when governance interacts with economic outcomes, it signals credibility, policy stability, and lower transaction costs, which significantly shape FDI decisions.

It is also important to note that the negative direct effect of governance alone may appear theoretically contradictory to the views expressed by most scholars in FDI-governance literature, which positions governance as a positive driver of investment (Globerman & Shapiro, 2003; Hansen & Rand, 2006). However, this empirical divergence can be reconciled by recognizing that governance reforms implemented in isolation, in the absence of enabling economic performance and supportive macroeconomic fundamentals, may raise regulatory compliance costs for investors without yielding immediate returns. This rationale aligns with the perspectives of the institutional quality that institutions are not uniformly beneficial in all contexts; instead, their effects are contingent upon economic fundamentals, political stability, and policy coherence (North, 1990; Rodrik et al., 2004 and Acemoglu & Robinson, 2010). Thus, governance alone may not attract FDI unless it accompanies improvements in the underlying economic performance of the sector, which the interaction term effectively captures.

These findings also resonate with the notion of institutional complementarities in the FDI literature: institutions and economic performance do not operate independently but jointly influence investment attractiveness (Aoki, 2001; Hall & Soskice 2001; Alfaro et al., 2010; Busse & Hefeker, 2007). For instance, in the context of oil-rich economies, governance that increases transparency, regulatory predictability, security of property rights, and contract enforcement can magnify the positive signals sent by strong economic performance to potential FDI investors (Globerman & Shapiro, 2003). Conversely, strong economic performance in the absence of credible institutions may be perceived as unstable or unsustainable, reducing investment attractiveness for foreign investors.

Taking cognizance of the findings above, the policy implications of these results are significant. First, governance reforms should be formulated not as isolated objectives but as components of broader economic strategies that prioritize sectoral economic performance and institutional coordination. Well-articulated initiatives linking governance reforms with output-enhancing policies such as stable fiscal frameworks, transparent revenue management, and consistent regulatory enforcement can create a reinforcing institutional framework that attracts and retains FDI. In addition, the findings empirically highlight the importance of institutional sequencing: governance improvements and institutional strengthening are most effective in attracting FDI when they accompany or follow enhancements in economic performance metrics, such as production stability and revenue reliability.

In conclusion, the evidence suggests that governance and economic performance act complementarily in shaping FDI inflows into Nigeria's oil and gas industry. The negative direct effect of governance highlights the complexity of institutional impacts in resource-intensive sectors, while the positive interaction effect underscores that high governance quality magnifies the positive influence of sectoral output on foreign investment. These findings contribute to the broader literature on governance and FDI by demonstrating that, in resource-dependent contexts, institutional quality interacts with economic performance to influence FDI, rather than acting independently. Such interaction effects should be central considerations for policymakers seeking to attract sustainable investment and enhance sectoral economic performance in Nigeria's oil and gas industry. Therefore, the hypothesis that the complementary relationship between governance and economic performance is significantly related to FDI inflows into the oil and gas industry is not rejected.

7. Conclusion

The study establishes that governance quality and sectoral performance act as conditional complements, meaning governance alone can actually deter investment due to regulatory costs unless the sector is already showing strong economic performance. It further explicitly argues for institutional sequencing, stating that governance improvements and institutional strengthening are most effective in attracting FDI when they accompany or follow enhancements in economic performance metrics, such as production stability and revenue reliability.

Furthermore, the Threshold ARDL reveals that FDI responses are regime-dependent. It shows that improvements in governance only become a catalyst for sustained FDI inflows when they interact with a location advantage (like high oil reserves) that signals profitability. Also, the empirical results for this objective show that while the direct effect of governance on FDI was negative, the interaction term (Governance $\times$ Sectoral Output) was positive and highly significant. This proves that high governance quality magnifies the positive influence of sectoral output on foreign investment, rather than acting as a standalone driver. This paper concludes that for rentier states like Nigeria, policy efforts should be sequenced to ensure macroeconomic stability and sectoral production are prioritized alongside governance reforms to ensure those reforms actually "unlock" the anticipated FDI gains. It is further concluded that the growth tragedy often experienced in resource-dependent economies is often a result of poorly sequenced reforms. By prioritizing sectoral performance first, the government can ensure that subsequent governance improvements effectively translate into sustainable FDI inflows.

8. Policy Implications and Recommendations

The findings from this study imply that institutional quality only enhances FDI inflows when the sector is productive and profitable, highlighting the importance of conditional policy design. Policymakers should therefore align institutional reforms with measures that boost sectoral performance, such as output-based tax incentives, infrastructure investment, and innovation support. By coordinating governance improvements with high-output operations, the government can maximize FDI attraction while minimizing deterrent effects from excessive regulation. Policymakers should therefore adopt an integrated approach that simultaneously improves institutional quality and sectoral productivity. This could involve targeted incentives for high-output operations, support for technology adoption, and infrastructure development that enhances the efficiency of domestic firms and foreign investors alike. Sovereign wealth funds, counter-cyclical fiscal strategies, and stabilization mechanisms can further mitigate short-run volatility, ensuring that governance frameworks enhance rather than inhibit FDI inflows.

References

- [1] Acemoglu, D., & Robinson, J. A. (2008). The role of institutions in growth and development. *Commission on Growth and Development Working Paper No. 10*. World Bank. <https://openknowledge.worldbank.org/handle/10986/2804>

- [2] Adegbeye, F. B., Adesina, T. F., Ojeka, S. A., Akinjare, V. A., & Olokoyo, F. O. (2020). Foreign direct investment, dual gap model and economic development in sub-Saharan Africa. *Cogent Social Sciences*, 6(1), Article 1743138. <https://doi.org/10.1080/23311886.2020.1743138>
- [3] Acemoglu, D., & Robinson, J. A. (2012). *Why nations fail: The origins of power, prosperity, and poverty*. Crown Business.
- [4] Adenuga, I. A. (2023). *An empirical analysis of institutional quality and foreign direct investment inflows in Nigeria*. *Oradea Journal of Business and Economics*, 8(1), 8–18. <https://doi.org/10.47535/1991ojbe160>
- [5] Akya, D. T. (2024). Investigating the nexus among natural resources, foreign direct investment and capital flight in Nigeria: The role of institutional quality. *Benue State University Economic and Social Review*, 10(1), 142–161.
- [6] Alfaro, L., Chanda, A., Kalemli-Ozcan, S., & Sayek, S. (2010). Does foreign direct investment promote growth? *Journal of International Economics*, 65(1), 3–32. <https://doi.org/10.1016/j.jinteco.2004.01.002>
- [7] Aoki, M. (2021). *Toward a comparative institutional analysis*. Cambridge University Press.
- [8] Asiedu, E. (2006). Foreign direct investment in Africa: The role of natural resources, market size, government policy, institutions and political instability. *The World Economy*, 29(1), 63–77. <https://doi.org/10.1111/j.1467-9701.2006.00758.x>
- [9] Asiedu, E. (2012). Foreign direct investment, natural resources, and governance in Africa. *World Development*, 144, 105470. <https://doi.org/10.1016/j.worlddev.2021.105470>
- [10] Asiedu, E., & Lien, D. (2011). Democracy, foreign direct investment and natural resources. *Journal of International Economics*, 84(1), 99–111. <https://doi.org/10.1016/j.jinteco.2010.12.001>
- [11] Ayanwale, A. B. (2007). FDI and economic growth: Evidence from Nigeria. *African Economic Research Consortium (AERC) Research Paper*, 165. <https://www.aercafrica.org/research>
- [12] Bai, J., & Perron, P. (1998). Estimating and testing linear models with multiple structural changes. *Econometrica*, 66(1), 47–78. <https://doi.org/10.2307/2998540>
- [13] Bakare, I. A., Ozegebe, A. E., & Salami, D. K. (2023). Does corruption and institutional quality impede economic performance in Nigeria? *Journal of Economics, Management and Trade*, 29(7), 40–56. <https://doi.org/10.9734/jemt/2023/v29i71103>
- [14] Bhujabal, P., Sethi, N., & Padhan, P. C. (2024). Effect of institutional quality on FDI inflows in South Asian and Southeast Asian countries. *Heliyon*, 10(5), Article e27060. <https://doi.org/10.1016/j.heliyon.2024.e27060>
- [15] Booyesen, F. (2002). An overview and evaluation of composite indices of development. *Social Indicators Research*, 59(2), 115–151. <https://doi.org/10.1023/A:1016275505152>
- [16] Brunnschweiler, C. N., & Bulte, E. H. (2008). The resource curse revisited and revised: A tale of paradoxes and red herrings. *Journal of Environmental Economics and Management*, 55(3), 248–264.
- [17] Buchanan, B. G., Le, Q. V., & Rishi, M. (2012). Foreign direct investment and institutional quality: Some empirical evidence. *International Review of Financial Analysis*, 21(C), 81–89. <https://doi.org/10.1016/j.irfa.2011.10.001>
- [18] Busse, M. (2003). *Democracy and FDI* (HWWA Discussion Paper No. 220). Hamburg Institute of International Economics. <https://doi.org/10.22004/ag.econ.26260>
- [19] Busse, M., & Hefeker, C. (2007). Political risk, institutions and foreign direct investment. *European Journal of Political Economy*, 23(2), 397–415. <https://doi.org/10.1016/j.ejpoleco.2006.02.003>
- [20] Cuervo-Cazurra, A., & Genc, M. (2008). Transforming disadvantages into advantages: Developing-country MNEs in the least developed countries. *Journal of International Business Studies*, 39(6), 957–979. <https://doi.org/10.1057/palgrave.jibs.8400390>
- [21] Dike, P. S. C., Ehie, E., & Chukwuka, O.-D. (2023). Appraising the layers of governance under the Petroleum Industry Act 2021. *African Journal of International Energy & Environmental Law*, 6(01), 163–177. <https://ajieel.com/index.php/a/article/view/37>
- [22] Dabla-Norris, E., Brumby, J., Kyobe, A., Mills, Z., & Papageorgiou, C. (2011). *Investing in public investment: An index of public investment efficiency* (IMF Working Paper No. WP/11/37). International Monetary Fund.
- [23] Dunning, J. H. (1993). *Multinational enterprises and the global economy*. Addison-Wesley.
- [24] Dunning, J. H. (2000). The eclectic paradigm as an envelope for economic and business theories of MNE activity. *International Business Review*, 9(2), 163–190. [https://doi.org/10.1016/S0969-5931\(99\)00035-9](https://doi.org/10.1016/S0969-5931(99)00035-9)
- [25] Dunning, J. H. (2001). The eclectic (OLI) paradigm of international production: Past, present and future. *International Journal of the Economics of Business*, 8(2), 173–190. <https://doi.org/10.1080/13571510110051441>
- [26] Dunning, J. H., & Lundan, S. M. (2008). Institutions and the OLI paradigm of the multinational enterprise. *Asia Pacific Journal of Management*, 25(4), 573–593.
- [27] Ezeoha, A. E., & Cattaneo, N. (2011). *FDI flows to Sub-Saharan Africa: The impact of finance, institutions and natural resource endowment* (CSAE Conference Proceedings). Centre for the Study of African Economies.
- [28] Globerman, S., & Shapiro, D. (2003). Governance infrastructure and US foreign direct investment. *Journal of International Business Studies*, 34(1), 19–39. <https://doi.org/10.1057/palgrave.jibs.8400023>
- [29] Greco, S., Ishizaka, A., Tasiou, M., & Torrisi, G. (2019). On the methodological framework of composite indices: A review of the issues of weighting, aggregation, and robustness. *Social Indicators Research*, 141(1), 61–94. <https://doi.org/10.1007/s11205-017-1832-9>
- [30] Hall, P. A., & Soskice, D. (Eds.). (2001). *Varieties of capitalism: The institutional foundations of comparative advantage*. Oxford University Press. <https://doi.org/10.1093/0199247757.001.0001>
- [31] Hansen, H., & Rand, J. (2006). On the causal links between FDI and growth in developing countries. *The World Economy*, 29(1), 21–41. <https://doi.org/10.1111/j.1467-9701.2006.00741.x>
- [32] Iledare, W. (2007). *Oil and the future of Nigeria: Perspectives, challenges, and strategic actions for sustainable economic growth and development*. Paper presented at the International Association for Energy Economics (IAEE) Round Table, Abuja, Nigeria.

- [33] Iledare, W. (2022, November). *Perspectives on Nigeria's oil and gas sector challenges* [Unpublished interview/Commentary]—Institute for Oil, Gas and Energy Studies.
- [34] Ileola-Gold, V. O. (2025). *Aggregated and sectoral analysis of FDI determinants in Africa: The role of infrastructure, financial development, and formal and informal institutions* (Doctoral dissertation, Nottingham Trent University). NTU Institutional Repository.
- [36] Jenkins, C., & Thomas, L. (2002). Foreign direct investment in Southern Africa: Determinants, characteristics and implications for economic growth. Centre for the Study of African Economies, University of Oxford.
- [37] Kaznacheev, P. (2017). Curse or blessing? How institutions determine success in resource-rich economies. *Cato Institute Policy Analysis*, (807), 1–28.
- [38] Kerlinger, F. N., & Lee, H. B. (2000). *Foundations of behavioral research* (4th ed.). Harcourt College Publishers.
- [39] Kinda, T. (2010). Investment climate and FDI in developing countries: Firm-level evidence. *World Development*, 38(4), 498–513. <https://doi.org/10.1016/j.worlddev.2009.12.001>
- [40] Majekodunmi, W. O. (2026). *Foreign direct investment, governance, and economic performance of Nigeria's oil and gas industry* (Unpublished doctoral dissertation). Lagos State University.
- [41] Land, K. C. (2021). Composite index construction. In *Encyclopedia of Quality of Life and Well-Being Research*. Springer
- [42] Levy, B., & Fukuyama, F. (2010). Development strategies: Integrating governance and growth. *The World Bank Policy Research Working Papers*, (5196), 1–43. <https://doi.org/10.1596/1813-9450-5196>
- [43] Mazziotta, M., & Pareto, A. (2024). Methods for constructing composite indices: A comparative review. *Quality & Quantity*, 58(1), 1–25.
- [44] Meyer, K. E. (2004). Institutions, transaction costs, and entry mode choice in Eastern Europe. *Journal of International Business Studies*, 35(5), 357–367.
- [45] Narayan, P. K. (2005). The saving and investment nexus for China: Evidence from cointegration tests. *Applied Economics*, 37(17), 1979–1990.
- [46] Nardo, M., Saisana, M., Saltelli, A., Tarantola, S., Hoffman, A., & Giovannini, E. (2005). *Handbook on constructing composite indicators*. OECD Publishing.
- [47] Narula, R., & Dunning, J. H. (2000). Industrial development, globalization and multinational enterprises: New realities for developing countries. *Oxford Development Studies*, 28(2), 141–167. <https://doi.org/10.1080/713688313>
- [48] Nigerian Economic Summit Group. (2022). *2022 macroeconomic outlook: Nigeria in transition—Recipes for shared prosperity* (Macroeconomic Outlook Report). Nigerian Economic Summit Group.
- [49] North, D. C. (1990). *Institutions, institutional change and economic performance*. Cambridge University Press.
- [50] Omokaro, G. O., Simiyu Nafula, Z., Iloabuchi, N. E., Efendi, O. S., Adeyanju, O. I., Janet, O. O., & Idiong, O. U. (2025). Energy sanctions in the global economy: Geopolitical disruptions, market fragmentation, innovation and green transition. *International Journal of Innovation Studies*, 9, 246. <https://doi.org/10.1016/j.ijis.2025.07.003>
- [51] Organization of Petroleum Exporting Countries. (2025). *Annual statistical bulletin 2025*. Organization of the Petroleum Exporting Countries. https://www.opec.org/opec_web/en/publications/338.htm
- [52] Peng, M. W. (2008). *Global strategy* (2nd ed.). South-Western Cengage Learning.
- [53] Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of Applied Econometrics*, 16(3), 289–326. <https://doi.org/10.1002/jae.616>
- [54] Petroleum Industry Act, (2021), No. 6, Fed. Repub. of Nig. Off. Gaz. No. 142, Vol. 108, A121–370 (2021). <https://neiti.gov.ng/cms/wp-content/uploads/2023/01/Official-Gazette-of-the-Petroleum-Industry-Act-2021.pdf>
- [55] Ross, M.L. (2015). *What have we learned about the resource curse?* Annual Review of Political Science, 18: 239–259.
- [56] Rodrik, D., Subramanian, A., & Trebbi, F. (2004). Institutions rule: The primacy of institutions over geography and integration in economic development. *Journal of Economic Growth*, 9(2), 131–165. <https://doi.org/10.1023/B:JOEG.0000031425.72248.b5>
- [57] Stevens, P., & Dietsche, E. (2008). Resource curse: An analysis of causes, experiences and possible ways forward. *Energy Policy*, 36(1), 56–65. <https://doi.org/10.1016/j.enpol.2007.10.003>
- [58] Varshney N, Iyer L, Sharma K (2012). *Corporate Governance Index and Firm Performance: Evidence from Indian Firms*. European Scientific Journal, 8(12): 157–172.
- [59] World Bank (2019). *Public Investment Management Assessment*. Washington, DC: World Bank.