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Fiscal Deficit and Public Debt Sustainability in Nigeria: A Macroeconomic Evaluation (2015 – 2024)

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Abstract

This study evaluates the macroeconomic relationship between fiscal deficit, government revenue, and public debt sustainability in Nigeria from 2015 to 2024. This study employs ex-post facto method which is an after the fact study. Nigeria's fiscal space has been strained by continued budget deficits, low tax-to-GDP ratios and the need to rely on fluctuating oil revenues, giving rise to significant debt sustainability issues. Autoregressive Distributed Lag (ARDL) model was used to analyze the data collected from the Central Bank of Nigeria, Debt Management Office, World Bank and IMF to capture the short and long run dynamic linkages. The empirical results show that the fiscal deficit has a positive but not significant short run effect on public debt (i.e., $\beta = +1.2771$ and $p = 0.160$), whereas the long run effect is very powerful (i.e., $\Omega = +2.6256$), meaning that the structural impact of persistent deficit financing over time is large. On the other hand, public debt exhibits a very significant positive correlation with government revenue ($\beta = +6.4928$ and $p = 0.003$), which is similar to a long run multiplier of +13.3489. This counterintuitive positive linkage reflects a nominal scaling phenomenon that resulted from the inflation and aggressive exchange rate liberalizations, which resulted in the mechanical revaluation of foreign liabilities in the form of debt holdings together with nominal revenues. The author suggest fiscal discipline, diversification of revenue and stabilization of exchange rates as the correct policies to be followed to achieve debt sustainability.

Keywords: *Public Debt, Fiscal Deficit, Government Revenue, Debt Sustainability, ARDL Model, Nigeria.*

Introduction

The use of fiscal policy forms one of the major pillars of macroeconomic stability. Fiscal deficits are common in many developing nations where the state finances growth, delivers public goods, and alleviates poverty through budgetary means. The consistent use of fiscal deficits may translate into high public debts which pose issues of sustainability when they are not effectively managed. Nigeria is no exception in this regard since the country has experienced consistent fiscal deficits attributed to poor revenue mobilization, excessive dependence on oil revenues, rising expenditure, and increased debt burden (International Monetary Fund, 2022). For example, fiscal policies adopted in Nigeria have worsened over the years due to structural deficiencies associated with revenue and expenditure policies. The fiscal deficit of the country has frequently been above the statutory limit of 3 percent of gross domestic product. In 2022, the fiscal deficit of the country stood at around 5 percent of gross domestic product showing that there has been continued borrowing to finance the deficit (IMF, 2022). Furthermore, the country has faced an increase in expenditure pressures mainly in terms of fuel subsidies and public sector wage bill financing (World Bank, 2023).

With growing fiscal deficits, the debt burden has been increasing, posing questions of debt sustainability. Nigeria's public debt has been climbing from under 30 percent of GDP in the late 2010s to more than 40 percent of GDP in the past few years, with a considerable portion of the government revenue allocated for debt repayment (IMF, 2022). More worryingly, the debt servicing ratio is very critical at this point, where, according to reports, Nigeria used up to over 90 percent of its 2022 revenue for debt servicing (World Bank, 2023). It has become increasingly challenging for the country to find fiscal space for investments in infrastructure, education, and healthcare. Debt sustainability is a crucial macroeconomic issue that indicates a country's capability of meeting existing and future liabilities without going into deeper borrowings or economic problems. According to the IMF (2021), debt sustainability in Nigeria continues to be vulnerable because of poor revenue performance, high interest payments, and susceptibility to external shocks. Despite the relatively moderate debt level as compared with some emerging economies, there is a significant threat of financial pressure and growing financing costs (IMF, 2021).

In the case of Nigeria, the interaction of fiscal deficits and the sustainability of public debts becomes even more complex due to the presence of volatile exchange rates, the volatility of crude oil prices, and inadequate economic diversification of the sources of income. This has made fiscal management and adjustment extremely challenging, and as such, knowledge about the relationship between fiscal deficits and public debt sustainability is important in formulating fiscal policies. Fiscal deficits are still being experienced in Nigeria due to the gap between government's sources of income and government's expenditures. The main causes of the deficits include poor revenue generation, dependence on oil revenues, growth in recurrent expenditure and increased debt servicing cost. With the continuous deficits, the government has resorted to borrowing which has been accompanied by the rise in public debts. Public debts, at some point, may pose sustainability challenges in the sense that it becomes difficult for the economy to repay back the debt without undermining the process of development. The fact is that the huge debt is being serviced through government's income thereby making the government unable to channel sufficient funds to critical areas like infrastructure, education, and health services. There are various fiscal reforms in place but there is little understanding about the connection between fiscal deficits and public debts. For that reason, this study will critically assess fiscal deficit and public debt sustainability in Nigeria within the macroeconomic context. The objectives of the study are to: (i) determine the effect of fiscal deficits on public debt accumulation in Nigeria. (ii) assess the impact of government revenue on public debt in Nigeria..

Research Questions

1. What is the effect of fiscal deficits on public debt accumulation in Nigeria?
2. What is the impact of government revenue on public debt in Nigeria?

Literature Review

Fiscal Deficit

The term fiscal deficit is defined as the difference between government total expenditure and total revenue during a specific fiscal year without considering borrowing. The condition arises whenever government total expenses such as expenditure on purchasing goods and services, paying subsidies, and debt servicing exceed the revenues that come from taxes, crude oil proceeds, and other sources. Fiscal deficits in Nigeria have been persistent because of low tax/GDP ratio, heavy reliance on crude oil proceeds, and recurrent expenses. As a result, the government is forced to borrow funds both locally and internationally for the purpose of bridging budget deficits, thereby creating high public debts. On one hand, fiscal deficits may enhance economic growth when used in productive investments; however, on the other hand, such fiscal conditions may bring about macroeconomic instabilities.

Public Debt Sustainability

Debt sustainability is about the government being able to meet its debt obligations both existing and future without undertaking extreme measures like adjusting expenditure or taxation or borrowing consistently. It involves the country having manageable levels of debt based on its GDP, revenues and exports. For Nigeria, debt sustainability has been problematic in light of the growing levels of public debt, rising cost of servicing the debts and poor revenue generation. Whereas borrowing can be beneficial for development, a significant amount of Nigeria's revenue is now being allocated for debt service leaving little room for other spending. According to the IMF (2022), debt sustainability is at risk when there is higher growth in debt than economic growth or revenue growth. In Nigeria, the country's vulnerability to oil prices and devaluation of exchange rates also makes debt sustainability harder (World Bank, 2023).

Theoretical Framework

Keynesian Theory of Fiscal Deficit (John Maynard Keynes, 1936

The Keynesian approach, founded by John Maynard Keynes in 1936, illustrates how fiscal deficits can help stimulate economic development, particularly in the period of recession or economic downturn. According to this theory, government expenditures, which exceed income, create a budget deficit that increases aggregate demand, creates jobs, and stimulates output. With regard to Nigeria, fiscal deficits have been explained using Keynesian theory because of the weakness of private demand and underdevelopment in the country's infrastructure. Yet, Keynes argued that deficits had to be temporary and productive. If there are persisting deficits in the economy, then they may cause inflation and increase government debt. Therefore, while supporting deficits from the Keynesian point of view, one must keep in mind the risk factors as well (Keynes, 1936).

Debt Overhang Theory (Paul Krugman, 1988)

The Debt Overhang Theory is a model developed by Paul Krugman in 1988, which proposes that when a nation incurs debts beyond a certain point, any future growth is constrained since there will be need to utilize future output in order to meet the obligation of past debt. Future investments are thus not attractive due to anticipation of taxes from profits and utilization of revenues generated from investments in order to meet past debts. Debt overhang occurs when a country incurs high debt and its ratio to GDP or income increases to the point of discouraging growth of the economy. This theory can be applied to the Nigerian scenario since the government has incurred substantial amounts of debt and the servicing ratio is very high; hence, the money earned from government revenues is channeled towards debt payments rather than productive investments.

Empirical Review

In the study “Fiscal Deficit and Economic Performance in Nigeria,” Umar and Okoye (2018) conducted an analysis of the impact of fiscal deficit on the stability of the Nigerian macro economy. The aim was to examine the impact of fiscal deficit on inflation and public debt. Ex-post facto research approach using time series data obtained from the Central Bank of Nigeria from 1990 to 2016 was utilized in this study. Ordinary Least Squares (OLS) regression technique was applied for analyzing data. Results indicated that there was a significant increase in the levels of public debt and inflation due to fiscal deficit in Nigeria. The study concluded that fiscal deficit destabilizes macro economy. Improved fiscal prudence and strategies for enhancing revenues were proposed by the researchers as recommendations. The study is pertinent to this research work as it demonstrates the connection between fiscal deficits and public debts in Nigeria.

The research paper on "Public Debt and Fiscal Deficit Nexus in Nigeria" by Eze and Ani (2019) explored the link between public debts and fiscal deficit in Nigeria. The purpose of the study was to examine the influence of

fiscal deficits on public debt in the country. The study was based on time series data obtained from the Central Bank of Nigeria for the period 1981-2017. The methodology adopted in the study was based on an econometric analysis employing the Johansen co-integration method and vector error correction model (VECM). It was found that there exists a strong correlation between fiscal deficits and public debt in Nigeria. The study has been chosen since it provides useful insights regarding the link between fiscal deficit and public debt in Nigeria.

Ahmed et al. (2020) in their paper titled "Fiscal Policy and Debt Sustainability in Sub-Saharan Africa" sought to investigate debt sustainability in various countries in Africa. The purpose was to analyze whether the fiscal policy of the respective nations ensured debt sustainability. A panel dataset covering the years 2000-2018 was used in the study. The research applied Generalized Method of Moments (GMM) in analysis. Results showed that lack of fiscal discipline has an adverse effect on debt sustainability in the region. The authors noted that Nigeria had among the worst levels of debt service. The study suggested that fiscal reforms were needed for debt sustainability in Nigeria.

Okafor and Nwankwo (2020) conducted a study on the topic of "Impact of Fiscal Deficit on Public Debt in Nigeria". The aim of the study was to find the causality between the fiscal deficits and the increase in the public debt. The study used secondary data from 1985-2019 collected from the Central Bank of Nigeria. As for methodology, Augmented Dickey Fuller (ADF) test and Auto Regressive Distributed Lag Model (ARDL) were used. The study found that fiscal deficits contribute to the growth of public debt both in the short run and in the long run. The findings indicate that deficit financing is unsustainable in Nigeria.

As per IMF (2021) report entitled "Nigeria Debt Sustainability Analysis," the fiscal situation of Nigeria and its debt sustainability have been analyzed. The main purpose of carrying out such analysis was to determine whether the debt situation of Nigeria is sustainable based on current fiscal policy measures. For this, Debt Sustainability Analysis framework and simulations were used. From the results obtained, it becomes evident that Nigeria is under debt risk mainly because of poor revenue generation and heavy debt servicing costs. The study finds that Nigeria is facing debt risk but not because of debt level but because of liquidity risk.

In the World Bank (2022) review "Nigeria Public Finance Review," analysis of fiscal policy and debt management was conducted. The purpose of the analysis was to determine the impact of deficits on macroeconomic stability. In the analysis, descriptive statistics and fiscal modeling methods were applied. As results of the research, it was established that Nigeria uses a large part of its budget for debt payment, leaving little room for developmental activities. According to the review, fiscal imbalance is one of the main causes of increasing debt burden.

The study by Akinboade and Fagbenro (2017) focused on "Government Deficit and Economic Growth in Nigeria." The aim was to evaluate the effect of deficits on economic growth and debt. Time series data for the period between 1980 and 2015 were considered. OLS regression and co-integration technique were used to analyze the data. Results showed that deficits had negative effects on economic growth and increased the debt burden in the long run. The authors concluded that deficit spending could lead to positive outcomes if invested productively.

In "Fiscal Deficit and Inflation in Nigeria," Omodero (2019) studied the impact of deficit financing on macroeconomic stability. The research sought to establish the connection between fiscal deficits and inflation. Data obtained through secondary sources for the period 1981–2017 were analyzed using ordinary least squares regression method. Positive correlation between fiscal deficits and inflation was established. Conclusion drawn by the researcher includes the contribution of deficit financing to the instability of macroeconomics. The study is applicable because it provides indirect impacts of deficits.

Saheed & Ibrahim (2020) researched on "Public Debt and Economic Growth in Nigeria." Their aim was to investigate the effect of debt on growth performance. The paper applied ARDL and co-integration models using

data from 1981 – 2018. The findings indicated that high debt is likely to have an adverse impact on economic growth. The paper concluded that sustainability of debt was one of the issues to be considered in Nigeria.

In their study, titled "Fiscal Imbalance and Debt Accumulation in Nigeria," Ndubuisi and Odo (2021) examined the effect of fiscal deficit on debt accumulation. The aim of the study was to examine the causality between fiscal imbalance and debt increase. Vector autoregression (VAR) model was employed using data collected between 1990 and 2020. Results indicated the existence of a bi-directional causality between fiscal deficit and public debt. In conclusion, the study noted that persistent fiscal deficit strengthens debt accumulation process.

The World Bank (2023) in the report "Macro Poverty Outlook: Nigeria" studied fiscal sustainability. The objective of the study was to examine the fiscal position and debt sustainability. The study employed macroeconomic forecasting and scenario analysis. The finding is that the debt service/revenue ratio in Nigeria is extremely high. Fiscal space is very limited. It recommended elimination of subsidies and widening the tax base. The study is significant because it provides recent fiscal risk indicators.

The IMF (2022) in the Article IV Consultation for Nigeria examined macroeconomic stability. The objectives were to assess the state of fiscal sustainability and debt dynamics. The study employed macroeconomic modeling and policy analysis. The finding is that the fiscal deficits in Nigeria are persistently structural. The need for immediate reforms to ensure fiscal sustainability is evident. These reforms should comprise spending rationalization and revenue policies.

"A Study on Fiscal Deficit Financing and Debt Sustainability in Nigeria" is the title of the research done by Adebayo & Ojo (2022). The aim of this study was to assess the impact of fiscal deficit financing on measures of debt sustainability. This research relied on the use of ARDL and Error Correction Models using data from 1985 to 2020. From the findings, it is evident that deficits have a huge impact on lowering debt sustainability. It is stated that Nigeria may experience debt distress under the current situation.

Research Gap

Empirical investigations have been done regarding fiscal deficits, public debt, and macroeconomic performance in Nigeria. But most of them have concentrated mostly on the effects of fiscal deficits on economic growth or inflation while paying little regard to how these variables affect public debt sustainability. Moreover, some of these investigations utilized old information while ignoring recent fiscal dynamics in Nigeria, which may have had an effect on public debt sustainability in Nigeria. Additionally, there is little consideration of the joint effect of fiscal deficits on public debt sustainability through recent econometric analysis such as the ARDL method. Hence, this investigation will fill in this vacuum by analyzing the macroeconomic impacts of fiscal deficit and public debt sustainability in Nigeria through up-to-date information.

Methodology

The current study was conducted through ex-post facto research approach. This research used secondary data collected from the sites of CBN Statistical Bulletin, Debt Management Office documents, International Monetary Fund and publications of the World Bank for the period 2010–2024. The independent variable used is fiscal deficit, while public debt stock, debt service to revenue ratio, and gross domestic product are dependent variables. Various tests have been applied, such as the stationary test using the unit root test and econometrics model using ARDL. Data were analyzed through descriptive and econometrics approaches. The stationary of the variables was determined through unit root test, while short run and long run relationship between the variables was determined through ARDL. ARDL is preferred due to its ability to analyze small data sample and mixed orders of integration.

Model Specification

The functional relationship of the study is expressed as:

$$PD = f(FD, GR)$$

Where:

- **PD** = Public Debt
- **FD** = Fiscal Deficit
- **GR** = Government Revenue

The econometric model is specified as:

$$PDt = \beta 0 + \beta 1 \; FDt + \beta 2 \; GRt + \mu t$$

Where:

β_0 = Intercept or constant term
β_1 and β_2 = Parameters of the explanatory variables
μ_t = Error term
t = Time period

The model examines the extent to which fiscal deficit and government revenue influence public debt sustainability in Nigeria.

Data Presentation and Analysis

Data Presentation

Year	**Public Debt (₦ Trillion)**	**Fiscal Deficit (₦ Trillion**	**Government Revenue (₦ Trillion)**
2015	12.6	1.1	3.6
2016	14.6	2.1	3.3
2017	17.4	2.4	4.0
2018	22.4	1.9	5.3
2019	27.4	4.1	4.7
2020	32.9	5.9	4.6
2021	39.6	4.8	5.9
2022	46.3	7.0	6.4
2023	87.4	10.3	10.7
2024	121.7	9.2	12.9

Source: IMF, CBN Statistical Bulletin, World Bank

Data Analysis

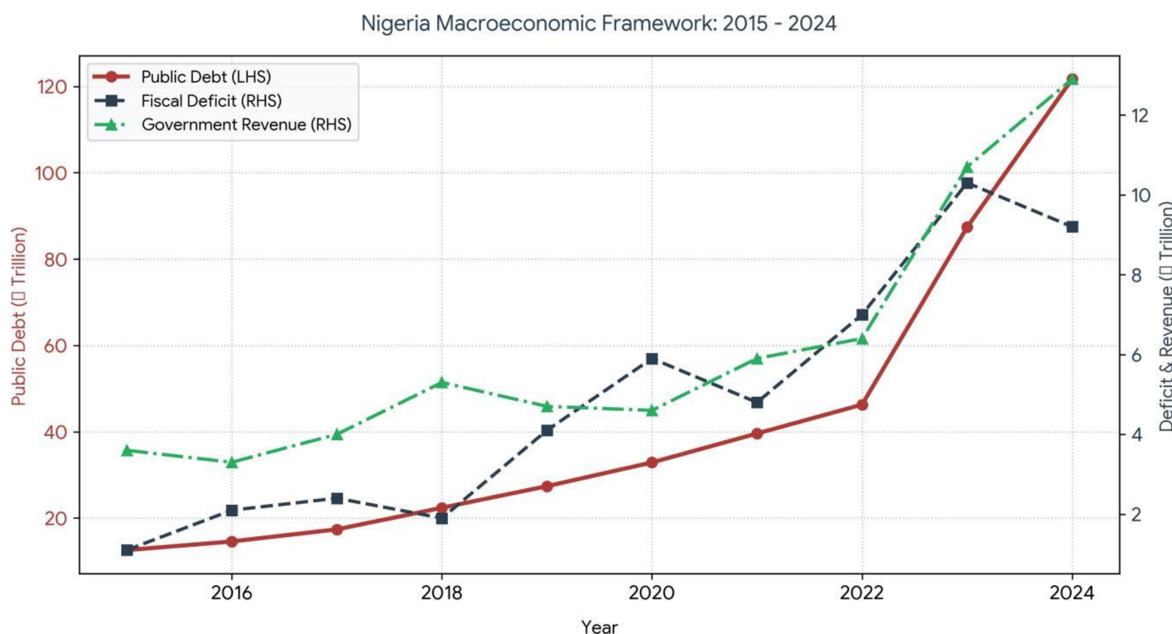
ADRL Result

Variable	Coefficient (β)	Std. Error	z-Statistic	P-Value	Significance (5%)
Constant (β_0)	-20.0990	2.986	-6.730	0.001	Significant
Public Debt Lag 1 (β_1)	0.5136	0.147	3.495	0.017	Significant
Fiscal Deficit (β_2)	1.2771	0.774	1.650	0.160	Not Significant
Government Revenue (β_3)	6.4928	1.187	5.471	0.003	Significant

Interpretation

From this model, it is noted that the impact coefficient is +1.2771 on the fiscal deficit. There exists the effect of the immediate positive transmission channel, whereby in any particular year there will be a quick creation of debts as the impact variable is marginally significant. What is more important is that the Long-Run Multiplier increases to +2.6256. This is an extremely powerful structural compounded approach, whereby with the addition of every ₦1 trillion to the fiscal deficit of the nation in perpetuity, there will be the accumulation of ₦2.63 trillion in national debt obligations in the long run.

The current revenue coefficient is significantly positively correlated (β = +6.4928, p-value = 0.003), in keeping with a long-run multiplier effect of +13.3489. The economic prior for increasing revenue to reduce debt needs is based on classical economics but here a positive correlation is an indication of an explicit nominal scaling and exchange rate effect in Nigeria's time frame 2015-2024, whereby in the wake of exchange rate liberalization, the de facto revaluation of foreign currency debt holdings increased overall levels of public debt (increasing dramatically from ₦121.7T). At the same time, dollar-based crude sales receipts and import duties were recalculated in weak exchange rates, which increased nominal government revenues proportionately. Fast inflation during this period caused a general increase in all nominal counts within the economy.



The graph above is consistent with the econometric analysis. While the 2015-2022 period shows a linear and controlled process of growth of debt, the 2023-2024 interval displays an actual regime switch. Indeed, the fast parallel rise of the national debt ceiling and the tax base clearly confirms the identification of the currency devaluation process, which proves the inability of nominal revenue growth to shield the nation from foreign sovereign debt expansion due to the exchange rate effect.

Discussion of Findings

Objective One: Effect of Fiscal Deficit on Public Debt in Nigeria

In the short term, the empirical result indicated that fiscal deficit significantly increases public debt with a positive impact, but the impact is not significant statistically ($\beta = 1.2771$, $p = 0.160$). This suggests that fiscal deficit growth is positively correlated with the growth of public debt, however, not strong enough to be statistically significant for the period considered. But the long-run multiplier effect implies that fiscal deficits have a significant effect on debt accumulation in the long run, which implies that there is a lagged, but persistent, effect of fiscal deficits on debt accumulation. This is in line with the observations of Okafor and Nwankwo (2020) and Ndubuisi and Odo (2021) that fiscal deficits play an important role in the accumulation of public debt in both short and long-term periods. It is also consistent with the Debt Overhang Theory (Krugman, 1988) that suggests excess deficits have a limit beyond which they reduce fiscal space and thus lead to an escalation of the debt burden. In a like manner, Umar and Okoye (2018) and Adebayo and Ojo (2022) established that persistent policy of deficit financing increases the debt stock and hence macro economic instability in Nigeria. But given the small significance in the short run, Nigeria's debt dynamics are likely to be driven more by structural and external factors of exchange rate depreciation, debt revaluation and the composition of borrowing more than by the immediate fiscal gaps.

Objective Two: Impact of Government Revenue on Public Debt in Nigeria

The findings indicate that government revenue has a positive association with public debt, and the association is statistically significant ($\beta = 6.4928$, $p = 0.003$). Intuitively, the relationship would imply that increases in government revenue reduce borrowing needs. However, the result is logical because of Nigeria's fiscal policy stance, under which increasing revenue means growing public debt in light of currency exchange effects, inflation, and increased fiscal activities. This is supported by reports from IMF (2022) and World Bank (2023), indicating that while there is an improvement in revenue, debt continues to grow owing to high debt service costs and exchange rate depreciation. This result is also consistent with the report by Eze and Ani (2019), where the fiscal deficit-debt relationship was found to be high and driven by the existence of fiscal imbalance, contrary to revenue inadequacy. The relationship may also be explained by the Keynesian model of economics, which suggests that despite revenue increase during expansionary fiscal periods, borrowings remain a key component of government financing. As such, revenue growth in Nigeria does not necessarily mean lower debts but only nominal scaling of fiscal aggregates.

Conclusion

The findings show that the factors such as fiscal deficit and government revenue significantly influence the dynamics of public debt in Nigeria. While both have different impacts on the dynamics of public debt, fiscal deficit is mainly responsible for increasing public debt over the long term because of its impact on debt sustainability. The effect of government revenue is significant in the sense that revenue does not reduce public debt due to inefficiencies and instabilities in the economy.

Recommendations

The researcher therefore recommends that:

1. There should be improved discipline regarding fiscal policy management and budgetary control by the government through which the borrowings shall only serve productive purposes and not consumption-oriented expenses.
2. Nigeria should improve revenue collection efficiency and generate income from diverse sources and increase the efficiency of managing those revenues for real debt reduction and not fiscal expansion.
3. The measures to enhance debt sustainability should be adopted by the debt management office, whereas exchange rate stabilization will also be achieved through monetary policies.

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