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Natural Resource Rents, Institutional Quality, and Economic Performance in Nigeria: An Empirical Investigation

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Abstract
The study aims to investigate the effect of natural resource rent, institutional quality and economic performance in Nigeria. Data from 2000 to 2024 was used in the study. The results of Model estimation, which examines the short-run dynamics of natural, mineral and oil resources, institutional quality on economic performance in Nigeria using the Error Correction Model (ECM). Beginning with the resource components, the Natural Resource Rent exhibits a positive and highly significant effect. The Mineral Resource Rent also displays a positive and statistically significant effect. In contrast, the Oil Resource Rent carries a negative effect. Interestingly, the Natural Gas Rent shows a positive and statistically significant effect. Turning to institutional factors, the Institutional Quality Index emerges as a positive and statistically significant determinant of economic performance. The Rule of Law Index while positive is statistically insignificant. Conversely, the Government Effectiveness Index records a negative effect. This result mirrors the paradox, where improvements in bureaucratic or administrative capacity do not necessarily align with economic expansion. Based on these findings the study recommended that; government strengthen the transparency framework governing extractive industries through full public disclosure of all payments, receipts, and contracts across all tiers of government, the National Assembly should enact a fiscal rule mandating that a fixed proportion of oil and gas revenues be automatically invested in a sovereign wealth or future generations fund. Such a fund should be ring-fenced for financing long-term developmental assets, particularly in infrastructure, education, and healthcare, thereby converting non-renewable resource income into reproducible capital that supports intergenerational equity and macroeconomic stability.

Keywords: Natural Resource Rents, Institutional Quality, Economic Performance

1. Introduction

Today, Nigeria's economy remains heavily dependent on oil, which accounts for approximately 90% of its foreign exchange earnings and over 60% of government revenue (World Bank, 2021) [33]. This dependency renders the economy vulnerable to fluctuations in global oil prices, as evidenced during the oil price crash of 2014 and the subsequent economic downturn caused by the COVID-19 pandemic. These events led to significant declines in GDP, underscoring the risks associated with over-reliance on natural resources (Edo & Ojo, 2021) [15]. Furthermore, the lack of economic diversification has stunted growth in other sectors, particularly agriculture, which has not fully recovered from the neglect experienced during the oil boom (NBS, 2022) [23]. Recent efforts to promote agricultural development and other sectors have yielded mixed results, often hindered by inadequate infrastructure and persistent corruption.

Theoretical frameworks such as the Dutch disease and the rentier state theory provide insights into the mechanisms behind the resource curse. The Dutch disease, first observed in the Netherlands following natural gas discoveries, describes how resource booms can lead to currency appreciation, crowding out non-resource sectors like agriculture and manufacturing (Corden & Neary, 1982) [13]. In Nigeria, this phenomenon has been evident since the 1970s oil boom, where the dominance of oil revenues has stifled diversification and rendered the economy vulnerable to global oil price fluctuations (Sala-i-Martin & Subramanian, 2003) [28]. Similarly, the rentier state theory posits that resource-dependent governments, insulated by easy revenue streams, often neglect taxation and public accountability, leading to weak institutions and governance failures (Ross, 2001) [26]. Nigeria's experience aligns with this theory, as oil rents have fueled corruption, elite capture, and a disconnect between state

and society (Chenge & Salifu, 2020) [11].

Some scholars argue that Nigeria's resource curse highlight divergent outcomes across sectors. For instance, according to Banjo *et al*. (2024) [8], while oil rents have a short-term positive impact on GDP growth, their long-term effects are insignificant, whereas natural gas rents contribute more sustainably to economic performance. However, these gains have been unevenly distributed, with poverty rates rising from 36% in 1970 to 63% in 2022, despite increased resource revenues (Banjo *et al*., 2024) [8]. Furthermore, institutional quality has been identified as a critical mediator in the resource-growth nexus. Weak institutions exacerbate the curse by enabling mismanagement and rent-seeking, whereas strong institutions can mitigate these effects (Mehlum *et al*., 2006) [22]. In Nigeria, institutional fragility has perpetuated the curse, as evidenced by poor governance, lack of transparency, and ineffective revenue allocation (Soula *et al*., 2023) [31].

The quality of institutions plays a crucial role in determining how resource wealth is managed and utilized. In Nigeria, weak institutions have been identified as a primary factor in the mismanagement of resources. Corruption, lack of transparency, and ineffective governance structures hinder the equitable distribution of resource wealth and stifle economic growth (Adebayo, 2020) [1]. The World Bank Governance Indicators consistently show Nigeria ranking low on measures of government effectiveness, rule of law, and control of corruption, which underscores the challenges faced by the country in harnessing its natural resources for development (World Bank, 2021) [33]. Recent research indicates that improving institutional quality can mitigate some of the negative effects associated with the natural resource curse. For example, Iyoha and Oriakhi (2020) [20] found that countries with stronger institutions are better positioned to convert resource wealth into sustainable economic growth. This highlights the importance of focusing on institutional reforms in Nigeria as a pathway to overcoming the challenges posed by its resource wealth.

Moreover, the social impact of resource wealth cannot be overlooked. Communities in oil-rich regions often experience environmental degradation, which affects their livelihoods and exacerbates tensions between local populations and the government. Oil spills, gas flaring, and land degradation have led to conflicts and protests, drawing attention to the need for more equitable resource management. Addressing these socio-environmental challenges is crucial for fostering social cohesion and ensuring that the benefits of resource wealth are shared more broadly among the population.

Objectives of the Study

The study aims to investigate the effect of natural, mineral and oil resources, institutional quality and economic performance in Nigeria. Specifically, the study will;

1. Examine the effect of natural resources rent on economic performance in Nigeria.
2. Evaluate the effect of mineral resources rent on economic performance in Nigeria.
3. Assess the effect of oil resources rent on economic performance in Nigeria.
4. Determine the effect of institutional quality on economic performance in Nigeria.
5. Investigate the impact of natural gas rent on economic performance in Nigeria.

Statement of the Problem

Despite Nigeria's vast natural resource endowments, particularly in oil and gas, the country continues to grapple with a paradoxical reality: resource abundance coexists with chronic underdevelopment, institutional decay, and pervasive poverty. Over five decades of oil dependency have failed to translate into sustainable economic growth or improved welfare for the majority of Nigerians. While oil rents contributed 12.01% to GDP on average between 1984 and 2022, poverty rates surged from 36% in 1970 to 63% in 2022, accompanied by widening income inequality and recurrent macroeconomic instability (Banjo *et al*., 2024; Chenge & Salifu, 2020) [8, 11]. This contradiction underscores the persistence of the "resource curse" hypothesis, which posits that natural resource wealth, instead of catalyzing development, often exacerbates governance failures, economic volatility, and social inequities (Sachs & Warner, 1995; Auty, 1993) [27, 5].

From the perspective of some scholars, resource curse is not inevitable, but conditional, depending largely on the strength and quality of domestic institutions (Adu & Denkyirah, 2023; Epo & Nochi, 2023) [2, 18]. In contexts where rule of law, transparency, regulatory quality, and anti-corruption frameworks are weak, resource revenues tend to fuel rent-seeking behavior, elite capture, and cyclical misallocation of public expenditure (Effiom, Ndem, & Eyo, 2024) [16]. Nigeria exemplifies this trajectory. Despite multiple reform efforts, the institutional environment remains plagued by inconsistent fiscal policies, lack of accountability, poor regulatory enforcement, and corruption, all of which continue to undermine the country's capacity to leverage its natural wealth for meaningful economic growth (Asongu & Odhiambo, 2020) [4].

The rest of the study is structured as follow; the second setion, focuses on the literature review and methodology is in the third section. The fourth section, contains the results and discussion, providing a detailed analysis of the model's findings and the final section presents the conclusion and recommendations.

2. Literature Review

Essentially, the empirical literature on the natural resource curse presents a robust body of research examining the interplay between resource wealth, institutional quality, and economic performance, with a strong focus on resource-dependent economies like Nigeria. Studies such as Ejedegba (2025) [17] and Fagbemi & Adeoye (2020) [19] employ advanced econometric techniques (ARDL, GMM) to demonstrate that while natural resource rents can contribute to short-term growth, their long-term benefits are contingent on strong institutions. These studies highlight Nigeria's struggles with corruption, fiscal mismanagement, and Dutch disease, emphasizing the need for institutional reforms to mitigate the curse. Bamoy & Fouopi Djiogap (2024) [7] extend this analysis across Africa, finding that trade openness, human capital, and governance quality mediate the resource-growth relationship, reinforcing the conditional nature of the curse. Comparative case studies, such as Sarmidi *et al*. (2019) [29] and Alemazung (2015) [3], contrast successful resource managers like Norway and Botswana with underperformers like Nigeria and Angola, identifying political stability, bureaucratic efficiency, and anti-corruption measures as key differentiators. These works underscore that institutional capacity rather than resource

abundance determines economic outcomes. Meanwhile, Sibanda *et al*. (2023) [30] and Chenge & Salifu (2020) [11] expand the discourse to environmental and social dimensions, showing that weak institutions exacerbate ecological degradation and inequality in resource-rich regions. Subnational and qualitative analyses, including Pelzman *et al*. (2018) [25] on Kazakhstan and Obi (2016) [24] on Nigeria's Niger Delta, revealed intra-country disparities in resource governance, emphasizing the role of local elites, fiscal decentralization, and community engagement. Kim & Lee (2018) [21] and Vijge *et al*. (2019) [32] introduce political economy and transparency frameworks, respectively, demonstrating how regime types (e.g., parliamentary vs. presidential) and initiatives like EITI influence resource management. Collectively, the literature converges on the centrality of institutional quality in transforming resource wealth from a curse into a blessing, advocating for context-specific reforms in governance, diversification, and social equity. Chung & Jin (2025) [12] introduce geopolitical risk as a critical variable, showing that resource-rich nations with weak institutions (e.g., Iraq, Venezuela) suffer amplified instability, while strong governance (e.g., Canada, Norway) buffers against shocks. Similarly, Xu *et al*. (2018) [35] identify a threshold effect: resource wealth only fosters growth above a minimum institutional quality benchmark, with education and investment acting as complementary drivers. Regional studies like Destek *et al*. (2023) [14] on MENA and Azarhoushang & Rukavina (2014) [6] on Iran, Russia, and Norway highlight the role of economic complexity and historical legacies. Successful cases (UAE, Norway) combine sovereign wealth funds, technocratic management, and diversification, whereas failures (Libya, Nigeria) stem from patronage and elite capture. Boschini *et al*. (2013) [9] further differentiate resource types, showing that point-source resources (oil, diamonds) are more prone to rent-seeking unless institutions are robust.

3. Methodology

This study will utilize an ex post facto design. This design was selected due to the nature of the study's variables, which involve examining events or influences that have already occurred and their impact on a particular phenomenon. This study relied exclusively on secondary time series data covering the period 2000 to 2024, drawn from credible national and international databases. The data were collected from the World Development Indicators (WDI, 2024) of the World Bank, the Central Bank of Nigeria (CBN) Statistical Bulletin (2024 edition), and publications of Transparency International. These sources were selected for their consistency, reliability, and wide acceptance in empirical economic research.

The data set comprised variables representing natural resource rents, oil rents, mineral rents, natural gas rent, institutional quality indicators, and economic performance proxies. Specifically, economic performance was measured using Gross Domestic Product (GDP) growth rate, while natural resource rents were disaggregated into total natural resource rent (% of GDP), oil rent (% of GDP), and mineral rent (% of GDP). Institutional quality was proxied by the World Governance Indicators (WGI) dimensions such as government effectiveness, control of corruption, rule of law, and voice and accountability while natural gas rent was measured as natural gas rent (% of Gross National Income, GNI), consistent with the World Bank methodology.

The choice of secondary data was informed by the historical nature of the study, which required long-term macroeconomic indicators to assess the relationships among natural resource dependence, institutional quality, and economic performance in Nigeria. All data were cleaned, organized, and transformed where necessary to ensure stationarity and comparability before empirical analysis.

The models for this study would first be stated in their functional forms. We consider economic performance as a function of natural gas rent and natural resource rent variables as well as institutional quality variables thus:

$$GDP = f(NRR, MRR, ORR, NGR, IQI, RLI, GEI) \quad (3.1)$$

Where;

GDP: Gross Domestic Product
NRR: Natural Resource Rents
MRR: Mineral Resource Rents
ORR: Oil Resource Rents
IQI: Institutional Quality Index
RLI: Rule of Law Index
GET: Government Effectiveness Index
NGR: Natural Gas rent

Next, we transform the functional form models into econometric models as follows:

From equation (3.1), we would be testing the effects of all the independent variables on economic performance thus;

$$GDP_t = \alpha_3 + \delta_1 NRR_t + \delta_2 MRR_t + \delta_3 ORR_t + \delta_4 NGR_t + \delta_5 IQI_t + \delta_6 RLI_t + \delta_7 GEI_t + u_{3t}$$

These models align with the hypotheses and test the relationships between natural resources wealth, depletion, institutional quality and economic performance in Nigeria.

Let $ECT_{t-1}^{(j)} = \hat{u}_{jt-1}$ be the lagged residual from the estimated long-run equation j. The ECM models for are specified as follows:

The Error Correction Model is presented as;

$$\begin{aligned}\Delta GDP_t &= \theta_0 + \sum_{i=1}^{p} \alpha_{3i} \Delta GDP_{t-i} + \sum_{k=0}^{q_1} \delta_{1k} \Delta NRR_{t-k} + \sum_{k=0}^{q_2} \delta_{2k} \Delta MRR_{t-k} \\ &+ \sum_{k=0}^{q_3} \delta_{3k} \Delta ORR_{t-k} + \sum_{k=0}^{q_4} \delta_{4k} \Delta NGR_{t-k} + \sum_{k=0}^{q_5} \delta_{5k} \Delta IQI_{t-k} \\ &+ \sum_{k=0}^{q_6} \delta_{6k} \Delta RLI_{t-k} + \sum_{k=0}^{q_7} \delta_{7k} \Delta GEI_{t-k} + \lambda_3 ECT_{t-1}^{(3)} + \varepsilon_{3t}\end{aligned}$$

Where:

- Δ denotes first difference (short-run changes).
- The $\beta_{\cdot k}, \gamma_{\cdot k}, \delta_{\cdot k}$ are short-run (dynamic) coefficients on differenced regressors.
- λ_j is the speed-of-adjustment coefficient for model j. We expect $\lambda_j < 0$ and $|\lambda_j| \leq 1$. A negative and significant λ_j indicates that deviations from long-run equilibrium are corrected over time; its magnitude gives the speed of adjustment.

For the a-priori expectations, it is expected that: $\beta_1 > 0$; $\beta_2 > 0$; $\beta_3 > 0$; $\beta_4 < 0$; $\beta_5 > 0$; $\beta_6 > 0$; and $\beta_7 > 0$.

4. Results and Discussion and Findings

Table 4.1: Descriptive Statistics

	GDP	NRR	MRR	ORR	NGR	IQI	RLI	GEI
Mean	3.29E+11	4.23E+10	34617888	3.44E+10	3.43E+09	-0.917453	-1.096825	-1.040570
Median	3.67E+11	4.29E+10	24523622	3.36E+10	2.90E+09	-0.894972	-1.061053	-1.026958
Maximum	5.74E+11	7.13E+10	98266852	6.30E+10	7.84E+09	-0.681769	-0.842042	-0.847907
Minimum	6.92E+10	2.25E+10	71742.27	1.30E+10	2.84E+08	-1.292818	-1.512510	-1.213150
Std. Dev.	1.53E+11	1.31E+10	33628669	1.37E+10	2.42E+09	0.166683	0.196993	0.100730
Skewness	-0.385691	0.214171	0.543259	0.111645	0.440831	-0.728255	-0.789303	-0.113932
Kurtosis	1.885313	2.478748	1.749384	2.289995	2.008715	2.840281	2.750253	2.176324
Jarque-Bera	1.914121	0.455180	2.744561	0.553965	1.833307	2.057479	2.447939	0.699931
Probability	0.384020	0.796451	0.253528	0.758068	0.399855	0.357457	0.294061	0.704712
Sum	8.22E+12	1.01E+12	8.31E+08	8.26E+11	8.57E+10	-21.10142	-25.22697	-23.93310
Sum Sq. Dev.	5.65E+23	3.97E+21	2.60E+16	4.30E+21	1.41E+20	0.611234	0.853736	0.223223
Observations	25	25	25	25	25	25	25	25

Source: Author computation (2026)

The descriptive statistics reveal a Nigerian economy with substantial yet volatile resource wealth, juxtaposed with persistently weak institutional quality, a combination highly relevant to the resource curse paradox.

Beginning with economic performance, the mean GDP of approximately ₦329 billion (converted from USD) indicates a significant economic size, though the substantial standard deviation of ₦153 billion and a minimum value as low as ₦69.2 billion highlight considerable economic volatility over the observed 25-year period; this implies Nigeria's economic output has been subject to pronounced fluctuations, likely tied to external shocks. The analysis of resource rents shows that oil resources rent (ORR) has the highest mean value of ₦34.4 billion, which is notably larger than the mineral resources rent (MRR) of ₦34.6 million, a finding that implies the Nigerian economy is overwhelmingly dependent on oil revenues rather than on a diversified mineral base, creating a high exposure to global oil price swings.

Furthermore, the positive skewness for all rent variables suggests that periods of extremely high resource revenue occur more frequently than periods of extreme low revenue, though the Jarque-Bera probabilities indicate these variables are still normally distributed. Importantly, the mean natural gas rent (NGR) of ₦34 billion is a critical metric, implying that a significant portion of the resource wealth being generated, over half when compared to the mean NRR of ₦42.3 billion is effectively a loss of natural capital, raising serious concerns about the sustainability of this growth model and whether it represents genuine income or merely asset depreciation.

Most critically, the institutional indices (IQI, RLI, GEI) all have negative mean values, approximately -0.92, -1.10, and -1.04 respectively, which implies that the quality of Nigeria's institutions, across the dimensions of governance, rule of law, and regulatory effectiveness, falls considerably below the global average throughout the entire period, a condition that is fundamental to the resource curse as weak institutions are unable to translate resource wealth into broad-based economic development. The low standard deviations for these institutional variables, particularly for GEI, further imply there has been very little improvement or fundamental change in institutional quality over time, suggesting a state of persistent institutional stagnation.

Finally, the negative skewness for the institutional variables indicates that the distribution is skewed towards values even worse than the mean, implying that observations of severely poor institutional quality are more common than any instances of strength, cementing the challenge of overcoming the resource curse without significant institutional reform.

Table 4.2: Results of the Augmented Dickey-Fuller Unit Root Test

Unit Root Test at Level				
Variable	**ADF Test Statistic**	**ADF Critical Value**	**P-Value**	**Remark**
GDP	-1.919785	-2.991878	0.3181	Not Stationary
NRR	-2.219454	-2.998064	0.2051	Not Stationary
MRR	-2.633035	-3.004861	0.1017	Not Stationary
ORR	-1.974744	-2.998064	0.2950	Not Stationary
NGR	-2.030592	-2.991878	0.2727	Not Stationary
IQI	-2.458759	-3.012363	0.1391	Not Stationary
RLI	-1.870107	-3.012363	0.3388	Not Stationary
GEI	-2.507512	-3.012363	0.1279	Not Stationary
Unit Root Test at 1st Difference				
Variable	**ADF Test Statistic**	**ADF Critical Value**	**P-Value**	**Remark**
GDP	-3.094566	-2.998064	0.0411	Stationary At I(1)
NRR	-4.885217	-3.004861	0.0008	Stationary At I(1)
MRR	-4.555550	-3.012363	0.0019	Stationary At I(1)
ORR	-4.713793	-3.004861	0.0012	Stationary At I(1)
NGR	-4.826848	-3.040861	0.0009	Stationary At I(1)
IQI	-6.343969	-3.020686	0.0000	Stationary At I(1)
RLI	-4.355416	-3.020686	0.0031	Stationary At I(1)
GEI	-6.030453	-3.020686	0.0001	Stationary At I(1)

Source: Author's Computation (2026)

The results of the Augmented Dickey-Fuller (ADF) unit root test, as presented in Table 4.2, provide important information into the time series properties of the data, which fundamentally shape the subsequent econometric approach for analyzing the resource curse paradox in Nigeria.

At their levels, the test reveals that the null hypothesis of a unit root cannot be rejected for any of the variables under study, as evidenced by their ADF test statistics being less negative than the 5% critical values and their associated p-values all exceeding the 0.05 significance threshold; this implies that the stochastic processes governing Nigeria's GDP, the various resource rents (NRR, MRR, ORR, NGR), and the institutional quality indices (IQI, RLI, GEI) are all non-stationary, meaning they exhibit underlying trends, time-varying variances, and a strong influence of past shocks, which would render any standard regression analysis at levels susceptible to spurious correlation and unreliable statistical inference.

However, upon applying the test to the first differences of these variables, the null hypothesis of a unit root is soundly rejected for every series, as each ADF test statistic now significantly exceeds the 5% critical value in absolute terms

with p-values well below 0.05; this key finding implies that while the variables are non-stationary in their level form, they all become stationary after first differencing, confirming that each series is integrated of order one, or I(1).

The primary implication of this result is that it establishes a firm empirical foundation for employing cointegration techniques, such as the Johansen or Engle-Granger methodology, to investigate whether stable long-run equilibrium relationships exist among these variables, as the presence of a common stochastic trend among I(1) variables would mean that despite their individual non-stationarity, their linear combination is stationary and thus reflects a genuine economic linkage rather than a statistical artifact.

Table 4.3: Johansen Co-integration

No. of co-integrating equation	Trace Statistic		Maximum Eigen Value	
	Trace Statistic	P-Value**	Max-EigenStatistic	P-Value**
None*	**230.3395**	**0.0000**	**76.32938**	**0.0000**
At most 1*	**154.0101**	**0.0003**	**49.51570**	**0.0215**
At most 2*	**104.4944**	**0.0109**	38.66430	0.0715
At most 3	65.83008	0.0998	28.28460	0.2007
At most 4	37.54548	0.3222	15.98273	0.6673
At most 5	21.56276	0.3235	9.559911	0.7849
At most 6	12.00285	0.1568	7.274319	0.4572
At most 7	4.728527	0.0297	4.728527	0.0297

* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values
Source: Author's Computation

The Johansen cointegration test results provide strong evidence of a stable, long-run equilibrium relationship among the variables, which is a pivotal finding for your research on the resource curse paradox in Nigeria. Both the Trace test and the Maximum Eigenvalue test reject the null hypothesis of no cointegration (None*) at the 1% significance level, as their statistics (230.34 and 76.33) far exceed the critical values and their associated p-values are 0.0000; this implies that despite the individual variables being non-stationary, they share a common stochastic trend and move together in the long run, confirming that the modelled relationship between economic performance, resource rents, and institutional quality is not spurious but represents a genuine long-run equilibrium.

Furthermore, the tests sequentially reject the hypotheses of "at most 1" and "at most 2" cointegrating equations at the 5% significance level, which implies there is not merely one but multiple, specifically up to three, distinct long-run relationships binding these variables together; this suggests a more complex and multi-faceted equilibrium system is at work, where variables like oil rents, institutional quality, and GDP may adjust in different ways to restore long-run balance after an economic shock. The failure to reject the null hypothesis beyond "at most 3" cointegrating vectors implies that the system is driven by three common trends, a finding which significantly directs the subsequent econometric strategy; it necessitates the use of a Vector Error Correction Model (VECM) to not only model the long-run equilibria but also to analyze the short-run dynamics and the speed of adjustment through which variables like GDP and institutional quality converge back to their long-run path following a deviation.

The model of this study combines natural resources rent, natural gas rent and institutional variables to ascertain their effects on economic performance.

Table 4.4: ECM Model

Dependent Variable: ΔRGDP				
Sample (adjusted): 2003 2023				
Included observations: 21 after adjustments				
Method: Error Correction Model				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.***
C	0.033867	0.008014	4.226041	0.0012
ΔLNNRR	0.067820	0.021037	3.223287	0.0027
ΔLNMRR	0.022161	0.009326	2.376553	0.0162
ΔLNORR	-0.093310	0.166786	-0.559458	0.5861
ΔLNNGR	0.059996	0.022796	2.631899	0.0219
ΔLNIQI	0.087896	0.034223	2.568331	0.0196
ΔLNRLI	0.116575	0.102953	1.132315	0.2796
ΔLNGEI	-0.108802	0.073516	-1.479985	0.1646
ECM_3	-0.081913	0.040313	-2.031925	0.0421
R-squared	0.896284	Mean dependent var		0.043801
Adjusted R-squared	0.760474	S.D. dependent var		0.029812
S.E. of regression	0.027316	Akaike info criterion		-4.065169
Sum squared resid	0.008954	Schwarz criterion		-3.617516
Log likelihood	51.68427	Hannan-Quinn criter.		-3.968017
F-statistic	14.77870	Durbin-Watson stat		1.748425
Prob(F-statistic)	0.000000			

Source: Author's computation (2026)

Presented in Table 4.4 is the comprehensive model, which integrates both natural resource rents and institutional quality variables, offers the clearest and most complete explanation of the determinants of Nigeria's economic performance. By combining the direct economic impacts of resource exploitation with the mediating influence of governance structures, this model provides a holistic view of the forces shaping growth in a resource-dependent economy such as Nigeria's.

The model demonstrates a strong overall fit, with an adjusted R-squared of 0.76, indicating that approximately 76% of the short-run variations in the growth of real GDP are explained by the included resource and institutional variables. This is a substantial improvement over the earlier models, particularly the institution-only specification, confirming that both natural resource dynamics and institutional quality jointly define the trajectory of Nigeria's economic outcomes. The F-statistic of 14.78 with a p-value of 0.0000 confirms the overall statistical significance of the model, implying that the explanatory variables collectively exert a powerful influence on economic performance within the study period.

Beginning with the resource components, the Natural Resource Rent (ΔLNNRR) variable exhibits a positive and highly significant coefficient (0.0678, p = 0.0027). This finding reaffirms that, even after accounting for institutional effects, aggregate natural resource revenues contribute positively to GDP growth. It suggests that resource wealth continues to serve as an immediate driver of income and economic activity in Nigeria, reinforcing the idea that the resource sector remains a cornerstone of short-run growth.

The Mineral Resource Rent (ΔLNMRR) also displays a positive and statistically significant coefficient (0.0222, p = 0.0162), underscoring the potential of non-oil minerals to contribute constructively to economic expansion. Though the magnitude of this coefficient is smaller compared to total natural resource rent, it suggests that diversification within

the extractive sector particularly through mining can yield modest but meaningful growth benefits, and may represent a more stable, less distortionary form of resource-based development.

In contrast, the Oil Resource Rent (ΔLNORR) carries a negative coefficient (–0.0933), though statistically insignificant (p = 0.5861). This pattern, consistent with the "resource curse" hypothesis, suggests that oil rents continue to exert a dampening effect on growth, possibly due to volatility in oil prices, fiscal mismanagement, and the crowding-out of productive sectors. Even when combined with institutional variables, the persistent negative sign implies that Nigeria's historical dependence on oil remains an economic liability, reflecting structural inefficiencies and governance challenges endemic to the petroleum sector.

Interestingly, the Natural Gas Rent (ΔLNNGR) shows a positive and statistically significant coefficient (0.0600, p = 0.0219), indicating that short-run increases in gas exploitation are associated with measurable GDP growth. This contrasts with earlier expectations of a negative relationship and may reflect recent policy shifts emphasizing gas monetization and infrastructure investment, which have begun translating into real economic gains. However, this relationship should be interpreted with caution, as it may capture short-term income effects rather than sustainable, broad-based growth outcomes.

Turning to institutional factors, the Institutional Quality Index (ΔLNIQI) emerges as a positive and statistically significant determinant (0.0879, p = 0.0196) of economic performance. This implies that improvements in the overall governance environment, spanning regulatory quality, corruption control, and accountability are directly associated with stronger GDP growth. The result validates the argument that effective institutions serve as critical enablers of productivity and investment, enhancing the developmental returns from resource wealth.

The Rule of Law Index (ΔLNRLI), while positive (0.1166), is statistically insignificant (p = 0.2796), suggesting that variations in the enforcement of legal and property rights, though directionally beneficial, have not translated into immediate economic gains within the sample period. This may reflect the time lag between institutional reform and measurable economic outcomes, or the fact that Nigeria's legal institutions remain too weak and unevenly applied to influence short-run growth dynamics in a statistically meaningful way.

Conversely, the Government Effectiveness Index (ΔLNGEI) records a negative coefficient (–0.1088), albeit statistically insignificant (p = 0.1646). This result mirrors the paradox observed in previous models, where improvements in bureaucratic or administrative capacity do not necessarily align with economic expansion. It may indicate that government effectiveness, in the Nigerian context, does not always translate into growth-enhancing outcomes—potentially due to inefficiencies in policy prioritization, excessive centralization, or the misallocation of public resources. Thus, while the government apparatus may function more effectively in procedural terms, it may not yet be directed toward policies that foster inclusive and sustainable economic growth.

The error correction term (ECM_3) displays the expected negative and statistically significant coefficient (–0.0819, p = 0.0421), confirming the validity of the ECM specification and the existence of a stable long-run equilibrium relationship among the variables. The coefficient magnitude indicates that approximately 8.2% of short-run disequilibrium in GDP is corrected each period, suggesting a relatively slow but steady pace of adjustment toward long-run equilibrium. This implies that while shocks to the system, whether from resource volatility or institutional shifts are not immediately neutralized, the economy gradually converges toward stability over time.

In essence, Model underscores that Nigeria's economic performance is shaped by an intricate interplay between its resource endowments and institutional structures. Resource rents, particularly total and mineral rents remain key short-run drivers of growth, while oil's persistent negative influence continues to reflect structural fragility within the sector. Institutional quality, when improved broadly, exerts an independent and significant positive impact, though the deeper foundations of governance, such as rule of law and bureaucratic effectiveness remain too weak to deliver consistent economic dividends.

The overarching conclusion is clear: Nigeria's economy remains resource-driven but institutionally constrained. The results affirm that sustainable economic progress will depend not merely on resource exploitation but on strengthening the quality and direction of governance, ensuring that bureaucratic efficiency, legal enforcement, and policy credibility work in tandem to transform natural wealth into durable, inclusive growth.

Post-Estimation Diagnostic Tests

To ensure the validity and reliability of the estimated model, a series of diagnostic tests are conducted. These tests assess whether the underlying assumptions of the classical linear regression model are satisfied.

Specifically, the analysis includes tests for serial correlation, heteroskedasticity, and normality of residuals, which help verify the robustness of the model's error term. Additionally, the stability of the model over time is examined using the CUSUM and CUSUMSQ tests. The results from these diagnostics provide insights into the adequacy of the model and inform whether any corrective measures are needed.

Table 4.5: Test for Normality, Heteroskedasticity and Autocorrelation

Test	F-Statistics	P-value
Normality Test	0.518816 (Jarque Berra)	0.771508
Serial correlation LM Test	1.445728	0.2835
Heteroskedasticity	0.289021	0.9481

Source: Author's computation (2026)

The results of the diagnostic tests presented in Table 4.5 are crucial as they verify the reliability and statistical soundness of the regression model, allowing us to trust the interpretations and conclusions drawn from the analysis. Beginning with the Normality Test, the high Jarque-Bera statistic p-value of 0.7715, which is far above the conventional 0.05 significance level, indicates that we cannot reject the null hypothesis that the model's residuals are normally distributed; this implies that the error term follows a normal distribution. Next, the Serial Correlation LM Test yields a p-value of 0.2835, which is also insignificant; this implies that there is no evidence of autocorrelation in the model's residuals. Finally, the Heteroskedasticity Test result, with a p-value of 0.9481, fails to reject the null hypothesis of constant variance; this

implies that the residuals do not exhibit heteroskedasticity.

Table 4.6: Multicollinearity Test using VIF

Variance Inflation Factors			
Sample: 2000 2024			
Included observations: 23			
	Coefficient	**Uncentered**	**Centered**
Variable	**Variance**	**VIF**	**VIF**
C	3.21E+22	406.3895	NA
NRR	70.08271	1761.333	9.577105
MRR	175060.5	5.275354	2.388340
ORR	74.47815	1306.738	9.341212
NGR	2.672344	21.20125	5.594343
IQI	7.38E+21	81.08378	2.481682
RLI	5.48E+21	85.92282	2.571772
GEI	1.16E+22	161.0055	1.430324

Source: Author's computation (2026)

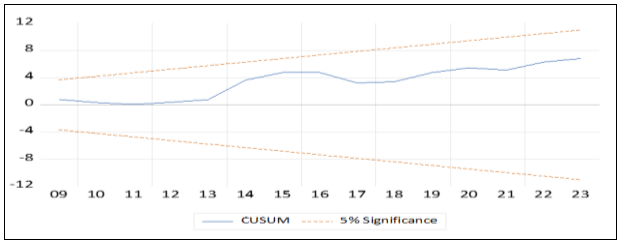
The Variance Inflation Factor (VIF) test is conducted to check for the presence of multicollinearity, which occurs when two or more independent variables in a regression model are highly correlated, making it difficult to isolate their individual effects on the dependent variable. The key metric to interpret is the Centered VIF. A common rule of thumb is that a VIF value above 10 indicates severe multicollinearity that can distort the regression results.

Looking at the Centered VIF values, we see that Natural Resources Rent (NRR) and Oil Resources Rent (ORR) have values of 9.58 and 9.34, respectively. These are high and approach the threshold of 10. This implies that there is a strong linear relationship between these two variables, which is logically sound because oil rent is the dominant component of total natural resource rent in Nigeria. While this correlation is expected, it means that the model might have some difficulty in perfectly distinguishing the independent effect of total rents from the specific effect of oil rents.

However, all the other variables, including Mineral Resources Rent (MRR), Natural gas rent (NGR), and the institutional indices (IQI, RLI, GEI), have Centered VIF values well below 10, ranging from 1.43 to 5.59. This implies that multicollinearity is not a severe problem for these variables. Their individual coefficients in the regression model are reliable and can be interpreted with confidence, as their effects on GDP are not overly entangled with the effects of the other variables in the model.

In light of these, while there is a predictable and high correlation between the broad measure of resource rents and its oil component, the overall model does not suffer from crippling multicollinearity. The findings related to the distinct roles of mineral rents, gas rent, and the various institutional quality measures remain statistically sound.

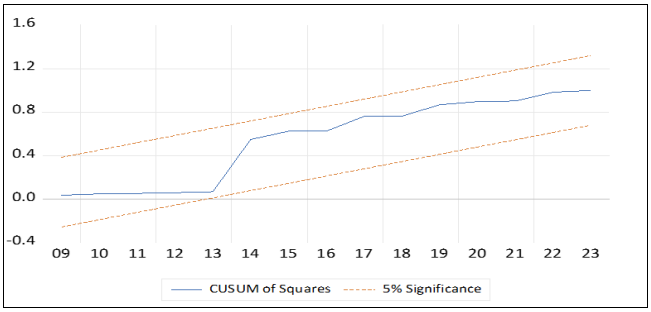
Stability Tests



Source: Author (2026)

Fig 4.1: CUSUM Test

CUSUM of Squares



Source: Author (2026)

Fig 4.2: CUSUM of Squares Test

The CUSUM and CUSUM of Squares tests both indicate that the regression model is structurally stable over the study period, meaning the relationships it describes between the variables are consistent and reliable.

5. Conclusion

This study has clearly demonstrated that the natural resources curse is not a mere theoretical abstraction but a persistent and defining reality of the Nigerian economy. The empirical analysis confirms the central paradox: the nation's immense resource wealth, particularly from oil, has functioned as a double-edged sword, driving short-term fluctuations in GDP while simultaneously undermining the foundations for sustainable and diversified growth. The findings reveal an economy heavily dependent on a sector whose revenues are volatile and whose specific influence is detrimental, creating a growth model that is not only inefficient but fundamentally unsustainable, as evidenced by the significant economic cost of natural gas rent. This validates the concerns raised by early theorists of the curse, and firmly situates Nigeria's experience within the global narrative of resource-rich yet underperforming nations.

The investigation into the institutional channel reveals a deeply layered and critical dimension of the curse. The powerful, positive role of the rule of law affirms the foundational arguments of institutional economists, implying that a predictable legal environment is a non-negotiable prerequisite for converting resource wealth into prosperity. However, the startling finding that government effectiveness can have a negative impact offers a profound and sobering insight into the Nigerian context. It suggests that the capabilities of the state apparatus have been historically misdirected towards rent-seeking and control rather than towards creating an enabling environment for broad-based economic activity. This institutional fracture, coupled with the absence of any causal link from resource rents to institutional improvement, paints a picture of a political economy trapped in a self-reinforcing equilibrium of weak governance, a dynamic that can be described as the defining feature of a petro-state.

Looking ahead, the implications of this study point towards an urgent need for a fundamental reorientation of policy. The path forward for Nigeria cannot be business as usual; it demands a deliberate and strategic dismantling of the structures that perpetuate the curse. Policy must move beyond simplistic revenue allocation to focus on deep institutional surgery, prioritizing the strengthening of the rule of law, contract enforcement and property rights above all else. Furthermore, a conscious strategy of economic

diversification is imperative to reduce the overwhelming dominance of oil, with the potential of the non-oil mineral sector offering a glimmer of hope. Critically, mechanisms for transparent and accountable resource revenue management, as championed by initiatives like the NEITI, must be strengthened to ensure that future earnings are invested in human capital, infrastructure and a resilient non-resource sector, thereby aligning with the sustainable development principles.

Based on the findings of this study, the following practical and realistic policy recommendations are proposed:

1. Institutionalize Transparency and Accountability in the Resource Sector

Given that oil rents continue to exert a negative influence on growth while overall resource rents remain positive, the persistence of opacity and rent-seeking in the petroleum sector undermines its developmental potential. It is therefore critical to strengthen the transparency framework governing extractive industries through full public disclosure of all payments, receipts, and contracts across all tiers of government. This can be operationalized by deepening compliance with the Extractive Industries Transparency Initiative (EITI) standards and empowering independent oversight bodies to monitor and audit resource flows. Institutional transparency will reduce corruption, discourage fiscal leakages, and build citizen trust in public resource management.

2. Legislate a Structural Link Between Resource Revenues and Long-Term Investment

The evidence that Nigeria's growth remains tied to the depletion of natural capital underscores the unsustainability of its current fiscal model. To mitigate this, the National Assembly should enact a fiscal rule mandating that a fixed proportion of oil and gas revenues be automatically invested in a sovereign wealth or future generations fund. Such a fund should be ring-fenced for financing long-term developmental assets, particularly in infrastructure, education, and healthcare, thereby converting non-renewable resource income into reproducible capital that supports intergenerational equity and macroeconomic stability.

3. Strengthen Institutional Quality Through Governance Reforms

The study's finding that aggregate institutional quality significantly enhances growth underscores the centrality of governance reform in economic transformation. Strengthening the rule of law, though statistically insignificant in the current model, remains conceptually critical for sustaining investor confidence. Judicial independence should therefore be reinforced through better funding, continuous professional training, and strict enforcement of judicial outcomes. Moreover, improving accountability mechanisms and citizen oversight across government tiers will help reduce discretionary power and foster a more predictable governance environment conducive to private sector investment.

4. Invest Strategically in Human Capital for Post-Oil Competitiveness

Ultimately, the pathway to escaping the resource trap lies in developing a highly skilled and adaptive workforce. The government should prioritize large-scale investment in education, technical and vocational training, and digital literacy programs aligned with the demands of an innovation-driven economy. Such investments, if coordinated through a reformed educational framework and supported by private sector partnerships, will position Nigeria for a post-oil transition where human capital, not natural resources becomes the foundation of sustainable economic prosperity.

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