Assessing the impact of oil rent on living standards in Nigeria: Evidence from an ARDL Model

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Abstract

Some countries are naturally endowed with abundant natural resources, which serve as a significant source of government revenue for national development. Conversely, other countries lacking such resources rely on alternative means to generate income for their developmental efforts. The disparity in development and living standards among nations, however, cannot be attributed solely to the unequal distribution of natural resources but rather to the effectiveness and efficiency with which resource revenues are utilized. This study examines the effect of oil rents on living standards in Nigeria using the Autoregressive Distributed Lag (ARDL) model. The findings reveal a positive long-run relationship between Living Standard (LS), Oil Rent (OR), and Gross Domestic Product (GDP), while a negative relationship is observed with Oil Price (OP) and Exchange Rate (ER). However, these relationships are found to be statistically insignificant. In the short run, the results show a negative and statistically significant relationship between living standards and the variables of Oil Rent, Oil Price, GDP, and Exchange Rate. These findings highlight the complex dynamics between oil rents and living standards, particularly in the context of short-run economic fluctuations. In light of these results, the study recommends that the government prioritize making all refineries operational to meet domestic fuel demand and reduce the costs associated with fuel importation, which consumes a substantial portion of the country's earnings from oil exports. Furthermore, revenues from oil exports should be channeled into productive projects that directly improve the living standards of citizens, such as investments in infrastructure, healthcare, and education. These measures are essential for ensuring that the wealth generated from natural resources translates into sustainable development and improved quality of life for the populace.

Keywords: *Living standard, Natural resources, Oil price, Oil rent*

JEL Classification: C32, O13, Q32

INTRODUCTION

The core objective of any development policy, whether in developed or developing economies, is to enhance the living standards of citizens. Consequently, the performance of an economy is evaluated based on the well-being of its citizens, which is reflected in their access to employment, healthcare, education, potable water, and other essential infrastructure. It is, therefore, the responsibility of the government to

safeguard the lives and property of its citizens while providing the necessary infrastructure to promote economic growth. This is achieved through the effective utilization of revenues generated from the country's endowment factors.

Some countries are abundantly endowed with natural resources, and their levels of development are often determined by the extent to which these resources are effectively harnessed and utilized. Depending on these factors, nations can be categorized into three groups: resource-rich countries where citizens are wealthy. Resource-rich countries where citizens remain impoverished, and resource-poor countries where citizens are also poor (Saheed & Alofun, 2010). These disparities among nations are largely attributable to the inefficient utilization of resources and the quality of governance.

Nigeria is one such country richly endowed with natural resources, which constitute the primary sources of its revenue. For example, coal, discovered in 1909 in Enugu, eastern Nigeria, has about three billion tons of reserves distributed across 17 fields. Additionally, the country possesses an estimated 10 million tons of lead reserves located in Enugu, Abuja, Cross River, Kano, and other states. There are also approximately three billion tons of iron ore deposits in Abuja, Niger, and Kogi States within the North Central geopolitical zone (Stetsin, 2020).

As of 2022, Nigeria's proven oil reserves stand at 37.046 billion barrels, ranking 10th globally and accounting for 2.2% of the world's 1.65 trillion barrels of oil reserves. The country produces 1.323 million barrels per day, making it the 15th largest producer worldwide (OPEC, 2022). Furthermore, Nigeria holds 208.62 trillion cubic feet (TCF) of proven natural gas reserves, valued at over USD 803.4 trillion as of 2022 (Nnodium, 2022). This represents 3% of the global natural gas reserves, ranking the country 9th in the world behind Russia, Iran, Qatar, the United States, Saudi Arabia, Turkmenistan, the United Arab Emirates, and Venezuela. With a current consumption rate of 664.628 TCF, Nigeria's natural gas reserves are estimated to last for approximately 306 years (Worldometer, n.d.).

Since its discovery in commercial quantities, oil has become the cornerstone of the Nigerian economy, serving as the primary source of revenue and foreign reserves. The oil and gas sector contributes approximately 90% of the country's total export value, 95% of the federal government's foreign revenue, and about 80% of the government's overall revenue (Fajana, 2005). Despite its dominance, the sector contributes only around 9% to Nigeria's Gross Domestic Product (GDP).

Economists define rents as payments to a factor of production that exceeds the minimum amount required to induce it to perform its work (Wessel, 1967, as cited in Katia et al., 2011). When applied to natural resources, resource rents refer to any payments remaining for the resource owner after deducting costs associated with highly skilled labor, capital (including technology), and other inputs required for resource extraction.

Between Nigeria's return to democracy in 1999 and 2020, the oil sector generated significant revenues as oil rents. According to the Nigeria Extractive Transparency Initiative (NEITI), as reported by Okafor (2022) and Adeloju (2022), the total revenue from oil rents during this period amounted to USD 786.14 billion. This includes USD 211.92 billion from 1999–2007, USD 135.43 billion from 2007–2010, USD 268.81 billion from 2010–2015, and USD 206.06 billion from 2015–2019 (Adegboyega, 2020, citing OPEC in *Premium Times*). In 2020 alone, the NEITI reported oil revenues of USD 20.43 billion (Adeloju, 2020).

Despite these substantial earnings, Nigeria's economic conditions remain troubling, as indicated by critical indicators of national well-being. For instance, the

poverty rate, a key measure of economic health, was estimated at 63.1% in 1999. Although it declined to 52.99% in 2007, it increased to 54.43% in 2010 and 55.8% in 2015. By 2017, the poverty rate had risen significantly to 61.2% (Ewubare & Okpami, 2018).

Unemployment, another crucial determinant of economic performance, paints a similarly concerning picture. Unemployment represents the percentage of the labor force actively seeking but unable to find jobs. Between 1999 and 2007, Nigeria's unemployment rate decreased from 3.99% to 3.84% and further to 3.78% in 2010. However, the rate began to climb, reaching 4.31% by 2015 and surging to 9.71% in 2020.

Access to clean water is a critical indicator of living standards in any country. According to a World Bank report cited by Macrotrends (2022), "improved water sources" refer to piped water, boreholes, protected wells, springs, or packaged water. An analysis of data from Macrotrends shows a slow but steady improvement in access to clean water in Nigeria. The percentage of Nigerians with access to improved water sources increased from 13.72% in 1999 to 16.71% in 2007 and further to 17.95% in 2010. By 2015, the figure had risen to 19.86%, reaching only 20.6% by 2020. These figures highlight that, despite progress, a substantial portion of the population still lacks access to clean water.

Adequate electricity supply is arguably one of the most crucial determinants of a nation's growth and development. Electricity is fundamental to socioeconomic and technological advancement. In Nigeria, however, the electricity demand significantly exceeds supply, which remains unreliable and inadequate. Despite the country's abundant natural resources, acute electricity shortages continue to hinder its developmental efforts. As Sambo (2008) established, there is a strong correlation between socioeconomic development and a sufficient electricity supply.

In 1999, only 44.90% of Nigerians had access to electricity. This figure improved to 50.13% by 2007 but dropped to 48% in 2010. Between 2010 and 2015, access to electricity increased modestly to 52.50%. During the current administration (2015–2020), access grew slightly to 55.40%, leaving almost half of the population without electricity.

The growing disparity between Nigeria's substantial oil rents and the stagnation or decline of living standard indicators raises critical concerns. Unlike other oil-rich nations such as Kuwait, where oil wealth is distributed to improve citizens' welfare significantly, Nigeria presents a stark contrast. El-Katia et al. (2011) highlighted that Kuwait's extensive welfare system, supported by oil revenues, ensures substantial benefits for all citizens and even attracts a significant number of immigrants who benefit from employment opportunities created by oil wealth.

In Nigeria, however, despite the massive oil rents, the socioeconomic benefits have not translated into improved living standards for the majority of the population. This disparity underscores the need for an examination of governance, resource management, and equitable wealth distribution in Nigeria. It raises a pertinent question: why has Nigeria's oil wealth failed to improve the living standards of its citizens significantly, and what systemic changes are required to address this persistent issue?

The concept of standard of living has been explored from various perspectives in the literature. Conceptually, Yin Fah (2010) defines the standard of living as the combination of desired levels of wealth and services with habitual evaluations of these aspects. It encompasses all satisfactions considered essential for living and is often used as a reference point in discussions of economic achievements and public interest goals.

According to Georgia Public Broadcasting (GPB, 2020), standard of living reflects a country's overall wealth, measured by the quality and availability of housing, healthcare, transportation, food, and other basic necessities accessible to individuals. Real Gross Domestic Product (GDP) per capita is widely used as a primary indicator of standard of living. GPB further notes that countries with high levels of investment in human and physical capital, as well as access to quality healthcare, tend to have higher standards of living.

Amadeo (2022) describes the standard of living as a measure of the material aspects of a nation or regional economy, focusing on the goods and services produced and available for consumption by citizens. Similarly, the Corporate Finance Institute (2020) defines the standard of living as the level of income, necessities, luxuries, and other goods and services generally available to a designated population. Gross Domestic Product (GDP) and GDP per capita are among the most commonly used indicators for measuring the standard of living. Additionally, the World Bank uses Gross National Income (GNI) per capita as an indicator, which is adopted in this study as a proxy for measuring living standards in Nigeria.

Empirical studies on the subject have predominantly focused on the relationship between resource rents and economic outcomes. However, most of these studies emphasize macroeconomic variables such as economic growth and development rather than standard of living. For example, Ezekwe, Otto, Ozigbu, and Moris (2022) found that oil rents have an insignificant positive contribution to the Human Development Index (HDI) in Nigeria. Adabor and Buabeng (2021) examined the asymmetric impact of oil and gas resource rents on Ghana's economic growth. Their findings supported the "oil blessing" hypothesis for oil rents, while gas rents exhibited a significant negative effect, aligning with the "resource curse" hypothesis.

Similarly, Badeeb et al. (2021) identified the presence of the "oil curse" in Malaysia through the Dutch disease mechanism, particularly in the manufacturing sector. Mbingui, Owonda, and Diabakana (2021) analyzed the effect of oil rents on the economic development of Congo, revealing that reliance on oil rents negatively impacted development due to poor governance and corruption. Meanwhile, Ogundele et al. (2020) investigated the relationship between crude oil revenue and sustainable development, measured by HDI, in selected African oil-producing countries. They found no long-term relationship between crude oil revenue and sustainable development.

Despite the insights provided by these studies, they rarely focus explicitly on the impact of oil rents on the standard of living. The closest is the work by Ogundele et al. (2020), which examined crude oil revenue related to HDI but did not comprehensively address the broader concept of standard of living. This creates a gap in the literature, which this study seeks to address by examining the effect of oil rents on living standards in Nigeria. This approach aims to provide a more holistic understanding of how resource wealth is— or is not—translated into tangible improvements in the quality of life for citizens.

METHODS

Sources of data

This study utilizes time-series data spanning from 1970 to 2020, obtained from the Central Bank of Nigeria's Statistical Bulletin. The data encompasses key variables relevant to the analysis, including Living Standard (LS) proxied by Per Capita Income

(PCI), Oil Rent (OR), Oil Price (OP), Gross Domestic Product (GDP), and Exchange Rate (ER).

Model specification

The relationship between the Living Standard (LS) and the explanatory variables (OR, OP, GDP, and ER) is modeled as a linear function. The functional form is expressed as:

$LS = f(OR, OP, GDP, ER)$ ..... (1)

In econometric terms, the equation can be rewritten as:

$LS_t = \alpha + \beta_1 OR_t + \beta_2 OP_t + \beta_3 GDP_t + \beta_4 ER_t + e_t$ ..... (2)

Where:
LS = Living Standard, proxied by Per Capita Income (PCI)
OR = Oil Rent
OP = Oil Price
GDP = Economic Growth
ER = Exchange Rate.
α = Constant term
$\beta_1, \beta_2, \beta_3 \beta_4$ = Coefficients of the explanatory variables
e_t = Error term.

The model is built on several assumptions to ensure its validity and reliability. First, it assumes a linear relationship between the dependent variable, Living Standard (LS), and the independent variables, namely Oil Rent (OR), Oil Price (OP), Gross Domestic Product (GDP), and Exchange Rate (ER). This implies that changes in the independent variables are expected to result in proportional changes in the living standard.

Additionally, the model assumes that the error term (ϵ_t) has a zero mean and constant variance and that it is uncorrelated with the independent variables. This assumption ensures that the residuals are randomly distributed and do not systematically affect the estimates of the coefficients. However, the results of the Breusch-Pagan-Godfrey test indicate the presence of heteroscedasticity, suggesting that the variance of the error term is not constant across observations. This violation of the homoscedasticity assumption highlights potential inefficiencies in the coefficient estimates, necessitating adjustments such as robust standard errors to address this issue and ensure the reliability of the results.

Estimation procedure

To address the risk of spurious regression, commonly associated with non-stationary time-series data, the Augmented Dickey-Fuller (ADF) test is employed. The ADF test determines whether each variable is stationary. The test equations are as follows:

$$\Delta Y_t = \delta Y_{t-1} + \sum_{i=1}^{p} \alpha_i \Delta Y_{t-i} + \epsilon_t$$

$$\Delta Y_t = \alpha + \delta Y_{t-1} + \sum_{i=1}^{p} \alpha_i \Delta Y_{t-i} + \epsilon_t$$

$$\Delta Y_t = \alpha + \beta t + \delta Y_{t-1} + \sum_{i=1}^{p} \alpha_i \Delta Y_{t-i} + \epsilon_t$$

Where:
Δ = First difference operator

Yt = Dependent variable
Yt−1 = Lagged value of the dependent variable
Δ = Coefficient under test (δ=ρ−1)
t = Time trend
p = Number of lags, determined using Schwarz Bayesian Criterion (SBC) or Akaike Information Criterion (AIC).

The null hypothesis of the ADF test states that the series is non-stationary. Rejection of the null implies stationarity, while non-rejection indicates non-stationarity.

Given the mixed order of integration of the variables, the ARDL approach, developed by Pesaran et al. (2001), is employed to examine the existence of long-run relationships between the dependent and independent variables. The conditional error correction form of the ARDL model is expressed as:

$$\Delta LSt = \beta_0 + \sum_{i=1}^{p} \lambda_1 \Delta LSt_{i-1} + \sum_{j=1}^{q} \lambda_2 \Delta OR_{t-j} + \sum_{k=1}^{q} \lambda_3 \Delta OP_{t-k} + \sum_{l=1}^{q} \lambda_4 \Delta GDP_{t-l}$$
$$+ \sum_{m=1}^{q} \lambda_5 \Delta ER_{t-m} + \beta_1 LSt_{t-1} + \beta_2 OR_{t-1} + \beta_3 OP_{t-1}$$
$$+ \beta_4 GDP_{t-1} + \beta_5 ER_{t-1} + \epsilon_t$$

Here:
$\beta_1,\beta_2,\beta_3,\beta_4,\beta_5$ =: Long-run coefficients of the explanatory variables
$\lambda_1,\lambda_2,\lambda_3,\lambda_4,\lambda_5$ = Short-run coefficients of the explanatory variables
p,q = Lag orders for the dependent and independent variables
ϵ_t = Error term capturing stochastic disturbances.

The ARDL framework provides robust results regardless of whether the variables are purely stationary at level, integrated at the first difference, or a combination of both. This ensures a reliable estimation of both short-run dynamics and long-run relationships in the model.

RESULTS AND DISCUSSION

Unit root test

The Augmented Dickey-Fuller (ADF) unit root test results, as shown in Table 1, indicate that Living Standard (LS), Oil Rent (OR), and Gross Domestic Product (GDP) are stationary at the first difference (I(1)), while Oil Price (OP) and Exchange Rate (ER) are stationary at level (I(0)). This mixed order of integration justifies the use of the ARDL model, which accommodates variables with different integration orders, provided none are integrated beyond I(1)).

Table 1. Results of the ADF unit root test

Variables	Levels		First Difference		Order of Integration I(d)
	Constant	Constant & Trend	Constant	Constant & Trend	
LS	-1.518768	-2.116693	-5.540425**	-5.477110**	I(1)
OR	-1.480350	-1.573876	-7.205987**	-3.883849**	I(1)
OP	-1.762241	-3.894169**	-2.560442	-2.831697	I(0)
GDP	-0.563033	-1.771632	-5.000535**	-4.985692**	I(1)
ER	3.054351**	0.383450	-4.478824**	-5.372150**	I(0)

***Stationary at 5% level*

Lag selection for co-integration

Table 2 presents the results of lag selection criteria for the ARDL model. Various criteria, including the Akaike Information Criterion (AIC), Final Prediction Error (FPE), Schwarz Criterion (SC), and Hannan-Quinn Criterion (HQ), were used to determine the optimal lag length. The AIC and FPE suggest an optimal lag length of two, which was adopted for the co-integration test and ARDL estimation to ensure the short-term dynamics are well captured without overfitting.

Table 2. Result of lag selection for co-integration test

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-307.7374	NA	35274.10	13.30797	13.50480	13.38204
1	-305.4936	3.914667	33475.54	13.25505	13.49124	13.34393
2	-302.8949	4.423380*	31299.91*	13.18702*	13.46257*	13.29071*
3	-302.6681	0.376315	32382.98	13.21992	13.53484	13.33843
4	-302.4732	0.315183	33559.93	13.25418	13.60846	13.38750

* indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

F-bounds test for co-integration

The F-bounds test results in Table 3 confirm the existence of a long-run relationship among the variables. The F-statistic value of 11.06902 exceeds the upper bound critical value of 4.01 at a 5% significance level. This indicates co-integration between Living Standard (LS) and the explanatory variables—Oil Rent (OR), Oil Price (OP), Gross Domestic Product (GDP), and Exchange Rate (ER). The rejection of the null hypothesis of no co-integration suggests that the variables move together in the long run, implying a stable equilibrium relationship.

Table 3. F-Bound Test for Co-Integration

F-Bounds Test		Null Hypothesis: No levels of relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
		Asymptotic: n=1000		
F-statistic	11.06902	10%	2.45	3.52
k	4	5%	2.86	4.01
		2.5%	3.25	4.49
		1%	3.74	5.06

Long-run ARDL model results

The long-run ARDL model results in Table 4 indicate that Oil Rent (OR) and Gross Domestic Product (GDP) have positive but statistically insignificant relationships with Living Standard (LS), with coefficients of 60.47953 and 20.25425, respectively. This suggests that a one percent increase in OR and GDP would lead to increases in LS by approximately 60.48% and 20.25%, respectively, in the long run. However, the lack of statistical significance implies that these relationships are not robust.

Conversely, Oil Price (OP) and Exchange Rate (ER) have negative but statistically insignificant relationships with LS, with coefficients of -79.95780 and -15.99933, respectively. This indicates that a one percent increase in OP and ER would

decrease LS by approximately 79.96% and 16.00%, respectively. The negative relationship aligns with the expectation that rising oil prices and exchange rates could increase inflationary pressures, thereby reducing purchasing power and adversely affecting living standards. However, the insignificance of these results suggests that these variables have no substantial long-term impact on living standards in Nigeria.

Table 4. Result of long-run ARDL Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
OIL_RENT	60.47953	62.64436	0.965442	0.3408
OIL_PRICE	-79.95780	78.45987	-1.019092	0.3150
GDP	20.25425	13.95144	1.451767	0.1552
ER	-15.99933	12.58204	-1.271601	0.2117

The findings underscore the need for targeted policy interventions to ensure that oil rents and economic growth have a more pronounced and sustainable impact on living standards. This could include strengthening governance frameworks to enhance the efficient allocation and use of oil revenues, investing in infrastructure and social services to improve the quality of life, and implementing measures to stabilize the macroeconomic environment.

Furthermore, the weak long-term effects of oil prices and exchange rates on living standards highlight the urgent need for proactive economic diversification strategies. Reducing dependence on oil and fostering the development of resilient non-oil sectors are critical steps to mitigate vulnerabilities associated with external shocks, such as fluctuating oil prices and exchange rate volatility. Economic instability, a common challenge for oil-exporting countries, can be effectively addressed through diversification and the promotion of robust non-oil sectors (Osintseva, 2022; Brown & Huntington, 2017).

Financial development plays a pivotal role in channeling oil revenues into productive non-oil activities to support diversification efforts. Evidence from Azerbaijan and Kazakhstan demonstrates that well-functioning financial systems can amplify the positive impact of oil rents on non-oil GDP, facilitating the transition to a more balanced economic structure (Hasanov et al., 2023). By improving financial mechanisms, oil revenues can be utilized more effectively to support sectors that are less vulnerable to external shocks, thereby fostering economic resilience.

Moreover, the presence of high-quality institutions is essential for sustainable and inclusive economic growth in oil-dependent economies. Countries with strong institutional frameworks—characterized by transparency, accountability, and effective governance—are better equipped to manage oil revenues and mitigate the adverse effects of oil dependence. Institutional quality has been shown to play a key role in promoting non-oil sector development, as it ensures the efficient allocation of resources and minimizes rent-seeking behaviors (Belarbi et al., 2021).

Short-run ARDL model results

The short-run ARDL model results in Table 5 reveal that Oil Rent (OR) has a negative relationship with Living Standard (LS) in the current period and its one-year lag, with coefficients of -1.799718 and -4.698534, respectively. This indicates that increases in OR during these periods reduce LS by 1.80% and 4.70%, respectively. The result suggests that oil rent in the short term may not be effectively utilized to enhance living standards.

Oil Price (OP) exhibits a mixed short-term relationship with LS. The current value of OP has a negative and significant effect on LS with a coefficient of -3.432703, while its one-year lag shows a positive and significant effect with a coefficient of 3.273451. This reflects the dual effects of oil price changes, where immediate impacts may negatively affect purchasing power, but lagged effects could positively contribute through improved revenues and economic adjustments.

Gross Domestic Product (GDP) and Exchange Rate (ER) positively influence LS in the short run, with coefficients of 10.20958 and 2.850906, respectively. This implies that increases in GDP and ER improve LS by 10.21% and 2.85%, respectively, in the short term. However, the one-year lag of ER shows a positive but statistically insignificant effect on LS, indicating that its impact diminishes over time.

The error correction term (ECT) is negative and statistically significant, with a coefficient of -0.089452, confirming that any deviation from the long-run equilibrium is corrected at a speed of approximately 8.9% annually. This indicates a relatively slow adjustment process, reflecting the inertia in aligning short-term dynamics with long-run equilibrium.

Table 5. Result of short-run ARDL model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	23.74278	15.32246	1.549540	0.1300
D(OIL_RENT)	-1.799718	1.698139	-1.059818	0.2963
D(OIL_RENT(-1))	-4.698534	1.616375	-2.906834	0.0062
D(OIL_PRICE)	-3.432703	1.493667	-2.298172	0.0275
D(OIL_PRICE(-1))	3.273451	1.251889	2.614809	0.0130
D(GDP)	10.20958	0.566573	18.01988	0.0000
D(ER)	2.850906	0.747045	3.816245	0.0005
D(ER(-1))	1.372132	0.789474	1.738033	0.0908
ECT (-1)*	-0.089452	0.011407	-7.841845	0.0000

The results highlight that while oil rents and economic growth have a positive relationship with living standards in the long run, these effects are statistically insignificant, suggesting that structural and governance challenges may undermine the potential benefits of resource wealth. In the short run, oil rents negatively impact living standards, reflecting inefficiencies in their utilization. Oil price fluctuations show mixed effects, where immediate inflationary pressures are counterbalanced by lagged positive impacts.

The findings of this study emphasize the critical need for enhanced governance and resource management to ensure that revenues generated from oil rents and economic growth lead to tangible improvements in living standards. Effective governance plays a pivotal role in modulating the impact of oil wealth on economic outcomes. As highlighted by Njangang et al. (2022) and Asiegbu et al. (2024), good governance—marked by the rule of law, corruption control, and robust regulatory frameworks—can mitigate the adverse effects of oil rents on wealth inequality while fostering a more equitable distribution of resources.

Additionally, the research underscores the importance of economic diversification in addressing the challenges posed by oil price volatility and exchange rate fluctuations. Evidence from Qatar's non-oil sector demonstrates that diversification enhances resilience to negative oil price shocks, thereby reducing reliance on oil revenues and stabilizing the economy (Charfeddine & Barkat, 2020). This aligns with findings from

Grigoli et al. (2019), who revealed that countries with a more diversified export base tend to weather oil price shocks more effectively, underscoring the stabilizing effects of diversification on economic performance.

Diagnostic checks

Following the ARDL regression estimation, diagnostic tests were conducted to evaluate the reliability and validity of the model. These tests included the Breusch-Godfrey Serial Correlation LM Test to detect serial correlation, the Breusch-Pagan-Godfrey test to assess heteroscedasticity, the Ramsey RESET test to identify model misspecification, and the Jarque-Bera Test to determine whether the residuals are normally distributed.

Table 6. Diagnostic checks

Test	F-statistic	DF	Probability
Breusch-Godfrey Serial Correlation LM Test	0.542016	(2, 34)	0.5865
Heteroskedasticity Test: Breusch-Pagan-Godfrey	3.997911	(12, 36)	0.0006
Ramsey RESET Test	18.52105	(1, 35)	0.0001

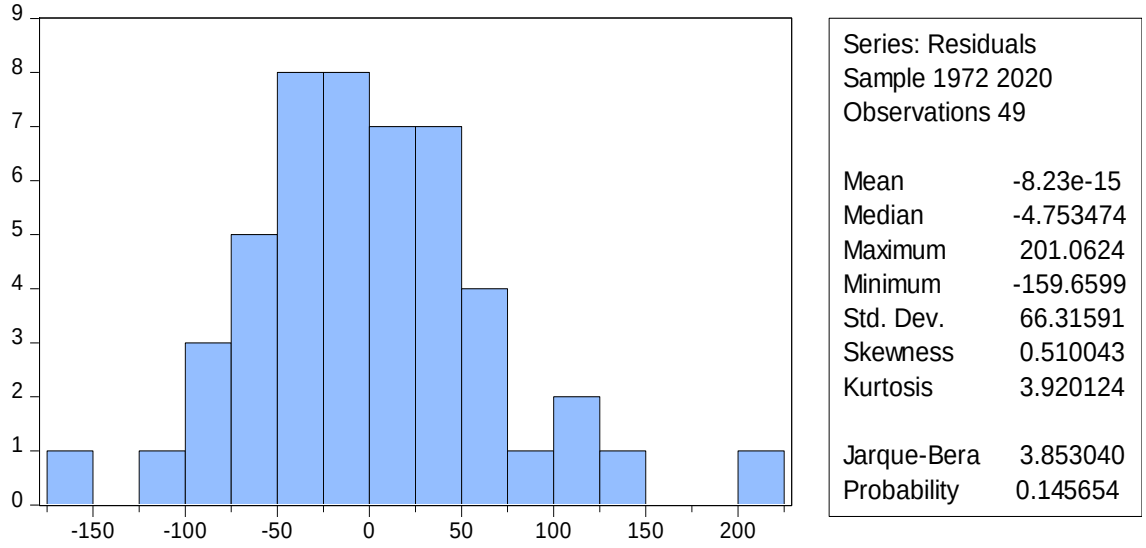

Figure 1. Normality Test

The diagnostic tests conducted on the ARDL model provide mixed insights into its robustness and reliability. The Breusch-Godfrey Serial Correlation LM Test shows that the F-statistic value of 0.542016, with a probability of 0.5865, is not significant at the 5% level. This result indicates the absence of serial correlation in the residuals. A high p-value suggests that the null hypothesis of no serial correlation cannot be rejected, confirming that the residuals are independent. This is an essential assumption of the ARDL model, ensuring that the error terms are not systematically related over time.

The Breusch-Pagan-Godfrey test for heteroscedasticity reveals a significant F-statistic value of 3.997911, with a probability of 0.0006. The low p-value indicates that the null hypothesis of homoscedasticity is rejected, suggesting that the residual variance is not constant across observations. This heteroscedasticity suggests an uneven distribution of residuals, which can affect the efficiency of the coefficient estimates. It highlights the need for adjustments, such as employing robust standard errors or alternative estimation techniques, to mitigate the potential impact on the model's efficiency.

The Ramsey RESET test provides evidence of model misspecification, with an F-statistic value of 18.52105 and a probability of 0.0001. The low p-value rejects the null hypothesis that the model is correctly specified, indicating that the functional form of the model may be inadequate or some key variables may have been omitted. This finding suggests the need to revisit the model's specification, perhaps by incorporating additional relevant variables or refining the functional structure to improve its accuracy and explanatory power.

Finally, the normality test results, as shown in Figure 1, indicate that the residuals are normally distributed. The Jarque-Bera test confirms this, as the residual distribution aligns with the theoretical normal curve. The normality of residuals supports the reliability of hypothesis testing and ensures that inferences drawn from the model are valid and unbiased.

CONCLUSION AND RECOMMENDATIONS

Conclusion

The objective of this study was to examine the impact of oil rents on the standard of living in Nigeria, an oil-producing nation. The analysis of available data revealed that, in the long run, there exists a positive relationship between oil rents and the standard of living. However, this relationship is not statistically significant. In the short run, however, oil rents, along with other independent variables such as oil price, gross domestic product, and exchange rate, were found to have a statistically significant negative impact on the standard of living. These findings underscore the complexities in translating resource wealth into improved living standards and highlight the challenges in managing short-run volatility associated with oil rents.

Recommendations

Several measures are recommended to address the challenges identified in the study and to enhance the effective utilization of oil rents to improve living standards in Nigeria. Government agencies should actively monitor oil price trends and adopt flexible policies to manage short-term shocks. These policies should focus on mitigating the immediate impacts of oil price volatility on the economy and ensuring that fluctuations do not disproportionately affect the standard of living of citizens.

Furthermore, revitalizing domestic oil refineries is crucial to reducing reliance on fuel importation, which currently drains a significant portion of oil revenues through subsidies. By producing sufficient refined fuel domestically, the government can reduce costs, minimize wastage of oil rents, and redirect savings to developmental projects such as healthcare, education, and infrastructure. This reallocation of resources is critical for fostering sustainable improvements in living standards.

The government must also direct oil rents toward productive and developmental projects. Strategic investments in infrastructure, human capital development, and public services can ensure that the benefits of oil wealth are equitably distributed across the population. Such initiatives will promote long-term economic growth and directly improve the quality of life for Nigerian citizens.

To ensure the transparency and accountability of oil revenues, robust monitoring and auditing mechanisms should be established. These systems should oversee oil exploration activities, track production costs, and accurately determine the quantity of

oil extracted. This will help eliminate revenue leakages, reduce corruption, and foster greater public trust in the management of natural resources.

The persistent issue of oil theft must also be tackled with urgency. Strengthened surveillance and patrol operations in oil-producing areas, coupled with the deployment of advanced monitoring technologies, can help curb this menace. Engaging local communities as stakeholders in monitoring and reporting illegal activities will further enhance resource protection and reduce losses from oil theft.

In addition to these policy recommendations, future research is necessary to explore the complex dynamics of oil rents and their impact on living standards. Future studies should investigate the mediating roles of governance, institutional quality, and fiscal policies in shaping the relationship between oil rents and socioeconomic outcomes. Moreover, comparative studies examining how other resource-rich countries have successfully leveraged their natural resources for development can provide valuable lessons for Nigeria. Longitudinal studies focusing on the intergenerational impacts of oil rents can also shed light on how to achieve sustainable benefits from natural resource wealth. These research directions will enrich the existing body of knowledge and support evidence-based policymaking for improving living standards in resource-dependent economies.

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