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The Causal Relationship between Government Revenue and Expenditure in Nigeria

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Abstract
For a long time, the link between how much money the government gets and how much it spends has been a big topic of discussion in the study of public finance. This paper looked at the cause-and-effect connection between government revenue and spending in Nigeria from 1981 to 2023 using a Granger-causality test. The results showed that there's a two-way relationship between total government spending and total government revenue, which matches the idea of fiscal synchronization. This outcome suggests that because government spending and revenue are connected, the government takes the decision on spending and revenue concurrently. Based on this idea, policymakers should work to increase revenue and cut spending all together to manage the country's budget deficit effectively.

Key words: Granger Causality, Government Revenue, Government Expenditure and Nigeria.

I. Introduction

For decades, the connection between government revenue and expenditure has been a major topic of discussions in public finance. Experts argued that it is important to understand this relationship to ensure fiscal sustainability, efficient budgeting, and macroeconomic stability (Peacock & Wiseman, 1979; Musgrave & Musgrave, 1989). In Nigeria, this discussion is important because of the weaknesses in the public finance system, the country's heavy reliance on oil revenue, and the frequent fiscal deficits. Nigeria's financial setup is very sensitive to changes in the global market because most of the government's revenue comes from the sales crude oil (Central Bank of Nigeria - CBN, 2023). When oil prices go up or down, the amount of money coming into the government changes a lot, which then affects how much is spent on important areas like infrastructure, education, health, and defense (Aregbeyen & Insah, 2013). This situation makes people wonder whether the government's spending is mainly based on how much money it gets or if the spending decisions influence how much revenue is collected.

Furthermore, three main hypotheses help explain how the government handles its money: the tax-and-spend hypothesis, the spend-and-tax hypothesis, and the fiscal synchronization hypothesis (Friedman, 1978; Barro, 1979). The tax-and-spend hypothesis says that how much revenue the government gets from taxes decides how much it can spend. On the other hand, the spend-and-tax hypothesis suggests that it is government expenditure that induces government revenue mobilization through taxes or borrowing. The fiscal synchronization hypothesis means that the government adjusts it revenue and expenditure at the same time, based on what the society wants in terms of public services (Meltzer & Richard, 1981). Strictly speaking, Nigeria faces several financial problems like increasing debt, bigger budget gaps, insufficient revenue, and high recurrent expenditure. Because of this, it's important to look at how the government's revenue and expenditure are connected.

There is no gain saying that Nigeria is still facing fiscal instability, categorized as growing budget gaps, uncertain revenue from taxes and other sources, and relying too much on borrowing money from both domestic and external sources (Debt Management Office, 2024). Even though the government has made some policy changes to improve how it collects revenue and manages spending, it still has trouble generating enough revenue, spending in an inefficient way, and has weaknesses in how it handles public finances. One big issue is that the country depends a lot on oil revenue, which makes its finances vulnerable to changes in global oil prices (CBN, 2023). Other sources of revenue, like taxes and customs fees, are not

being used properly because of problems with the system, low tax compliance, and pathetic economic diversification (OECD, 2021). At the same time, the government is spending more because of higher costs for workers, debt payments, and security issues (IMF, 2023). These trends show that there might not be a good connection between government revenue and expenditure planning, raising questions about whether Nigeria follows a pattern of collecting taxes then spending, spending then collecting taxes, or keeping things in balance (Yusuf & Akinsola, 2016). Studies have given mixed results, making it hard for policy makers to use strong, evidence-based financial strategies.

Importantly, without knowing how government revenue and expenditure are connected, Nigeria may keep facing perpetual fiscal imbalance, trap in high debt, which will hinder its economic growth and development. It is important to understand this link to create good financial policies and keep the economy stable over time. Because of this, this study examined the causal relationship between government revenue and expenditure in Nigeria, drawing from both theoretical foundations and empirical trends to provide insights for better financial policies in Nigeria. The paper is divided into five parts: introduction, literature review, materials and method, results and discussion, and conclusion with recommendations.

II. Literature Review

Conceptual Clarification

Government revenue refers to all the income a government generates from various sources to finance its activities, programmes, and public services. It is the money the government collects to fund expenditures such as infrastructure, education, healthcare, security, and administration. Public expenditure refers to the money spent by federal, state, and local governments to meet the shared needs of people and society. Herming (1991) said that public expenditure is the government's spending on creating goods and services that are not just for immediate use, but also include spending that helps build public physical capital, such as constructing schools, hospitals, and roads. Public expenditure is expenditure by government with the intention to encourage allocative effectiveness through a rectification of failures in the market system, ensure resources are distributed equally and support the growth of the economy (Ibrahim, 2009).

According to Wendwesen (2012), public spending, or government expenditure, includes all the money spent by federal, state, and local governments on things like buying goods and services. When the government spends money to get goods and services for use in the current period to satisfy the needs or wants of individuals or groups in society, it is considered final consumption expenditure. Okulegu (2013) said that the government has two main roles: protection and providing certain public goods. The protection role involves creating and keeping the rule of law and making sure people's property rights are respected. This helps to reduce the risk of crime, protect people's lives and property, and keep the country safe from outside threats. While the latter include power, roads, health, education and defense to mention a few.

Besides that, the government can get money for spending by collecting taxes or by borrowing funds. When the government buys things or services, it's usually to create benefits in the future, like building roads or schools. Spending on things like training people, farming, or research is considered government investment, which helps build up the country's resources for the long term. Public spending can be classified into recurrent and capital expenditures. By recurrent expenditures, we mean all day-to-day running costs of government. They include all the money the government spends to keep existing or new institutions and services running. Recurrent operating costs are the everyday expenses the government has, such as paying salaries and wages to public workers, as well as benefits and other costs needed to carry out activities like running the government, defense, and services such as education, healthcare, and pensions. On the other hand, capital expenditures are the costs the government incurs to create new institutions, services, or projects. These include spending on new buildings, roads, bridges, hospitals, schools, factories, and equipment that are needed to provide social and economic services.

Stylized Facts on Government Revenue and Expenditure in Nigeria

Over the years, the Nigerian government has made a lot of money and also spent a lot of it. For example, in 2011, the total money collected by the federal government went up by 52.2%, reaching ₦11,116.9 billion. This amount was 31.4% of the country's total economic output, or GDP. The increase was because the government received more money from both oil and non-oil sources. In the same year, the total spending by the government went up by 11.2% compared to 2010, reaching ₦9,774.3 billion. This spending was 27.6% of GDP, which is slightly lower than the 29.8% from 2010. When looking at the breakdown, most of the

money was spent on recurrent government activities, which was ₦6,011.9 billion or 17.0% of GDP, making up 61.5% of the total. Capital spending, which is money spent on long-term projects, was ₦2,715.5 billion or 7.7% of GDP, accounting for 27.8% of the total. Other spending, such as transfers and other expenses, was ₦935.9 billion (2.6% of GDP) and ₦111.0 billion (0.3% of GDP), which together made up 9.6% and 1.1% of the total, respectively (CBN, 2011).

In 2013, the total money collected by the federal government dropped by 8.4 percent to ₦9,759.8 billion and made up 12.0 percent of the country's total economic output. This happened because the government got less money from the oil sector. In the same year, the total spending by the general government went up by 10.0 percent to ₦11,103.5 billion. This spending was 13.7 percent of the country's total economic output, which is slightly less than the 13.9 percent in 2012 (CBN, 2013).

In 2014, the total money collected by the federal government increased by 3.2 percent to ₦10,068.9 billion and made up 11.3 percent of the country's total economic output. This was because the government got more money from non-oil sources, especially from corporate taxes, which went up by ₦221.8 billion or 22.5 percent. This was due to the Federal Inland Revenue Service (FIRS) working harder to collect taxes during that time. In the same year, the total spending by the general government decreased by 7.7 percent to ₦10,184.2 billion compared to the previous year. This was because there was less money available for capital projects. As a percentage of the country's total economic output, this spending was 11.4 percent, which is lower than the 13.8 percent in 2013 (CBN, 2014).

Furthermore, total federally-collected revenue fell by 31.3 per cent to ₦6,912.5 billion in 2015 and constituted 7.3 per cent of GDP. The development was attributed, largely, to the decrease in oil revenue, due to the plunge in the price of crude oil in the international market since the second quarter of 2014. In 2015, at ₦9,704.3 billion, aggregate expenditure of general government declined by 4.7 per cent from the level in 2014. This was attributed to the low capital releases, arising from the drop in revenue. As a proportion of GDP, it represented 10.2 per cent, compared with 11.3 per cent in 2014 (CBN, 2015).

In addition, the total revenue collected by the federal government dropped by 18.8% to ₦5,616.4 billion in 2016, which was 5.4% of the country's GDP. This decline was because of lower revenue from both oil and non-oil sectors, mainly due to low prices for crude oil, less production, and weaker economic activity. In 2016, the overall spending by the general government was ₦9,673.4 billion, a decrease of 0.3% compared to 2015. This was because of lower spending on capital projects, which came from the fall in revenue. As a share of GDP, this spending was 9.4%, down from 10.2% in 2015 (CBN, 2016).

In 2017, the total money collected by the federal government from all sources, known as gross revenue, went up by 30.3 percent to ₦7,317.7 billion. This amount made up 6.1 percent of the country's total economic output, or GDP. The increase was mainly because of more money coming in from oil and other non-oil sources. This was due to higher prices for crude oil on the world market, better efficiency in collecting taxes, especially because of automated systems for collecting Value Added Tax (VAT) in many areas of the economy, and also because the government expanded the number of people and businesses that had to pay taxes. In the same year, the total spending by the general government reached ₦11,938.0 billion, which was a 16.4 percent rise compared to 2016. This increase was because of a big jump of 70.8 percent in overhead costs and a 40.8 percent rise in payments for domestic interest. As a share of GDP, government spending was 10.4 percent in 2017, up from 10.0 percent in 2016 (CBN, 2017).

Total money collected by the government from all sources (gross) went up by 28.3% to ₦9,551.6 billion in 2018, which was 7.3% of the country's total economic output. This increase was because the government got more money from both oil and other sources. The oil revenue went up because of better production and higher prices on the world market. The non-oil revenue also went up because of a government order that asked people to declare their assets and income voluntarily. In 2018, the total money spent by the government was ₦13,967.0 billion, an increase of 21.5% from 2017. This was because all parts of the spending increased. As a share of the country's total economic output, this spending was 3.4%, which was higher than 3.2% in 2017 (CBN, 2018). In 2019, the total money collected by the government from all sources (gross) went up by 6.9% to ₦10,215.1 billion, which was 6.9% of the country's total economic output. This increase was mainly because of better income from non-oil sources. In 2019, the total money spent by the government was ₦15,617.2 billion, which was an increase of 11.6% compared to 2018. As a share of the country's total economic output, this spending was 10.7%, slightly lower than 10.8% in 2018 (CBN, 2019).

Importantly, the lack of enough oil income, because of the OPEC+ agreement to limit oil production and lower demand for crude oil worldwide due to the return of the COVID-19 virus in Europe and the Americas, caused a drop in the money collected by the government in the last quarter of 2020. The total money collected was ₦2,208.10 billion, with oil-related income making up 44.6% and other income sources making up 55.4% (CBN, 2020). The amount collected was 13.1%, 8.3%, and 16.8% less than what was planned, compared to the third quarter of 2020 and the same period in 2019. Because of the need to manage government spending carefully, considering the tough economic situation caused by the pandemic, total spending in the fourth quarter of 2020 went down by 11.7%, 9.1%, and 6.1% compared to the spending plan, the previous quarter, and the same time in 2019. However, even though spending was lower, it wasn't enough to make up for the big drop in income, leading to a bigger budget deficit in 2020 (CBN, 2020).

In 2021, the revenue increased compared to 2020, but it still didn't meet the set targets because oil earnings were low. Even though non-oil revenue went over the expected amount by 2.8 percent, the low oil earnings, which were 28.2 percent less than expected, made the overall revenue performance worse. The total revenue collected by the federal government, which was around ₦10,755.40 billion or 6.0 percent of the GDP, was 12.5 percent less than what was planned for 2021. However, compared to the previous year, the federal revenue went up by 15.9 percent, mainly because of better performance in non-oil areas, which came from the recovery in the economy and the positive impact of the SRGIs. In 2021, the total spending by the government also went up, mostly because of the costs related to the COVID-19 pandemic. The total spending, which was around ₦19,135.50 billion or 10.9 percent of the GDP, increased by 9.9 percent compared to 2020 (CBN, 2021).

In 2022, the amount of money earned by the government went up compared to 2021, but it still didn't reach the planned target. This was mainly because earnings from oil were low. The total money collected by the federal government was around ₦12,655.27 billion, which is 6.3% of the country's total economic output. This was a 17.7% increase from the previous year. However, it was still 31.2% less than what was expected for 2022. The reason for this was lower sales and exports of crude oil. Out of the total money collected, oil-related income was 50.4% below the planned amount, and non-oil income was 10.7% short. These two categories made up 37.2% and 62.8% of the total income, respectively (CBN, 2022). In 2022, the total spending by the government went up. This was mainly due to spending before the general elections, support for flood victims, and higher payments to cover debts. The total spending was around ₦22,445.64 billion, which is 11.1% of the country's economic output. This was a 17.3% increase from the previous year (CBN, 2022). In November 2024, the amount of money collected by the federal government went up by 21.23% compared to October 2024. However, it was still 19.65% less than the monthly target. At the same time, the total spending by the federal government dropped by 5.80% compared to the previous month and by 28.03% compared to the monthly target (CBN, 2024).

Theoretical and Empirical Considerations

Theoretically, this study looked at three ideas about how government spending and taxes work: the tax-and-spend hypothesis, the spend-and-tax hypothesis, and the fiscal synchronization hypothesis. The tax-and-spend hypothesis, which is linked to Friedman (1978), says that how much revenue the government gets through taxes affects how much it spends. According to this idea, governments first decide how much tax they will collect and then use that money to plan their spending. This theory suggests that policymakers behave as if revenue availability serves as a constraint on fiscal expansion (Friedman, 1978; Buchanan & Wagner, 1977). So, the idea is that tax revenue comes first, and then government spending follows. Thus, the causal direction is from tax revenue to public spending. The hypothesis assumes that increases in government revenue whether from taxes or natural resource earnings will create fiscal room for expanded expenditure programmes. On the other hand, if the government less revenue, it either cuts spending or starts cutting back on programmes (Friedman, 1978). This means that government spending is not planned ahead, but instead happens after the government has collected enough money (revenue). So, the direction of influence is from tax revenue to spending, and spending decisions are made after the revenue is available. In Nigeria, the way the government handles revenue and spending seems closely connected to changes in oil revenue, which is the main source of income for the government. Research has found that when crude oil prices go up, the government tends to increase its spending on both long-term and regular projects in line with that rise (Aregbeyen & Insah, 2013). As a result, Nigeria's financial activities often show a pattern of tax-and-spend behavior.

In addition, the spend-and-tax hypothesis linked to Peacock and Wiseman (1979) and Barro (1979), suggests that governments usually spend money first and then decide about taxes later. In this case, the government makes decisions about how much to spend before deciding how much money to collect through taxes. These spending choices are often influenced by political factors, the need for public services, and the state of the economy. According to this idea, when government spending goes up, it often leads to demands for higher taxes, more borrowing, or new ways to get money (Barro, 1979). This means that government spending is the main factor that pushes the government to find more revenue. This shows a one-way relationship where spending leads to changes in how much tax is collected. Nigeria often shows this spend-and-tax pattern, especially when there is more political spending, higher wages, or when the government is giving out subsidies. Spending tends to go up before the government has enough money, which forces them to borrow more or increase taxes (Olatunji, 2013).

Furthermore, the fiscal synchronization hypothesis, introduced by Musgrave in 1966, suggests that taxation and government spending are both decided at the same time. People and policymakers think about the costs of taxes and the benefits of public spending together, which means that income from taxes and government spending are connected rather than happening one after the other. Fiscal synchronization means that government revenue and spending are part of a single decision-making process. This creates a two-way relationship, where both government revenue and spending affect each other in a coordinated way, as explained by Musgrave in 1966. Instead of one being the main factor, both move together because they are part of a unified plan for government finances.

In Nigeria, fiscal synchronization is seen during the process of making the annual budget and the Medium-Term Expenditure Framework (MTEF), where the government at the same time predicts its income and plans how much money to spend. Some studies done in Nigeria show that there is a two-way relationship between government revenue and spending, meaning that during certain times, the way the government handles its money is done together. This suggests that decisions about revenue and spending are sometimes made at the same time.

Considering the three hypotheses - tax-and-spend hypothesis**,** spend-and-tax hypothesis and fiscal synchronization hypothesis**;** the causal relationship between government revenue and expenditure in Nigeria may align with any of the models depending on the economic and political context. When revenue drives spending, the tax-and-spend hypothesis is supported. When government spending expands before revenue mobilization, the spend-and-tax hypothesis becomes relevant. When both variables influence each other simultaneously, the fiscal synchronization hypothesis applies.

Empirical studies often reveal mixed results, indicating that countries of the world alternates between these three fiscal behaviours depending on prevailing economic conditions. For instance, in Namibia, Eita and Mbazima (2008) looked into how government revenue and government spending are connected. They used a statistical method called Granger causality test with cointegrated vector autoregression (VAR) for the time period from 1977 to 2007. Their study checked if government revenue leads to more government spending, or if government spending leads to more revenue, or if there's a two-way connection. The findings showed that government revenue causes government spending, but not the other way around. This result backs up the idea that when governments collect more taxes, they tend to spend more money.

Emelogu and Uche (2010) looked closely at how government money coming in and going out worked in Nigeria from 1970 to 2007. They used some special methods like the Engel-Granger two-step cointegration technique, the Johansen cointegration method, and the Granger causality test, all within the Error Correction Modeling (ECM) framework. Their study found that there is a long-term connection between government revenue and government spending in Nigeria. They also found that government revenue has a one-way effect on government spending. These results support the idea that when government income changes, it leads to changes in how much the government spends.

Similarly, Keho (2010) looked at data from 1960 to 2005 from Europe to study how government spending and income are connected. He used tests to show that there is a one-way relationship from government income to spending. His findings support the idea that government spends money based on how much it collects in taxes.

In Iran, Yousef and Mohammad (2012) examined how government spending and income relate to each other. They used a special method called bounds testing for cointegration. Their results showed that there is a two-way connection between government spending and income, both in the long run and short run.

This finding matches the fiscal synchronization hypothesis, which suggests that governments make decisions about spending and income at the same time.

In addition, Ogujiuba and Abraham (2012) looked at the revenue-spending idea in Nigeria using big data from 1970 to 2011. They used several methods like correlation analysis, granger causality test, regression analysis, lagged regression model, vector error correction model, and impulse response analysis. Their study found that revenue and spending are closely linked, and that spending is often caused by revenue in Nigeria. This result matches the tax-and-spend hypothesis, also called the revenue-and-spend hypothesis. The vector error correction model also showed that there is a strong long-term connection between revenue and spending. This means that when spending is not balanced with revenue, policies can help fix this over time by adjusting income from oil and non-oil sectors. The lagged regression model showed that the positive link between revenue and spending turns negative after five lags, which explains why it's important to use a medium-term spending plan to track spending patterns in the short and medium term.

Rafaqet and Mahmood (2012) looked into how government revenue and spending are connected in Pakistan using data from 1976 to 2009. They used Johansen cointegration and Granger causality methods. Their findings showed there is no long-term link between these variables. However, in the short term, there was no clear cause-and-effect relationship between government revenue and spending in Pakistan.

Omo and Taofik (2012) used the Autoregressive Distributed Lag (ARDL) Bounds testing method to study the long-term connections and how government revenues and spending interact in Nigeria between 1970 and 2008. Their results showed a long-term connection between government spending and revenue when spending was the main focus. But when revenue was the main focus, there was no long-term link. This supported the tax-spending hypothesis.

However, Komain & Tantatape (2013) investigated the cause-and-effect relationship between government spending and economic development. They used the Granger Causality test and found that these two things are not linked in the long run, meaning they don't move together over time. According to their study, government spending has a positive effect on economic growth. This was found using a method called the least squares approach, which looked at past values of economic growth, government spending, and money supply.

Al-Zeaud (2014) looked at the relationship between government revenues and spending in Jordan from 1990 to 2011. They used Granger Causality and VECM tests. The results showed that revenues and spending affect each other in both directions. This supports the idea that the Jordanian government makes decisions about revenues and spending at the same time. It also shows that how much the government spends influences how much revenue it gets, which in turn affects spending in the current and future years. The researcher suggests that policymakers should consider this two-way connection between spending and revenue, as it can make it harder to manage the budget deficit and might explain the high level of national debt.

Balogun (2017) tried to find out if there is a cause-and-effect relationship between government spending and government income in Nigeria. They used data from 1986 to 2015, which is yearly information. The researcher used statistical methods like co-integration and vector autoregressive techniques, including an Error Correction Model (ECM) and the Augmented Dickey Fuller test. The results showed that Nigeria follows a spend-and-tax pattern, which matches the theories of Barro (1974) and Peacock and Wiseman (1979). This means that changes in government spending lead to changes in government income. The study also found that there is a long-term balance or relationship between government spending and income. The conclusion was that if the government spends more without getting more income at the same time, it will increase the budget deficit.

Also, Alade (2022) looked into how the Nigerian government's total revenue, public spending, and debts are connected. This was done because the government is trying to provide important public services, but it's facing rising public debt and not enough money. The study used time series data from 1984 to 2019, which came from the Nigerian Central Bank's reports. The data was analyzed using both descriptive methods and a Vector Error Correction (VEC) model along with Granger-causality tests. They also did variance decomposition and impulse response analyses. The results showed that the data became stable after one difference, and the variables were found to be co-integrated using the Johansen Co-integration test. Using the VEC model, the study found that there is a Granger causality between government revenue and both public spending and national debt. This supports the spend-tax hypothesis and shows that there is a two-way relationship between government revenue and national debt. If the government doesn't release

funds quickly to cover regular expenses, it can mess up the stability of revenue that the federal government generates. Also, taking on more foreign debt is likely to slow down investment in public goods and reduce government revenue growth. The government's inability to fulfill its social responsibilities because of lack of funds and rising debt could make current issues like poverty, crime, and social problems worse in Nigeria.

Amobi (2025) looked at how tax money, government spending, and economic growth are connected in Nigeria. They used data from each month between 1981 and 2020. The study used a special method called wavelet Granger causality to analyze the data. The results showed that in the long run and very long run, there's a two-way connection between economic growth and government spending. However, in the long run, there's a one-way link from real GDP to tax revenue. Also, there's a one-way link from tax revenue to government spending during the second half of the short run, the medium run, and the long run. These findings are important for policy. They show that increasing government spending might be risky because much of the government's income comes from oil, which makes up about 80% of the revenue and is uncertain. To deal with this, the study suggests the government should work on finding more ways to earn money by expanding into other areas of the economy. This would reduce dependence on oil and build a more stable and lasting financial base for the country.

In summary, a careful examination of the literature reviewed revealed that many research papers around the world have looked at how revenue and spending are connected. However, there isn't agreement on exactly how these two variables relate. Some studies show that revenue can cause changes in spending, but not the other way around (Namibia, Eita & Mbazima, 2008; Emelogu & Uche, 2010; Keho , 2010; Ogujiuba & Abraham, 2012; Balogun, 2017; & Amobi, 2025), no causal linkage between revenue and spending (Rafaqet & Mahmood, 2012) and bidirectional causality between revenue and spending (Yousef & Mohammad, 2012; Al-Zeaud, 2014) are reported in the literature. From the foregoing, the idea that there's a clear connection between how much government takes in and how much it spends doesn't show a consistent pattern across different countries, whether they are developed or developing. The findings depend a lot on the type of data used and the method of analysis. Because of this, this study looked into the cause-and-effect link between government revenue and spending in Nigeria from 1981 to 2023 using the Granger causality test.

III. Materials And Method

To find out the connection between government's revenue and spending in Nigeria, this study used existing data from 1981 to 2023, which came from the statistical bulletin of Nigeria's central bank.

Model Specification

The causal effect between federal government's revenue and expenses in Nigeria is modeled below:

$TGR = f(TGE)$ (1)

The econometrics form of the equation is written as:

$TGR_t = \alpha_0 + \alpha_1 TGE_t + e_t$ (2)

Where: TGR is total federal government's revenue (₦ billion), TGE is total federal government's expenses (₦ billion), e = error term, α_1 is slope parameter.

Analytical Technique

This study used the Granger Causality method. The Granger causality test shows the direction of influence between two time series. This influence can go both ways – (both variables influence each other; past X predicts Y, *and* past Y predicts X, forming a feedback loop), unidirectional – (past values of one variable (X) significantly improve predictions for another variable (Y), but past values of Y don't help predict X) and independence causality – (neither variable's past helps predict the other, indicating no Granger-causal link). ranger (1969) explained causality in the context of time series as a situation where one variable, Y_t, is considered to have a causal relationship with another variable, X_t, if the information from Y_t helps in making better predictions about X_t. This idea is commonly known as Granger-causality. The relationships based on Granger causality are described as follows:

$$Y_t = \omega + \sum_{i=1}^{k} \alpha_i X_{t-i} + \sum_{j=1}^{k} \beta_j Y_{t-j} + \varepsilon_{1t} \quad (3)$$

$$X_t = \varpi + \sum_{i=1}^{k} \varphi_i Y_{t-j} + \sum_{j=1}^{k} \delta_j X_{t-i} + \varepsilon_{2t} \quad (4)$$

Where: Y_t and X_t are the variables of interest which are included in equation (2) to know the causal links, and ε is the error terms.

Granger causality test using Nigerian data on total government revenue and expenditure from 1981 – 2023.

$$TGR_t = \sum_{i=1}^{n} \alpha_i TGEt_{-1} + \sum_{j=1}^{n} B_j TGR_{t-1} U_i \quad (5)$$

$$TGE_t = \sum_{i=1}^{n} \alpha_i TGR_{-1} + \sum_{j=1}^{n} B_j TGE_{t-1} U_i \quad (6)$$

Considering the three hypotheses - **tax-and-spend**, **spend-and-tax** and **fiscal synchronization hypotheses**; **The tax-and-spend hypothesis** argued that causal direction is from tax revenue to public spending. It assumed that increases in government revenue whether from taxes or natural resource earnings create fiscal room for expanded expenditure programs. This implies a unidirectional causality from revenue to expenditure.

The spend-and-tax hypothesis, argued that increases in government expenditure eventually create pressure for higher taxation, additional borrowing, or new revenue sources. That is, government expenditure is the leading variable that pushes revenue mobilization efforts. This implies a unidirectional causality from expenditure to revenue.

The fiscal synchronization hypothesis implies that government revenue and expenditure are part of an integrated decision-making process. This leads to bidirectional causality, where both variables (government revenue and expenditure) influence each other in a coordinated manner. Instead of one variable being dominant, both move together because they reflect unified fiscal planning.

The test for causal relationship between government revenue and expenditure in Nigeria from 1981 to 2023 will help us to understand which of the models support or explains the Nigerian environment. However, this study hypothesized no causal relationship between government revenue and expenditure in Nigeria.

IV. RESULT AND DISCUSSION

Granger causality test was done to find out the direction of the relationship between government revenue and spending in Nigeria from 1981 up to 2023. The result is shown in Table one.

Table 1: Pairwise Granger Causality Test Result

Null Hypothesis:	Obs	F-Statistic	Prob.
TGE does not Granger Cause TGR	38	8.43614	0.0011
TGR does not Granger Cause TGE		5.32654	0.0099

Source: *Author's Computed Result (2025), Using E-Views 10.*

The result of Table 1 shows that total government expenditure (TGE) granger cause total government revenue (TGR) and total government revenue (TGR) granger cause total government expenditure (TGE). This implies the existence of bidirectional causality between total government expenditure (TGE) and total government revenue (TGR). The implication of this result is that historical variation in total government expenditure can be used to predict the future variation in total government revenue. Also, historical variation in total government revenue can be used to predict the future variation in total government expenditure. This

is consistent with the fiscal synchronization hypothesis that government revenue and expenditure are part of an integrated decision-making process which leads to bidirectional causality, where both variables (government revenue and expenditure) influence each other in a coordinated manner. Instead of one variable being dominant, both move together because they reflect unified fiscal planning. This corroborates earlier argument and empirical studies including Musgrave (1966), Yousef and Mohammad (2012), as well as Al-Zeaud (2014) who averred that government revenue and expenditure are jointly and simultaneously determined. This result means that the Nigerian government makes decisions about its income and spending at the same time. On the other hand, it also shows that how much money is planned to be spent first determines how much income is expected, which then influences the level of spending for the current and future fiscal years.

V. Conclusion and Recommendation

In this study, attempt was made to ascertain the causal connection between the revenue and expenses of government in Nigeria from 1981 to 2023. In essence, the study sought to answer the question: Does total government revenue cause total government spending or is it total government spending that causes total government revenue? Using Granger-causality test, the study confirmed bidirectional causality between total government spending (TGE) and total government revenue (TGR) which is consistent with the fiscal synchronization hypothesis. This outcome suggests that because government spending and revenue are connected, the government takes the decision on spending and revenue concurrently. Therefore, this study suggested that policymakers need to consider the two-way relationship between total government spending and revenue which could thwart the government's efforts to control budget deficit. Based on this idea, policymakers should work to increase revenue and cut spending all together to manage the country's budget deficit effectively.

Conflict of Interest Statement

The author declares no conflicts of interest.

About the Author

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References

1. Alade, M. E. (2022). Government revenue, public expenditure, and debts in Nigeria. *Fuoye Journal of Accounting and Management*, 5(1)253-271.
2. Al-Zeaud (2014). The Causal Relationship between Government Revenue and Expenditure in Jordan. *Global Journal of Management and Business Research: B Economics and Commerce*, 14(6), 49-57.
3. Amobi, A. P. (2025). Causal Links between Tax Revenue, Government Expenditure, and Economic Growth in Nigeria: A Wavelet Approach. *Afropolitan Journals*, 18(1), 329-352.
4. Aregbeyen, O., & Insah, B. (2013). Testing the revenue–expenditure nexus in Nigeria. *Asian Economic and Financial Review*, 3(10), 1314–1322.
5. Balogun, A. (2017). Causality between Government Expenditure and Government Revenue in Nigeria. *Asian Journal of Economics and Empirical Research*, 4(2): 90-98.
6. Barro, R. J. (1979). On the determination of the public debt. *Journal of Political Economy*, 87(5), 940–971.
7. Buchanan, J. M., & Wagner, R. E. (1977). *Democracy in deficit: The political legacy of Lord Keynes.* Academic Press.
8. Central Bank of Nigeria (2011). *Annual Economic Report, 31st December, 2011.*
9. Central Bank of Nigeria (2012). *Annual Economic Report, 31st December, 2012.*
10. Central Bank of Nigeria (2013). *Annual Economic Report, 31st December, 2013.*
11. Central Bank of Nigeria (2014). *Annual Economic Report, 31st December, 2014.*

12. Central Bank of Nigeria (2015). *Annual Economic Report, 31st December, 2015.*
13. Central Bank of Nigeria (2016). *Annual Economic Report, 31st December, 2016.*
14. Central Bank of Nigeria (2017). *Annual Economic Report, 31st December, 2017.*
15. Central Bank of Nigeria (2018). *Annual Economic Report, 31st December, 2018.*
16. Central Bank of Nigeria (2019). *Annual Economic Report, 31st December, 2019.*
17. Central Bank of Nigeria (2020). *Annual Economic Report, 31st December, 2020.*
18. Central Bank of Nigeria (2021). *Annual Economic Report, 31st December, 2021.*
19. Central Bank of Nigeria (2022). *Annual Economic Report, 31st December, 2022.*
20. Central Bank of Nigeria (2023). *Annual Economic Report, 31st December, 2023.*
21. Central Bank of Nigeria (2023). *Statistical bulletin*. Central Bank of Nigeria.
22. Central Bank of Nigeria (2024). *Annual Economic Report, 31st December, 2024.*
23. Debt Management Office. (2024). *Public debt statistics*. Debt Management Office of Nigeria.
24. Eita, J. H., & Mbazima, D. (2008). The Causal Relationship between Government Revenue and Expenditure in Namibia. *Journal of Economic and Financial Sciences,* 2(2), 175-186.
25. Emelogu, C. O., & Uche M. O. (2010). An Examination of the Relationship between Government Revenue and Government Expenditure in Nigeria: Cointegration and Causality Approach. *Central Bank of Nigeria Economic and Financial Review* Volume 48(2), 35-57.
26. Friedman, M. (1978). The limitations of tax limitation. *Policy Review*, 5, 7–14.
27. Hemming, R. (1991). *Public expenditure and fiscal policy*. International Monetary Fund Working Paper No. 91/17. International Monetary Fund.
28. Ibrahim, T. A. (2009). Public expenditure and economic growth in Nigeria. *Journal of Economics and Sustainable Development*, 1(2), 45–54.
29. International Monetary Fund. (2023). *Nigeria: 2023 Article IV consultation - Staff report*. International Monetary Fund.
30. Keho, Y., (2010), 'Budget Balance through Revenue or Spending Adjustments? An Econometric Analysis of the Ivorian Budgetary Process, 1960- 2005', *Journal of Economics and International Finance*, 2, 1, 001-011.
31. Komain, J., & Tantatape, B. (2013). The Relationship between Government Expenditure on Economic Growth in Thailand. *Journal of Applied Economics and Economic Education Research*, 8(2), 1-7.
32. Meltzer, A. H., & Richard, S. F. (1981). A rational theory of the size of government. *Journal of Political Economy*, 89(5), 914–927.
33. Musgrave, R. A. (1966). *Principles of budget determination. In H. Cameron & W. Henderson (Eds.), Public Finance: Selected Readings*. Random House.
34. Musgrave, R. A., & Musgrave, P. B. (1989). *Public finance in theory and practice* (5th ed.). McGraw-Hill.
35. Ogujiuba, K., & Abraham, T. W. (2012). Testing the Relationship between Government Revenue and Expenditure: Evidence from Nigeria. *International Journal of Economics and Finance*, 4(11), 172-182.
36. Ogujiuba, K., & Abraham, T. W. (2012). Testing the relationship between government revenue and expenditure: Evidence from Nigeria. *International Journal of Economics and Finance*, 4(11), 172–182.
37. Okulegu, B. E. (2013). Public sector expenditure and economic growth in Nigeria. *African Journal of Economic Policy*, 20(1), 65–82.
38. Olatunji, M. (2013). Government expenditure and revenue nexus: Evidence from Nigeria. *Journal of Economics and Sustainable Development*, 4(10), 127–134.
39. Omo, A., & Taofik, M. (2012), Testing the Revenue and Expenditure Nexus in Nigeria: An Application of the Bound Test Approach, *European Journal of Social Sciences*, 27(3), 374-380.
40. Organisation for Economic Co-operation and Development. (2021). *Revenue statistics in Africa 2021: The impact of COVID-19 on African revenues*. OECD Publishing.
41. Peacock, A. T., & Wiseman, J. (1979). Approaches to the analysis of government expenditure growth. *Public Finance Quarterly*, 7(1), 3–23.
42. Rafaqat, A., & Mahmood, T. (2012). Government revenue–expenditure nexus: Evidence from Pakistan. *International Journal of Economics and Finance*, 4(7), 123–131.

43. Wendwesen, A. (2012). Government expenditure and economic growth: Evidence from developing countries. *International Journal of Economics and Finance*, 4(6), 45–55.
44. Yousef, E. & Mohammad, R. (2012). The causality between government revenue and government expenditure in Iran, *International Journal of Economic Sciences and Applied Research, Kavala Institute of Technology, Kavala*, 5,(1), 129-145.
45. Yusuf, S. A., & Akinsola, F. A. (2016). Government revenue - expenditure nexus in Nigeria: Evidence from causality analysis. *Journal of Economics and Sustainable Development*, 7(6), 97–104.