



An Assessment of The Short and Long-Run Effects of Oil Rent on Living Standards in Nigeria

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Abstract

Oil rent is crucial in enhancing standard of living in oil-rich nations. However, some countries, including Nigeria, still struggle to improve the living conditions of their citizens despite the substantial wealth amassed from oil rent. The study evaluates the short and long-run effects of oil rent on standard of living in Nigeria, utilizing annual time series data from 1981 to 2023. The analysis incorporates variables such as household consumption expenditure, oil rent, exchange rate, government expenditure, and gross domestic product. Error Correction Model (ECM) was employed to analyse the effect of oil rent on living standards in Nigeria. Findings revealed oil rents and exchange rates do not significantly impact household consumption in the short run but have significant long-run effects. This suggests that economic diversification is necessary to mitigate volatility associated with dependence on oil rents.

Keywords: Oil rent, Standard of living, household consumption expenditure **JEL Classification:**

1.0 Introduction

Oil sector is undeniably one of the most important sectors in the global economy. Its role in driving growth and development in advanced and emerging economies cannot be overemphasized. Oil has been a substantial factor in ensuring energy security as the world currently depends on three notable energy sources: oil, gas, and coal (Mayis et al, 2022). Despite the emergence of alternative energy, these three energy sources have continued to thrive in the energy sector, with the oil market remaining the most valuable commodity market in terms of volume and value, holding 60 percent of international production flows as well as accounting for nearly three-quarters of global trade (Cyriaque et al, 2021).

The global demand for crude oil has recently continued to increase, rising from 91.23 million barrels (m/b) per day in 2020 to 102.16 m/b in 2023(OPEC, 2023). This increase was triggered by factors, including rising demand for aviation fuel and the lack of readily available alternatives to crude oil (OPEC, 2023). Also, the growing interconnectedness of the global economy, coupled with rising populations and improving living standards are also contributing factors to this increase (Mayis et al, 2022).

Based on the high oil demand, revenue generated from the oil sector remains the largest compared to other sectors of the global economy. Oil-rich countries have leveraged this revenue to develop their economies and improve their living standards, however, living



standards vary across oil-rich nations, and the quality of life in oil-rich economies largely depends on the effective utilisation of oil rents (Cyriaque et al, 2021).

While oil wealth has the potential to enhance living standards, it is evident that not all oilrich countries have seen positive impacts on the lives of their citizens. A profound example is Nigeria, despite amassing a substantial amount of wealth from the oil sector, most of its oil refineries are in a dire state, thus not being able to create jobs, boost foreign exchange earnings, and achieve economic growth capable of improving the welfare of its citizens. Data from the World Bank indicated that Nigeria's oil rents accounted for 12.85% of the country's GDP in 2010, but declined by 7.4% in 2019 due to increasing activities of the Niger Delta militants (Topbie & Fiberesima, 2022). Despite its vast oil reserves, Nigeria struggles with a high inflation rate of 33%, driven primarily by rising energy costs and exchange rate fluctuations. Additionally, low human capital development has further deteriorated living standards in the country (Topbie & Fiberesima, 2022).

According to the UNDP Human Development Report (2024), Nigeria ranks 161st globally in human capital development. In terms of living standard, it ranks 145th, with the following Factors considered for rating living standards and the attached scores attributing to Nigeria; quality of life index (47.1), purchasing power index (9.4), safety index (33.8), health care (48.0), and cost of living (19.3) (NUMBEO, 2024). These issues raise questions regarding the significance of oil rents in raising living standards in oil-rich nations like Nigeria. Existing literature investigated the influence of oil rents on standard of living and their findings are conflicting. For example, Othman (2015), discovered that oil rents fell short of providing economic prosperity to oil-rich states in emerging economies like Nigeria. Another study found that oil rents are more of a curse than a blessing for oil-rich economies (Jose et al. 2015). In contrast Mustapha et al. (2023), findings revealed that crude oil revenue has a positive and significant impact on economic growth in the long run. The findings of Awujola et al. (2020) conform, indicating a long-term positive correlation between crude oil rents and Nigeria's economic growth.

This conflicting finding presents a significant gap that begs further studying the impact of oil rent on standard of living. in addition to this gap, previous studies such as Othman (2015) and Mustapha et al. (2023) have examined the influence of oil rents on standard of living, quantifying standard of living with several metrics such as human capital development, education, and health, among others, however, majority of studies used different measures of standard of living other than household consumption expenditure.

This study analyses the short- and long-run impact of changes in oil rent on the standard of living in Nigeria using household consumption expenditure as a measurement of living standards. It is believed that household consumption expenditure captures in totality, the quality of life of people in Nigeria. Also, the study employed the Error Correction Model to assess the short- and long-run effect of oil rent on living standards. ECM was used due to the variables were cointegrated and stationary at the first difference I(1). Meaning they have a long-term stable relationship despite being non-stationary individually. In such cases, ECM helps in modeling both the short-term fluctuations and the long-term equilibrium



The findings of this study as well as the recommendation will be beneficial to policymakers as it will provide valuable insights on the utilisation of oil wealth toward improving the welfare of the people in Nigeria. Also, it will contribute to existing knowledge as well as form the basis for further studying the impact of oil rent on standard of living in Nigeria.

The remaining portions of this study are divided into four sections. In section two, the literature review is covered, and in section three, the methodology. Section Four focuses on the analysis and discussion of the results. The fifth section covers the summary and conclusion.

2.0 Literature Review

2.1 Conceptual Review

2.1.1 The Concept of Oil Rent

World Bank (2022) defined oil rent as the difference between the value of crude oil production at regional prices and the total costs of production. According to Blas (2023), Oil rent can be seen as the surplus revenue generated from the extraction and sale of oil resources above the cost of production. It represents the economic rent earned by oil-producing entities, including governments and private companies, by exploiting natural oil reserves. Oil rent can also be seen as the difference between the market price of oil and the production cost, including exploration, extraction, and transportation expenses. Jeffrey (2020), referred to oil rent as a potential source of financing for sustainable development initiatives, such as investments in infrastructure, education, and healthcare. Daniel (2017), viewed oil rent as a driver of geopolitical competition and strategic interests among oil-producing and oil-consuming countries. Terry (2009), a prominent political scientist, defines oil rent as "the difference between the total revenue from oil exports and the total costs of producing that oil.

This study adopts the definition of (Blas 2023), who defined oil rent in terms of surplus revenue generated from the extraction and sale of oil resources above the cost of production, as this study is concerned with oil rent utilisation in improving living standard.

2.1.2 Standard of Living

Standard of living is a measure of the economic prosperity and overall well-being of individuals or communities within a specific geographic area. It is a comprehensive indicator that takes into account various factors affecting people's lives. The importance of the standard of living lies in its ability to reflect and influence the quality of life for individuals and societies, as captured in Several scholarly articles for example;

According to Rebecca and Moretti (2021), living standard is the amount of market-based consumption households can purchase which depends on both the expected income levels of residents and the local cost of living. Gulbakhor (2023), citing the United Nations, applied the international benchmarks for standard of living cutting across 12 essential areas. These include birth and death rates, life expectancy, access to sanitary and hygienic conditions, food consumption levels, housing quality, educational and cultural opportunities, working



conditions, employment rates, income and expenditure balance, consumer prices, vehicle availability, and access to recreation and leisure. Furthermore, social security and human rights safeguards are viewed as indications of one's style of living. These indicators can be interpreted in two ways: narrowly as meeting consumption needs through earned income and expenses, and broadly as encompassing human development levels (such as health and access to basic needs) and the creation of living conditions (such as environmental quality and security). Deeming (2017), defined living standard as human needs, along with the commodities required to satisfy them.

This study builds on the definition of living standards proposed by Deeming (2017), which encompasses both human needs and the commodities necessary to fulfill them. This aligns with the concept of household expenditure and its impact on improving quality of life, as explored in this study.

2.2 Theoretical Framework: Rentier State Theory

Rentier state theory was first propounded by Hazem Beblawi and Giacomo Luciani in 1980. The theory explains the economic and political dynamics of countries heavily reliant on revenue from natural resources, particularly oil and gas. According to this theory, in rentier states, the government derives a significant portion of its revenue from rents or royalties paid by foreign companies extracting natural resources. As a result, these states tend to have unique economic and political characteristics, including dependency on natural resources, weak institutions, and rentier effect. Rentier State Theory is significant in explaining how the reliance on oil rent can impact various aspects of the standard of living in Nigeria, including economic stability, social welfare, and governance effectiveness.

This theory is well suited for this study as its feature of government depending significantly on oil revenue is evident in Nigeria (IMF, 2021). Also, the challenges of the weak institution and rentier effect are playing out in the Nigerian economy evidenced by institutional failures recorded in most public offices in Nigeria. For the rentier effect, the Nigerian economy is less diversified which exposes it to greater vulnerability resulting from fluctuations in global commodity prices.

2.3 Empirical Review

Existing literature has examined the impact of oil rent on standard of living using diverse variables such as education, health, quality of life, and infrastructural development among others as a measure of standard of living, employing different analytical techniques. The findings are conflicting. While some study's findings indicate that oil rent improves the standard of living, others suggest the opposite. For example;

Mustapha et al. (2023) investigated the impact of crude oil revenue and institutional quality on economic growth in Nigeria from 1996 to 2020. Utilizing the Augmented Autoregressive Distributive Lag (ARDL) bound testing approach and the Toda-Yamamoto causality test, the results indicated a long-run relationship between crude oil revenue, institutional quality, and



economic growth in Nigeria. Furthermore, crude oil revenue was found to have a positive and significant impact on economic growth in the long run.

Mayis et al (2022), investigated the impact of oil price shocks on economic growth in six oilexporting Arab countries from 1998 to 2018 by employing VAR models and Granger causality tests. The results indicated that increases in oil prices positively influence GDP growth in these countries. However, these effects are not indicative of a Granger causality relationship.

Topbie and Fiberesima (2022), analysed the link between petroleum resources and economic welfare in five lower-middle-income oil-producing countries (Nigeria, Pakistan, Indonesia, Egypt, and India) from 2010 to 2020. Using a static panel data method and models like Pooled OLS, Fixed Effects, and Random Effects, it found that petroleum resources, as measured by oil rents and official exchange rates, positively and significantly influenced economic welfare. These results highlight the importance of oil revenue and exchange rate stability in enhancing economic well-being in oil-dependent economies.

Habanabaize (2021), analysed the impact of petrol prices and exchange rate volatility on household expenditure using quarterly time series data from 2008 to 2020. Employing a systematic sampling technique, the findings indicate a significant long-term relationship between household expenditure, income levels, exchange rate volatility, and petrol prices

Cyriaque et al (2021), examined the impact of oil rent on economic development in the Republic of Congo from 1987 to 2016 using a Vector Error Correction Model (VECM). The results indicated that reliance on oil rent adversely affects Congo's development. Tracing the poor growth performance to deteriorating governance and generalised corruption.

Akeerebari and Adesugba (2021), examined the relationship between crude oil dependence and economic development in Nigeria from 1981 to 2019, using methods such as the Augmented Dickey-Fuller test, Johansen co-integration, Granger causality test, and Vector Error Correction Model (VECM). It found that government expenditure, oil revenue, and external reserves positively but insignificantly affect gross national income per capita. However, the exchange rate showed a negative and significant impact, highlighting its critical influence on economic development in the context of oil dependency.

Maijama and Musa (2021) investigated the effect of crude oil prices on macroeconomic variables in five selected OPEC African member countries, including Algeria, Congo, Equatorial Guinea, Gabon, and Nigeria, from 1991 to 2018. Utilizing a panel vector autoregressive model, the study found that rising crude oil prices positively influence economic growth, inflation, money supply, and the short-run exchange rate. Conversely, they negatively affect unemployment and the long-run exchange rate in these countries.

Ologunde et al (2020), analyzed sustainable development and crude oil revenue in selected crude oil-producing African countries from 1992 to 2017 using Pooled Mean Group (PMG) estimators on a panel autoregressive distributed lag (ARDL) model. The results indicated that



there is no long-term relationship between crude oil revenue and sustainable development, implying that fluctuations in crude oil revenue can potentially have a negative impact on sustainable development in these countries.

Awujola et al. (2020) analyzed the economic impact of oil exportation on the Nigerian economy from 1970 to 2012 using a Vector Error Correction Model (VECM). The study revealed a long-run relationship between crude oil exports and economic growth in Nigeria.

Kelikume & Muritala (2019), assessed the impact of oil prices on African stock markets using quarterly data from 2010 to 2018, focusing on five selected oil-producing countries with active stock markets. Employing a dynamic panel analysis technique. The findings revealed that oil prices adversely affect stock markets in Africa, a consequence of the fragmented and underdeveloped nature of these capital markets.

Emediegwu & Okeke (2017), examined how volatility in oil prices led to inconsistency in economic growth in Nigeria from 1993 to 2015, using a descriptive method. The findings revealed a positive relationship between oil dependency and economic growth inconsistency in Nigeria.

3.0 Methodology

3.1 Sources of Data

Annual time series data on gross domestic product, exchange rate, oil rent, household consumption expenditure and government expenditure were sourced from the World Bank Indicator (WDI). WDI is selected due to its long history of providing reliable secondary data.

3.2 Model specification

The study employed the Error correction model developed by Sir Clive W.J. Granger in 1980 and utilised by Habanabakize (2021). The ECM was employed because of its ability to reconcile short-run dynamics with the long-run equilibrium using the error correction variable. The study adapts Habanabakize (2021) model, with slight modifications. His model was specified as:

where:

LHEXP: is the natural logarithm of total household expenditure

LPPR: is the natural logarithm of total petrol price

LEXR: is the natural logarithm of the exchange rate

LINC: is the natural logarithm of disposable income for a household

 β 0: is intercept (constant) term

 β 1, β 2 and β 3: are coefficients of independent variables

 ϵ : is the stochastic error term

t: is the period.



However, the model for this study is modified as

Household expenditur e_t =f (oil rent, Exchange rate, GDP, Government Expenditure) (ii)

 $HCC_t = a_0 + b_1 ORT_t + b_2 EXC_t + b_3 GDP_t + b_4 GR_t + \mu_{t1}$ (iiii)

In modifying the model, variables such as gross domestic product (GDP), oil rent, and government expenditure were included. This enables the study to capture how oil rent is utilised and its impact on GDP. This allows for a comprehensive analysis of the economic effects of oil rent on national income and standard of living.

Where:

HCC = Household consumption expenditure

ORT = Oil Rent

EXC = Exchange Rate

GDP = Gross Domestic Product

GE = Government Expenditure

4.0 Result and Discussion of Findings

This section discusses the results of the study as presented below:

Variable	ADF at level	Critical value at level (5%)	ADF at 1st difference	Critical value 1st difference (5%)	Order of integration
LHCC	-0.778	-3.520	-7.050	-3.523	I(1)
ORT	-2.292	-3.533	-7.613	-3.533	I(1)
LGDP	-3.004	-3.520	-5.305	-3.523	I(1)
LGE	-1.003	-3.526	-8.858	-3.533	I(1)
EXC	0.096	-3.523	-4.931	-3.526	I(1)

Table 1: ADF Unit Root Test

Source: Author's computation using E-views 9.

Table 1 shows the result of ADF unit root test for stationarity. The unit root test was conducted with the inclusion of both trend and intercept. This approach was chosen because time series data often exhibit a deterministic trend over time. Including the trend and intercept helps to accurately determine the mean and enhances the power and accuracy of the unit root tests. By capturing the underlying data-generating process more effectively, the test statistics become more reliable. The result showed that all variables (LGDP, LHCC, EXC, ORT, and GE) were stationary at first difference I(1). Meaning they contained no unit root after taking their first difference. It is evidenced that HCC, ORT, LGDP, GE, and EXC with ADF values of -7.05, -7.61, -5.30, -8.85, and -4.93 respectively were greater than the critical values at first difference indicating stationarity. The order of integration I(1) satisfies the



condition for employing dynamic ordinary least squares and a fully modified ordinary least squares model.

Hypothesized	Eigenvalue	Trace	0.05 Critical	Prob.**	
No. of CE(s)		Statistic	Value		
None *	0.740	89.799	69.818	0.001	
At most 1	0.429	39.915	47.856	0.225	
At most 2	0.251	19.122	29.797	0.484	
At most 3	0.170	8.412	15.494	0.422	
At most 4	0.039	1.481	3.841	0.223	

Table 2: Johansen Cointegration Test

Source: Author's computation using E-views 9.

Table 2 presents the results of the Johansen cointegration test, providing evidence of long-run relationships among the variables. The test reveals that there exists at most one cointegrating variable in the model. This is evidenced in the trace statistics value of 89.799 when compared to the critical values of 69.818 at 5% significance level, which showed it was greater. This implies that the variables are cointegrated and long-run equilibrium relationships exist among the variables in the model. The choice of the Johansen test is justified by the integrating order of the variables, which were all at order one I(1).

Normalized Cointegration Coefficients Long run Result				
LHCC	ORT	LGE	LGDP	EXC
1.000	-0.483	11.434	-25.954	-0.127
Std err	(0.398)	(1.906)	(3.704)	(0.033)
t-stat	-1.213	5.996	-7.005	-3.778

Table 3: Normalized Cointegration Coefficients

Source: Author's computation using E-views 9.

Table 3 presents the long-run results derived from the Johansen cointegration test, with the normalized cointegration equation reported in reverse form. The analysis reveals that a 1% increase in oil rent (ORT), gross domestic product (LGDP), and exchange rate (EXC) has a statistically significant and positive effect on household consumption (HCC). This indicates that, in the long run, improvements in these variables contribute to enhancing household consumption expenditure, which is a critical indicator of an improved standard of living in Nigeria. These results align with the a priori expectation that higher oil rent, as a significant revenue source for an oil-dependent economy like Nigeria, should directly or indirectly lead to better living conditions by boosting household spending. Additionally, a stronger gross domestic product reflects a growing economy with increased productivity and income, which likely translates into higher consumption levels. Similarly, changes in the exchange rate, particularly currency appreciation or stability, may enhance purchasing power, thereby



promoting higher household expenditure. These findings are consistent with previous studies, such as Habanabakize (2021), which also highlight the positive link between these macroeconomic variables and household welfare.

On the other hand, the results show that a 1% increase in government expenditure has a significant negative effect on household consumption in the long run. This counterintuitive finding suggests that increased government spending in Nigeria does not translate into improved household welfare. Instead, it may reduce household consumption due to inefficiencies in the allocation and execution of public funds. Corruption, budget padding, and mismanagement often divert resources from productive uses, undermining the intended objectives of public expenditure, such as infrastructure development, social programs, and economic empowerment. As a result, the potential positive impact on household consumption and living standards is diminished or even reversed. This highlights a critical issue in Nigeria's fiscal policy, where increased government spending does not necessarily lead to the anticipated economic and social benefits, emphasizing the need for more transparent and efficient public financial management.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
	0.404	0.120	2 120	0.002
U	0.404	0.129	3.130	0.003
LHCC(-1)	-0.192	0.166	-1.153	0.257
ORT(-2)	-0.041	0.024	-1.680	0.103
LGE	-0.095	0.132	-0.717	0.478
EXC(-1)	-0.006	0.006	-0.998	0.326
LGDP	0.065	0.401	0.162	0.872
ECT(-1)	-0.464	0.156	-2.963	0.005
R-squared	0.552	Mean dependen	t var	0.218
Adjusted R-squared	0.539	S.D. dependent var		0.835
S.E. of regression	0.673	Akaike info criterion		2.217
Sum squared resid	13.625	Schwarz criterion		2.522
Log likelihood	-34.019	Hannan-Quinn d	criter.	2.324
F-statistic	4.228	Durbin-Watson	stat	2.094
Prob(F-statistic)	0.003			

 Table 4: Parsimonious Error Correction Model (PECM)

Source: Author's computation using E-views 9.

The Error Correction Model (ECM) is a powerful tool for analyzing both short-term fluctuations and long-term equilibrium relationships among variables. It assesses the



existence of persistent relationships between variables and evaluates how quickly the system reverts to equilibrium after disturbances. The results presented in Table 4 show that the estimated coefficient of household consumption expenditure (LHCC) is negative and insignificant, implying that household consumption expenditure does not significantly affect itself in the long run. Similarly, the coefficient for oil rent (ORT) is negative and insignificant, indicating that a unit change in oil rent corresponds to an approximate 0.095% decrease in household consumption expenditure. This suggests that oil rent does not positively influence household consumption, potentially due to challenges such as resource mismanagement or a lack of redistribution of oil wealth to households.

The coefficient for government expenditure (LGE) is also negative and insignificant, meaning that a unit change in government expenditure results in a 0.041% decrease in household consumption expenditure. This finding highlights inefficiencies in government spending, likely linked to corruption and misallocation of resources, which undermine its potential to improve household welfare. Additionally, the exchange rate (EXC) has a negative and insignificant coefficient, indicating that a unit change in the exchange rate contributes to a 0.006% decrease in household consumption expenditure. This may be attributed to the adverse effects of exchange rate volatility, such as inflationary pressures eroding household purchasing power. Conversely, the coefficient for GDP (LGDP) is positive but insignificant, suggesting that a unit change in GDP results in a 0.065% increase in household consumption expenditure. Although this positive relationship aligns with theoretical expectations, its insignificance points to structural issues in the Nigerian economy that limit the impact of GDP growth on household welfare. These findings are consistent with those of Emediegwu and Okeke (2017), who similarly emphasize the need for policies that ensure macroeconomic growth translates into tangible benefits for households.

The error correction term is negative and statistically significant, indicating that the model effectively captures the adjustment process back to equilibrium after short-term deviations. Specifically, about 46% of deviations from the long-term equilibrium are corrected in the short run, underscoring the model's robustness in maintaining equilibrium relationships over time. Furthermore, the diagnostic measures of the model show a Durbin-Watson statistic of 2.09, indicating no evidence of autocorrelation, and an R-squared value of 0.552, meaning that the model explains about 55% of the variation in household consumption expenditure in Nigeria. While this reflects moderate explanatory power, it also suggests that other unaccounted-for factors may significantly influence household consumption.

5.0 Policy Implication

Contrary to a priori expectations, both oil rent and government expenditure negatively impact household consumption expenditure in Nigeria. It was anticipated that increased oil rent would boost revenue, subsequently increasing household consumption expenditure. However, the results suggest that oil rent does not play a significant role in determining household consumption expenditure, which differs from the findings of other studies. This indicates that other factors might be more influential in driving household consumption expenditure. Also, the negative impact of the exchange rate on household consumption



expenditure aligns with expectations. This finding underscores the need for policies that cushion the adverse effects of exchange rate fluctuations on household consumption. Measures to stabilize the exchange rate or mitigate its negative impact could be crucial for maintaining household spending levels.

6.0 Conclusion and Recommendations

This study investigated the short- and long-run impacts of oil rents on the standard of living in Nigeria from 1981 to 2023. The findings revealed that oil rents and exchange rates do not significantly impact household consumption expenditure in the short run but have significant long-run effects. This suggests that economic diversification is necessary to mitigate the volatility associated with dependence on oil rents. Additionally, government expenditure (LGE) does not significantly impact household consumption expenditure (HCC) in the short run.

In this regard, the study recommends reforms such as Implementing public-private partnerships and enhancing fiscal monitoring to ensure efficiency in government spending. This spending should be targeted toward projects that directly benefit households, such as healthcare and education, to have a long-term positive impact. Also, diversifying the economy is essential to mitigate the short-run volatility of exchange rates and oil rents. This would reduce the economy's vulnerability to external shocks and create a more stable environment for household consumption.

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