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AN EVALUATION OF CRUDE OIL PRICES ON PUBLIC SECTOR PERFORMANCE IN NIGERIA

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Abstract

The study was evaluated the effect of crude oil prices on public sector performance in Nigeria. An ex-post facto research design was implemented in this investigation. The targeted population for this study is the Central Bank of Nigeria, Federal Ministry of Finance, National Bureau of Statistics and World Bank for 2013-2022. Descriptive and Inferential statistics were employed in the study with inference drawn from via the aid of E-View 10.0 statistical software. The study found that crude oil prices does not have a significant effect on public sector performance in Nigeria. The study recommended among others that the Government should reduce the over-reliance on oil, vehemently fight against oil theft to improve on the production and mitigate the negative effects of oil price volatility on human development through diversifying the Nigerian economy into other sectors such as social services, manufacturing and agriculture.

Key Words: Crude oil Prices, Public Sector performance, Human development Index

1.0 Introduction

GCrude oil is a vital commodity for both oil-importing and exporting nations, as it is a major source of income and input factor for several economies. A rise or fall in price is of interest to these economies as it can affect various macroeconomic variables (Boheman & Maxen,2015). The volatility in oil prices since the end of World War II has become even more serious in recent times. This has implications on the economies of oil-exporting countries especially oil-dependent nations like Nigeria (Okoro, 2014). Nigeria is a major oil-producing country, with her crude classified as the Brent crude with her exports accounting for a significant portion of its economic output and government revenue (Omojolaibi, 2013). The volatility of crude oil prices has had a significant impact on the country's economic performance and human development (Akinlo, 2012). The volatility in oil prices has taken a toll on the economic standing of the nation and the plunge has resulted in the depletion of our foreign

reserves, and the devaluation of the naira amongst others (Kaletsky 2015). Over the years, Nigeria has had to deal with the vagaries of the unpredictability of international oil prices and production quotas as frameworks for managing her public finances which are expended for the welfare of her citizens. According to Organization of Petroleum Exporting Countries (OPEC), Nigeria has almost 40 billion barrels of proven oil reserves. After nearly 50 years of exploration, the oil and gas sector continue to play a significant role in the economy and accounts for 65% of total revenue to the government. With a maximum crude oil production capacity of 2.5 million barrels per day, Nigeria is Africa's largest producer of oil, and the 13th largest oil-producing country in the world (Nigeria Extractive Industries Transparency Initiative {NEITI}, 2020). However, due to several extenuating conditions, like organized theft, sabotage, ethnic agitations, militancy, etc, actual production now seems closer to 1.9 million barrels per day. The relationship between crude oil prices and public sector performance measured by human development index has been a subject of extensive research. Several studies have investigated the effect of crude oil price movements on Nigeria's economic performance. The Human Development Index (HDI), a composite measure of life expectancy, education, and per capita income, is commonly used to assess a country's level of human development (United Nations Development Programme, 2020). Researchers have explored the link between crude oil prices and HDI in Nigeria, but the findings have been mixed. For instance, Onakoya, Emeffort, & Olufemi (2019), found a positive relationship between crude oil prices and HDI in Nigeria, suggesting that higher oil prices contribute to improvements in human development. Conversely, Ogundipe & Ogundipe (2014) reported a negative relationship, implying that oil price fluctuations may have adverse effects on the country's human development. Given the conflicting evidence, further research is needed to better understand the complex relationship between crude oil prices and human development in Nigeria.

2.0 Conceptual Framework

2.1. Concept of Crude Oil Prices

Crude oil prices can be used as a proxy for the impact of international market conditions on Nigeria's economy. Oil is a crucial energy source for modern economies and remains a major energy commodity traded in the international market. The demand and supply of oil depends on the internationally determined market price which can be affected by unpredictable global events (Nwosu, Anumudu, & Nnamchi, 2020). Crude oil in this study is believed to be the main driver of the economic condition of developing countries especially Africa continents, Nigeria to be precise such that a rise in the price of crude oil significantly improves the country's revenue and a fall also affects the nation's revenue negatively (Sule-Iko & Ibrahim, 2021).

Thus, the price and production of crude oil remains an important component influencing the world's economic development, modern turn of events, food cost, poverty, and other financial factors, other than its elements is the primary list exhibiting oil market conditions (Jiménez-Rodríguez, 2008; Naranpanawa &

Bandara, 2012; Sule-Iko & Nwoye, 2023).Changes in crude oil prices are indicative of fluctuations in demand and supply in the global market, which ultimately affects Nigeria's export earnings from crude oil. In this regard, the West Texas Intermediate (WTI) and Brent crude oil prices are commonly used as proxies for crude oil prices (Fattouh, 2011).

Baumeister and Kilian (2016), posit that oil price fluctuations are an unanticipated component of a substantial change in the price of oil, defined as the difference between the expected and realized oil prices. In the simplest term, a change in oil price could boost economic growth in that it could make the price of crude oil in the international market appreciate at the expense of domestic oil prices. However, the general impact of crude oil price fluctuations on enterprises and economic growth is mainly determined by how the government manages its previous and current revenue (Ighosewe, Akan, & Agbogun, 2021). Nigerian crude oil falls under the OPEC Price Basket. It serves as the mean value of prices gotten from Nigeria and other countries like Indonesia, Dubai, Saudi Arabia, Algeria, Mexico, and Venezuela (Ogbu, 2019). The World Bank Report (2023), aver that Nigeria's projected current account deficit will remain at an average of 0.3% of Gross Domestic Product (GDP) in 2013-25 due to declining prices and stagnant oil production. Despite oil prices trading at an average of $101 per barrel per year, the decline in oil production in 2022 exposed Nigeria's fragile state, as real growth of the country's oil GDP stood at −19.2% at the end of the year (National Bureau of Statistics, 2022). Before corona pandemic, Nigeria's oil sector alone accounted for about 9% of the country's gross domestic product (GDP). Between October and December 2020, the oil industry contributed 5.9% to the total real GDP, a decrease of roughly three percentage points compared to the previous quarter in July- September (Sasu, 2023). Fluctuations in crude oil production levels also have a significant impact on the performance of Nigeria's economy.

2.1.2 Public Sector Performance

The public sector plays a vital role in providing essential services, promoting social welfare, and driving economic development. However, many public organizations face challenges in deliveri ng efficient and effective services to citizens (Moore, 1995). Improving public sector performance has become a key priority for governments worldwide. One of the primary challenges in the public sector is the lack of clear performance metrics and accountability mechanisms (Behn, 2003). Unlike the private sector, where profitability and shareholder value are well-defined measures of success, the public sector often lacks easily quantifiable performance indicators. Public organizations are often subject to competing demands from various stakeholders, including elected officials, interest groups, and the general public (Rainey & Steinbauer, 1999). This can lead to conflicting priorities and a lack of consistent strategic direction.

The performance of the public budget is beyond the Gross Domestic Product but refers to basic human needs such as health, education, availability of food, clothing, etc; (Streeten, 1995 cited in Oru, 2023), empowerment, equity, sustainability (UNDP,

2011), social equality (UNDP, 2019) and freedoms; the freedom of well-being and freedom of agency to do or achieve what is valued (UNDP, 2016).

The performance of the public sector is often evaluated using various metrics, and one widely recognized measure is the Human Development Index (HDI). The HDI is a composite index developed by the United Nations Development Programme (UNDP) that assesses a country's level of human development based on three key dimensions: life expectancy, education, and standard of living (UNDP, 2020). The public sector plays a crucial role in shaping a country's human development outcomes. Governments are responsible for providing essential public services, such as healthcare, education, and social welfare programs, which directly impact the HDI components (Rajkumar & Swaroop, 2008). Effective public sector management and investment in human capital development can lead to improved HDI scores (Baldacci et al., 2008).

Studies have shown that countries with higher levels of public sector efficiency, as measured by factors such as government effectiveness and control of corruption, tend to have higher HDI scores (Dabla-Norris, Brumby, Kyobe, & Papageorgiou, 2012). This suggests that the quality and performance of the public sector can significantly influence a country's human development outcomes.

2.1.3 Impact of Crude Oil Prices on Human Development Index

The Human Development Index (HDI) is a composite statistic that measures a country's overall achievement in key dimensions of human development, including life expectancy, education, and standard of living (UNDP, 2020). As one of the most widely used indicators of a country's development, the HDI is influenced by a variety of economic, social, and political factors. Among these factors, the price of crude oil has been identified as a significant determinant of HDI, particularly for oil-exporting countries. The relationship between crude oil prices and HDI is complex and multifaceted. On one hand, high oil prices can generate substantial revenue for oil-exporting countries, which can be invested in social services, infrastructure, and other initiatives that contribute to human development (Sachs & Warner, 1995). This can lead to improvements in areas such as healthcare, education, and overall standards of living, thereby increasing a country's HDI. However, the effects of oil price fluctuations on HDI can also be negative, particularly for countries that are heavily dependent on oil exports. Volatility in oil prices can create economic instability and uncertainty, which can hinder long-term planning and investment in human development programs (Isham, Woolcock, Pritchett, & Busby,2005). Furthermore, over-reliance on oil revenues can lead to the neglect of other productive sectors, a phenomenon known as the "resource curse" (Sachs & Warner, 1995). This can result in a lack of economic diversification and a concentration of wealth in the hands of a few, contributing to increased inequality and a lower overall HDI.

A study by Fuinhas and Marques (2012) examined the relationship between oil prices and HDI in a panel of oil-exporting countries. Their findings suggest that while higher oil prices can have a positive impact on HDI in

the short term, the long-term effects are often negative, as countries become increasingly dependent on oil revenues and fail to invest in sustainable human development strategies. Similarly, Cooray and Shahbaz (2015) found that the impact of oil prices on HDI is more pronounced in countries with higher levels of oil dependence. Their research indicates that countries with a greater reliance on oil exports tend to experience more volatile HDI levels in response to oil price fluctuations, highlighting the need for economic diversification and the development of alternative sources of income.

2.2 Theoretical Framework

This research is therefore anchored on the Dutch disease theory. The choice of this theory is informed by the close relationship it bears with the subject matter. It specifies a link between changes in crude oil prices and their impact on the performance of the economy.

2.2.1 Dutch disease theory

This theory was propounded by Corden and Neary (1982). The Dutch disease theory was formulated to explain the poor economic performance of the Netherlands following the discovery of North Sea oil. This theory opines that, a natural resource boom causes a country's exchange rate to appreciate, making its manufacturing export less competitive. Ismail (2010), the Dutch disease can be seen as the process by which a boom in a natural resource sector results in shrinking non-resource convertible. This same process increases the specialization of the natural resource sector, thereby, leaving the economy more susceptible to resource specific shocks. The effect of Dutch disease on the economy was divided by Corden and Neary (1982) into two effects, specifically, the resource movement effect and the spending effect. The resource movement effect is the aspect of which the increase in the price of the discovered resource causes the marginal product of value of the resource to increase, which consequently increases wage rate in the newly discovered resource sector. This causes the tradable sectors to shrink possibly in operation, some of which might perhaps shut down. The spending effect on the other hand can be seen as the increase in revenue accounted for by the natural resource discovered, mainly when its price dramatically increases. The huge income obtained paves way for imports to increase together with domestic absorption for both tradable and non-tradable. This phenomenon has well-being effect.

3.0 METHODOLOGY

3.1 Research Design

An ex-post facto research design was implemented in this investigation. The statistical impact of one variable on another is described using an ex-post facto research design. As panel data was used in the study.

3.2 Population of Study

The targeted population for this study is the Central Bank of Nigeria, Federal Ministry of Finance, National Bureau of Statistics and World Bank from 2013-2022.

3.3 Sample Size and Sample Techniques

This study employed non-probabilistic sampling methods since the objective of this study was to study and describe a specific situation. Judgmental sampling was adopted for the study with panel data from the CBN statistical bulletin.

3.4 Techniques for Data Analysis

Descriptive and Inferential statistics of the data used in this study were conducted via the aid of E-View 10.0 statistical software based on 5% (0.05) level of significance.

3.5 Model Specification

This study examined the impact of crude oil prices on public sector performance in Nigeria. Generally, the model is specified as:

$HDI = \beta_0 + \beta_1 COP + e$……i

Where:

COP = Crude Oil Prices
HDI = Human Development Index
β_0= Constant term
β_1 = Coefficient of model parameters
e = Error term

RESULTS AND FINDINGS

4.1 Data Presentation

Table1: Human Development Index (HDI) and Crude Oil Prices (COP) for 2013 to 2022

Year	HDI	COP (N'B)
2013	0.504	175.8173
2014	0.513	170.7649
2015	0.52	156.9664
2016	0.526	100.6637
2017	0.528	110.6274
2018	0.53	165.5295
2019	0.537	218.3717
2020	0.539	197.3367
2021	0.542	150.5525
2022	0.548	304.698

Source: CBN Statistical Bulletin 2022.

4.2 Data Analysis

Table 2: Descriptive Statistics

	COP	HDI
Mean	200.1315	0.526000
Median	170.7649	0.528000
Maximum	450.1185	0.548000
Minimum	100.6637	0.499000
Std. Dev.	99.32029	0.015710
Skewness	1.582976	-0.389530
Kurtosis	4.746881	2.056636
Jarque-Bera	5.992635	0.686066
Probability	0.049971	0.709615
Sum	2201.447	5.786000
Sum Sq. Dev.	98645.20	0.002468
Observations	11	11

Source: Eviews 10.0

Table 2 revealed that COP has a mean value of 200.1315. This implies that on an average, the COP of Nigeria stood at 200%. The maximum and minimum values where 450.1185 and 100.6637 respectively. The deviation from the mean of 99.32029, implies that deviation from the mean is not widely dispersed. The data on HDI had a mean value of 0.53, which implies that on an average the HDI of Nigeria stood at 53%. The maximum and minimum values of 0.55 and 0.53. The standard deviation of 0.02, implies that the deviation from the mean is not widely spread thus very non-significant change in our public sector performance.

Table 3: Impact of crude oil prices on Human development Index

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.507818	0.009556	53.14140	0.0000
COP	9.08E-05	4.32E-05	2.104896	0.0646
R-squared	0.329888	Mean dependent var		0.526000
Adjusted R-squared	0.255431	S.D. dependent var		0.015710
S.E. of regression	0.013556	Akaike info criterion		-5.601039
Sum squared resid	0.001654	Schwarz criterion		-5.528695
Log likelihood	32.80572	Hannan-Quinn criter.		-5.646642
F-statistic	4.430589	Durbin-Watson stat		0.112465
Prob(F-statistic)	0.064603			

Source: Eviews 10.0

An inspection of R-squared value in table 3 above indicates that crude oil prices has about 26% impact on public sector performance. The R-squared result indicate that the prices of crude oil dy has predictive power over the performance of the public sector though statistically non-significant variance in HDI. The F-statistic ratio and p-values of 4.430589 (p=.0646) indicates that the prices of crude oil do not have a significant effect on the dependent variable.

4.3 Discussion of Findings

The study revealed that crude oil prices have a non-significant effect on public sector performance (HDI) in Nigeria. The effect is a positive and non-significant effect on human development index (HDI) in Nigeria (α= 9.08E-05, p=.0.0646). Since the p-value of the regression model is greater than 0.05 level of significance, thus, a non-significant effect. This implies that other fund sources are contributing to the performance of the public sector other than crude oil prices.

5.0 Conclusion and Recommendation

The study to evaluate the impact of crude oil prices on public sector performance in Nigeria concludes that crude oil prices do not have a significant effect on the Human Development Index (HDI) in Nigeria. This suggests that changes in crude oil prices do not directly translate into measurable improvements or declines in the overall human development, which takes into account factors such as life expectancy, education, and standard of living and security and administration in Nigeria. The study recommends among others that the Government should reduce the over-reliance, on oil, vehemently fight against oil theft to improve on the production and mitigate the negative effects of oil price volatility on human development through diversifying the Nigerian economy into other sectors such as social services, manufacturing and agriculture.

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