

HYDROCARBON TAX REVENUE AND HEALTHCARE DELIVERY IN NIGERIA.

Paulinus Y. ANEWE ¹, & Eke PROMISE ²

Department of Accounting, Ignatius Ajuru University of Education,
Rumuolumeni, Port Harcourt, Nigeria
Email: promiseeke40@gmail.com

ABSTRACT

The study investigated the association between hydrocarbon tax revenue and healthcare delivery (HCD) in Nigeria. An ex-post facto research design was employed. A purposive sampling technique was used to select annual observations over a 13-year period (2011–2023). Secondary data were obtained from the CBN Statistical Bulletin and analyzed using descriptive statistics and Pearson Product Moment Correlation (PPMC). The correlation analysis revealed a weak negative and statistically insignificant relationship between hydrocarbon tax revenue and healthcare delivery. Based on the findings, the study concludes that hydrocarbon tax revenue did not have a significant association with healthcare delivery in Nigeria during the review period. It is recommended that the Nigerian government strengthens fiscal governance, transparency, and resource allocation mechanisms to ensure that hydrocarbon tax revenues are effectively channeled towards improving healthcare outcomes. The study underscores the importance of addressing systemic inefficiencies in order to realize the full potential of hydrocarbon tax as a tool for healthcare development.

Keywords: Hydrocarbon Tax Revenue, Healthcare Delivery.

JEL Classification Code: H20, Q10

1. INTRODUCTION

The healthcare delivery system in Nigeria has faced numerous challenges, ranging from inadequate infrastructure to underfunding and inefficient service delivery (World Bank, 2021). The country's dependence on oil revenue has significantly shaped its fiscal

policies, including the introduction of hydrocarbon taxation, which is aimed at diversifying income streams and improving public services such as healthcare. This reliance on hydrocarbon taxes has raised questions regarding their role in addressing the healthcare sector's funding gaps, especially in developing countries where public health services heavily depend on government funding (Adelakun & Lawal, 2023).

Hydrocarbon taxation refers to the levies imposed on oil and gas companies for the extraction, production, and distribution of hydrocarbons. These taxes, including royalties, petroleum profit taxes, and gas flaring penalties, are major contributors to government revenue in oil-dependent nations like Nigeria (Olaoye & Akinleye, 2022). Given the substantial revenue generated, there is an expectation that such resources should translate into improved social services, including accessible and affordable healthcare for the population. However, the link between hydrocarbon tax revenues and healthcare outcomes remains underexplored in Nigeria, necessitating an empirical investigation.

Despite significant hydrocarbon revenue generation, Nigeria's healthcare system lags in achieving key indicators, such as reduced infant mortality rates and increased life expectancy (United Nations Development Programme (UNDP, 2023). Studies suggest that while oil revenues contribute to the national budget, inefficiencies in resource allocation and corruption hinder the effective utilization of funds for healthcare delivery (Adewuyi & Adeoye, 2022). This raises concerns over whether hydrocarbon tax revenue is being optimally channeled into the health sector or diverted to other non-health-related expenditures.

Furthermore, Nigeria faces a critical need for healthcare reforms, with a growing population and rising disease burden. For instance, health infrastructure remains insufficient, with rural areas experiencing severe shortages of medical personnel and facilities (National Bureau of Statistics (NBS, 2023). If hydrocarbon tax revenues are appropriately allocated, they have the potential to bridge this funding gap and significantly improve healthcare accessibility and quality. Exploring this relationship is crucial to understanding how tax policy can drive social and economic development in resource-rich economies.

The study also aligns with global sustainability goals, particularly Sustainable Development Goal 3, which seeks to ensure healthy lives and promote well-being for all at all ages (World Health Organization (WHO, 2023). Nigeria's commitment to achieving these goals depends, in part, on leveraging fiscal tools like hydrocarbon taxation to

strengthen its healthcare system. Therefore, examining the effect of hydrocarbon tax revenues on healthcare delivery is timely and relevant to policymakers, stakeholders, and researchers.

Several studies have explored the effect of hydrocarbon tax revenues on healthcare delivery, but gaps remain in understanding the direct impact of hydrocarbon tax on healthcare outcomes in Nigeria. For example, Adewale and Fatima (2023) examined petroleum tax revenues and healthcare outcomes, but their focus was on oil-producing states, leaving a gap in the national perspective. Similarly, Yusuf and Amina (2023) studied maternal healthcare but did not consider the broader healthcare delivery context. This study fills these gaps by specifically assessing the effect of hydrocarbon tax on healthcare delivery at a national level, utilizing a comprehensive dataset covering 13 years (2011-2023), thus providing a more detailed and wide-ranging understanding of the relationship.

Objective of the Study

1. To investigate the association between hydrocarbon tax between healthcare delivery in Nigeria.

Research Hypothesis

H₀₁: There is no significant association between hydrocarbon tax revenue and healthcare delivery in Nigeria.

2. LITERATURE REVIEW

2.1 Conceptual Review

Hydrocarbon Tax Revenue

This refers to the fiscal levies imposed on the exploration, production, and distribution of hydrocarbons such as oil and natural gas. These taxes typically include royalties, petroleum profit taxes, gas flaring penalties, and other regulatory fees aimed at generating revenue for the government from the extraction of finite natural resources. In resource-rich countries like Nigeria, hydrocarbon taxation plays a critical role in financing public budgets, with revenues often allocated to infrastructure development, education, healthcare, and other social services (Olaoye & Akinleye, 2022). However, while hydrocarbon tax serves as a significant income stream, challenges such as revenue mismanagement, corruption, and inefficiencies in tax collection often hinder its potential impact on socio-economic development. This has sparked debates about the sustainability of relying on hydrocarbon tax revenues and the need for more transparent and effective fiscal policies.

Healthcare Delivery

Healthcare delivery refers to the provision of medical services, resources, and interventions aimed at maintaining, improving, or restoring the health and well-being of individuals and communities. It encompasses a wide range of activities, including preventive care, diagnosis, treatment, rehabilitation, and palliative care, delivered through healthcare facilities, professionals, and systems. Effective healthcare delivery relies on adequate infrastructure, skilled personnel, financing mechanisms, and access to essential medicines and technology (World Health Organization (WHO, 2023)). In Nigeria, healthcare delivery faces significant challenges, such as underfunding, poor infrastructure, and inequitable access, particularly in rural areas (National Bureau of Statistics (NBS, 2023)). Strengthening healthcare delivery is critical for addressing the country's high disease burden, improving life expectancy, and achieving the Sustainable Development Goals, particularly Goal 3, which focuses on ensuring healthy lives and promoting well-being for all ages.

2.2 Theoretical Review

Resource Curse Theory

The Resource Curse Theory, also known as the "Paradox of Plenty." This theory, proposed by Auty (1993), suggests that countries rich in natural resources often experience slower economic growth and poor development outcomes compared to resource-scarce nations. The paradox lies in the mismanagement of resource wealth, where revenues from resources such as hydrocarbons, instead of being used for development, are often diverted due to corruption, weak governance, or inefficient fiscal policies. In the context of healthcare delivery, the theory posits that despite significant revenues generated from hydrocarbon taxes, resource-dependent countries may fail to allocate these funds effectively toward improving healthcare infrastructure, accessibility, and quality, thus exacerbating socio-economic inequalities.

Applying the Resource Curse Theory to Nigeria highlights how over-reliance on hydrocarbon taxes, coupled with systemic issues such as poor governance and limited fiscal accountability, has impeded the ability to achieve equitable healthcare delivery. While hydrocarbon revenues present an opportunity to finance healthcare improvements, their misallocation or underutilization often leads to inadequate investments in critical health infrastructure, rural healthcare services, and workforce development. The theory provides a framework for analyzing how resource wealth can be better managed through policies that emphasize transparency, accountability, and targeted expenditure on social

services such as healthcare, ultimately breaking the cycle of resource dependence and fostering sustainable development.

2.3 Empirical Review

Eke et al. (2023), determined the correlation between health sector expenditure and economic development in Nigeria. The study adopted ex-post-factor research design. The population of this study was the entire Nigerian economy where the properties of data used for this research were extracted covering 1981 to 2022. Using judgmental sampling technique, a sample of 42years' period from 1981 to 2022 were used. Time series secondary data obtained basically from the CBN bulletin and world demographic index for a period of 42years (1981 to 2022) were used. Multiple regression analysis was used to test the hypothesis on the strength of relationship between the predictor and criterion variables (HDI and GDP). Co-integration test was used to determine the long-run effect of the predictor variable on the criterion variables (HDI and GDP). The study disclosed a significant positive relationship between health sector expenditure and economic development in Nigeria. Meanwhile, the co-integration test displayed none existence of long-run relationship between the variables. Consequently, the study further recommended that government should allocate more resources to build and upgrade healthcare facilities, including hospitals, clinics, and medical laboratories. Government should also encourage the adoption of health insurance schemes, both public and private, to ensure that more Nigerians have access to affordable healthcare services.

Adewale and Fatima (2023) explored the link between petroleum tax revenues and healthcare outcomes in oil-producing states in Nigeria. The study used a panel data approach, focusing on infant mortality rates and healthcare access indicators between 1990 and 2020. Results showed that higher petroleum tax revenues correlate with reduced infant mortality rates but only when revenues are earmarked for healthcare investments. The study concluded that adopting fiscal policies that prioritize healthcare funding could enhance overall health outcomes in oil-rich regions.

Yusuf and Amina (2023) studied the impact of hydrocarbon tax revenue on maternal healthcare services in Nigeria. Using econometric models and data from 1995 to 2021, the study found that hydrocarbon tax revenues have a significant positive effect on maternal healthcare indicators such as antenatal care and maternal mortality rates. However, the study emphasized the need for better fiscal policies to channel these revenues effectively toward maternal health programs.

Adebayo and Grace (2023) analyzed the nexus between hydrocarbon taxes and healthcare workforce development in Nigeria. The study employed time-series analysis from 1990 to 2022, examining how revenues from hydrocarbon taxes impact the availability of skilled healthcare professionals. Findings revealed that states with higher allocations from hydrocarbon taxes showed better healthcare workforce development. The study recommended targeted training programs funded by hydrocarbon tax revenues to address workforce shortages.

Obi and Chioma (2023) explored the relationship between hydrocarbon tax revenues and public health expenditure in Nigeria. The study employed an ARDL model to analyze data spanning from 1980 to 2022. Results showed that hydrocarbon tax revenues significantly drive public health spending, though inefficiencies in spending allocation often reduce the effectiveness of these investments. The study recommended policy reforms to enhance the efficiency of health expenditure.

Eze and Chika (2022) examined the impact of hydrocarbon tax on healthcare financing in Nigeria. The study adopted an ex-post-facto research design, analyzing data from 1985 to 2020 sourced from the Central Bank of Nigeria and National Bureau of Statistics. Using multiple regression analysis, the findings revealed a significant positive relationship between hydrocarbon tax revenue and healthcare financing. However, the study highlighted inefficiencies in resource allocation that hinder the full impact on healthcare delivery. The authors recommended improved transparency in revenue allocation and increased investment in rural healthcare infrastructure.

Okoro and Emmanuel (2021) investigated the role of hydrocarbon taxes in achieving universal health coverage in Nigeria. The study used qualitative methods, including interviews with policymakers and healthcare professionals, combined with an analysis of fiscal data from 2000 to 2020. The findings indicated that while hydrocarbon taxes have the potential to bridge the healthcare funding gap, the lack of effective governance limits their impact. The study recommended stronger fiscal accountability measures and the establishment of a health fund financed by hydrocarbon taxes.

Musa and Ibrahim (2022) assessed the effect of oil and gas tax revenues on healthcare infrastructure development in Nigeria from 1995 to 2021. Using co-integration and error correction modeling techniques, the study revealed a significant short-term impact of oil tax revenues on healthcare infrastructure investment but found no evidence of a long-term

relationship. The authors suggested adopting sustainable fiscal policies to ensure continuous funding for healthcare development.

Samuel and Blessing (2021) examined the utilization of hydrocarbon tax revenues in primary healthcare delivery in the Niger Delta region of Nigeria. Using case studies and financial reports from local governments between 2010 and 2020, the study revealed that hydrocarbon tax revenues are often underutilized for healthcare services due to corruption and mismanagement. The authors advocated for the implementation of community-driven health initiatives funded by hydrocarbon taxes.

3. METHODOLOGY

This study employed an ex-post facto research design. The population includes key sectors of the Nigerian economy such as Federal Inland Revenue Services (IFRS), Central Bank of Nigeria (CBN), and health sectors. Purposive sampling technique was used to select a sample size of 13 years (2011-2023) annual observations. Data were collected through Secondary source via Central Bank of Nigeria (CBN) Statistical Bulletin. The collected data were further analyzed using descriptive statistics, and Correlation (PPMC). The correlation analysis was based on Pearson Product Moment Correlation Coefficient (PPMC). PPMC is computed thus:

$$r_{xy} = \frac{S_{xy}}{(S_x)(S_y)}$$

Where;

r_{xy} = sample correlation coefficient

S_{xy} = sample covariance

S_x = sample standard deviation of Hydrocarbon Tax revenue (HCT)

S_y = sample standard deviation of Healthcare Delivery (HCD)

The correlation coefficient measures the association between Hydrocarbon Tax revenue and Healthcare Delivery and ranges from -1 to 1. The decision rule is to accept null hypothesis if the probability value (p-value) is greater than 0.05; otherwise reject.

4. DATA ANALYSIS AND RESULTS

Data analysed here are the properties of hydrocarbon tax and healthcare delivery in Nigeria.

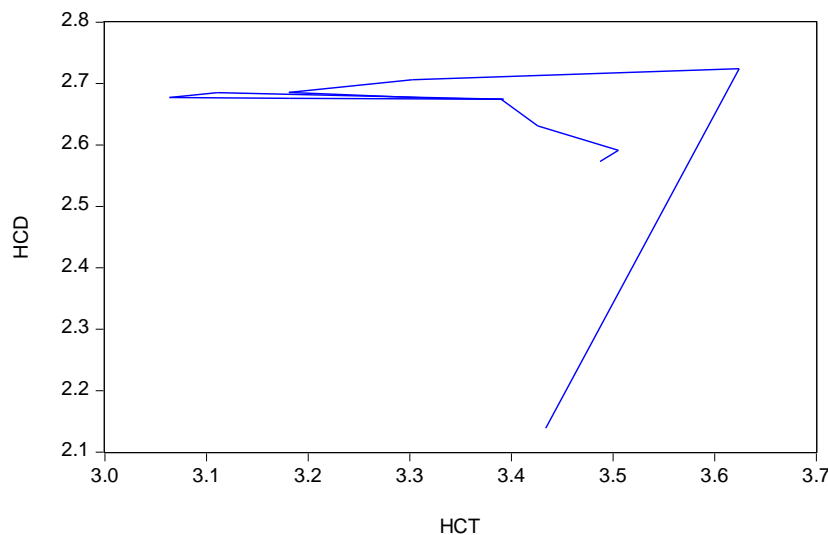
Table 1: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
HCT	13	1157.81	4209.02	2337.845	868.6847
HCD	13	137.67	529.99	438.9954	100.364
Valid N (listwise)	13				

Source: Author's Computation

Table 1 presents the descriptive statistics for hydrocarbon tax (HCT) and healthcare delivery (HCD) over 13 observations. The hydrocarbon tax has a minimum value of ₦1,157.81 million and a maximum of ₦4,209.02 million, with a mean of ₦2,337.85 million and a standard deviation of ₦868.68 million, indicating moderate variability in hydrocarbon tax revenue over the period. Healthcare delivery, on the other hand, has a minimum value of ₦137.67 million and a maximum of ₦529.99 million, with a mean of ₦438.99 million and a standard deviation of ₦100.36 million, suggesting relatively consistent investment levels in healthcare services. These results highlight observable variations in both fiscal input and service delivery, which are essential for assessing the fiscal impact of hydrocarbon taxation on healthcare outcomes.

Trend analysis of Hydrocarbon Tax revenue and Healthcare Delivery



Source: Eweiw9

Figure 1: Trend analysis of Hydrocarbon Tax revenue and Healthcare Delivery.

The graph illustrates the association between Hydrocarbon Tax (HCT) and Healthcare Delivery (HCD) over the study period. The trend suggests fluctuations in healthcare expenditure despite variations in hydrocarbon tax revenue. Initially, as HCT increases, HCD remains relatively stable, showing minimal upward movement. However, at a certain point, HCD declines despite a slight increase in HCT, indicating a weak or inconsistent relationship. The sharp drop at higher HCT values suggests irregularities in the allocation of tax revenue towards healthcare funding. This visual representation aligns with the results of correlation analysis, which indicated a weak and statistically insignificant association between HCT and HCD, supporting the conclusion that hydrocarbon tax does not significantly drive healthcare expenditure in Nigeria.

Test of Hypothesis

H₀₁: There is no significant association between hydrocarbon tax on healthcare delivery in Nigeria.

Decision rule: accept null hypothesis if PV is > 0.05; otherwise reject.

Table 2 Correlation Results of Hydrocarbon tax and healthcare delivery

		HCTR	HCD
HCT	Pearson Correlation	1.0000	
R	Sig. (2-tailed)		0.4977.
	N	13	13
HCD	Pearson Correlation	-0.2069	1
	Sig. (2-tailed)	0.4977	
	N	13	13

Source: Author's Computation, 2025

The test of hypothesis examines whether hydrocarbon tax (HCTR) has a significant association with healthcare delivery (HCD) in Nigeria. Based on the correlation results presented in Table 2, the Pearson correlation coefficient between HCTR and HCD is -0.2069, indicating a weak negative relationship. The p-value associated with this correlation is 0.4977, which is greater than the 0.05 significance level. Following the decision rule, since the p-value exceeds 0.05, the null hypothesis (H₀) is accepted. Therefore, it is concluded that there is no statistically significant association between hydrocarbon tax and healthcare delivery in Nigeria within the observed period.

This finding contrasts with several prior studies that reported more favorable outcomes. For example, Yusuf and Amina (2023) observed a significant positive effect of hydrocarbon tax revenue on maternal healthcare services, while Adebayo and Grace (2023) linked increased hydrocarbon tax earnings with improved healthcare workforce development. Likewise, Eze and Chika (2022) documented a positive correlation between hydrocarbon tax revenue and broader healthcare financing, although they acknowledged inefficiencies in budget allocation processes.

Furthermore, studies by Obi and Chioma (2023) and Okoro and Emmanuel (2021) cautioned that structural weaknesses in governance and fiscal transparency often undermine the potential benefits of hydrocarbon revenues. Samuel and Blessing (2021) added that corruption and mismanagement in the public sector have severely constrained the effective application of hydrocarbon tax funds in enhancing primary healthcare delivery. These empirical insights suggest that while hydrocarbon tax revenues hold considerable promise for improving healthcare systems, their actual impact is significantly mediated by the quality of governance, policy implementation, and financial accountability. Strengthening these institutional frameworks is critical if hydrocarbon revenues are to meaningfully contribute to sustainable improvements in Nigeria's healthcare sector.

5. CONCLUSION AND RECOMMENDATIONS

In conclusion, the study found no statistically significant association between hydrocarbon tax and healthcare delivery in Nigeria, as evidenced a correlation coefficient that has a p-value above the conventional threshold for significance. Despite this, existing literature suggests that hydrocarbon tax revenues possess the potential to enhance healthcare outcomes when effectively managed. The disparity between empirical results and prior findings underscores the role of governance quality, transparency, and fiscal accountability in translating resource revenues into public health benefits. Therefore, while hydrocarbon taxation alone may not guarantee improvements in healthcare delivery, its strategic allocation through sound policy and institutional reform remains essential for realizing its developmental potential.

RECOMMENDATIONS

The study further suggested that;

1. Policy measures that enhance the collection and efficient utilization of hydrocarbon tax revenues can serve as a strategic tool for strengthening Nigeria's healthcare system.

2. The study highlights the need for more effective allocation of hydrocarbon tax revenues. It is recommended that the government improves transparency and accountability in the distribution of hydrocarbon tax revenues, ensuring that funds are allocated efficiently to critical areas such as healthcare infrastructure, medical equipment, and personnel training.
3. To maximize the potential of hydrocarbon tax revenues for healthcare delivery, it is recommended that healthcare policies be better integrated with fiscal policies. The government should prioritize healthcare in national development plans, ensuring that tax revenues are strategically allocated to meet the growing healthcare needs, particularly in underserved regions of the country.

Competing Interest: The authors declare that there is no competing or conflicting interest in this manuscript.

REFERENCES

- Adebayo, T. & Grace, E. (2023). Hydrocarbon taxes and healthcare workforce development in Nigeria. *Journal of Public Health Economics*, 9(1), 50-65.
- Adelakun, T. A., & Lawal, M. O. (2023). Fiscal policies and healthcare financing in oil-rich economies: The Nigerian experience. *Journal of Public Finance and Development*, 9(1), 45-58.
- Adeyale, A. & Fatima, B. (2023). Petroleum tax revenues and healthcare outcomes in oil-producing states of Nigeria. *African Journal of Public Policy and Administration*, 15(2), 23-40.
- Adeyuyi, A. O., & Adeoye, F. M. (2022). Resource allocation and healthcare outcomes in developing nations: Evidence from Nigeria. *African Journal of Economic Studies*, 15(3), 120-135.
- Auty, R. M. (1993). *Sustaining development in mineral economies: The resource curse thesis*. London: Routledge.
- Eke, P., Graham-Kingsley, G. I., & Odukwu, V. C. (2023). Health sector expenditure and economic development in Nigeria. *Journal of Healthcare and Life-Science Research*, 2(11), 32. ISSN: 2181-4368.
- Eze, J. & Chika, A. (2022). Impact of hydrocarbon tax on healthcare financing in Nigeria. *Nigerian Journal of Economic Research*, 34(3), 45-60.
- Musa, A. & Ibrahim, S. (2022). Effect of oil and gas tax revenues on healthcare infrastructure development in Nigeria. *Journal of Economic Development Research*, 27(5), 102-118.

- National Bureau of Statistics (NBS). (2023). Healthcare infrastructure and access in Nigeria: A statistical overview.
- Obi, K. & Chioma, L. (2023). Hydrocarbon tax revenues and public health expenditure in Nigeria. *African Journal of Fiscal Policy*, 22(6), 75-89.
- Okoro, C. & Emmanuel, T. (2021). Hydrocarbon taxes and universal health coverage in Nigeria. *Journal of Fiscal Policy and Development Studies*, 18(4), 67-80.
- Olaoye, C. O., & Akinleye, M. J. (2022). Petroleum profit tax and national development in Nigeria. *International Journal of Economics and Policy Research*, 14(2), 98-115.
- Samuel, F. & Blessing, O. (2021). Utilization of hydrocarbon tax revenues in primary healthcare delivery in the Niger Delta region of Nigeria. *Nigerian Journal of Health Policy Studies*, 14(3), 35-50.
- United Nations Development Programme (UNDP). (2023). Nigeria's progress on sustainable development goals.
- World Bank. (2021). Health financing in resource-constrained economies: Challenges and opportunities.
- World Health Organization (WHO). (2023). Sustainable development goals: Goal 3.
- Yusuf, T. & Amina, R. (2023). Hydrocarbon tax revenue and maternal healthcare services in Nigeria. *Journal of Maternal and Child Health Policy*, 12(4), 88-100.