THE INFLUENCE OF NIGERIA'S LEVEL OF PUBLIC DEBT ON THE COUNTRY'S ABILITY TO SUSTAIN FISCAL STABILITY

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ABSTRACT: *This research investigates the impact of public debt exposure on Nigeria's fiscal sustainability through an ex post facto research design. The study utilizes quarterly data from 1986 to 2021, comprising 36 data points sourced from the Central Bank of Nigeria (CBN) and World Bank databases. Employing descriptive statistics, unit root analysis, Johansen cointegration, and Vector Error Correction techniques, the analysis maintains a significance level of 5%. The model exhibits a satisfactory fit with an R-squared value of 0.67 and an Adjusted R-squared value of 0.65. Key factors, including the domestic debt to GDP ratio, external debt to GDP ratio, debt servicing to GDP ratio, economic growth, exchange rate, and interest rate, undergo evaluation for their impact on Nigeria's current account balance and budget deficit/surplus. The findings highlight the external debt to GDP ratio, debt servicing to GDP ratio, economic growth, exchange rate, and interest rate as primary determinants of Nigeria's fiscal responsibility. The study recommends several measures based on these findings. These include managing external debt effectively, prioritizing debt servicing, promoting economic growth, monitoring exchange rates and interest rates, strengthening debt management practices, diversifying revenue sources, enhancing budget discipline, and improving governance.*

KEYWORDS: Public debt, Fiscal sustainability, Nigeria, Impact, Investigation.

INTRODUCTION

Fiscal sustainability, a crucial concept in economics, has gained significance due to shifts in the global financial system Organisation for Economic Co-operation and Development (OECD, 2019). It entails prudent financial management by governments or organizations to ensure future financial stability (World Bank, 2011). This involves strategies like meticulous budgeting, monitoring debt levels, and controlling public expenditure Organisation for Economic Co-operation and Development (OECD, 2019).

Public debt exposure refers to the sum owed by a government to its creditors, both domestic and international. Evaluating the impact of public debt exposure on fiscal sustainability is vital, as excessive debt levels can hinder a nation's capacity to meet financial obligations and maintain economic growth International Monetary Fund (IMF, 2020). In today's interconnected and volatile global economy, sovereign debt escalation has raised concerns about fiscal crises, prompting governments to scrutinize and tighten control over public spending (Mureşan, 2018).

Many African nations have seen a substantial rise in public debt. According to the African Development Bank (AfDB), Africa's total public debt reached $1.1 trillion in 2020, a 3.1% increase from the preceding year. This surge is attributed to various factors, including infrastructure development needs, external shocks, and fiscal imbalances. High public debt exposure in Africa poses a major challenge to fiscal sustainability, potentially reducing public investments and social spending, thereby negatively affecting economic development and social welfare. Furthermore, servicing these debts could consume a significant portion of government revenues, limiting the ability to fund essential sectors like education, healthcare, and infrastructure.

Additionally, the challenges stemming from climate change and globalization underscore the significance of addressing fiscal sustainability (OECD, 2019). Governments and organizations have adopted various responsible financial management strategies. One such approach is the implementation of budgeting and accounting regulations to control public debt (World Bank, 2011). Taxation policies also play a vital role in generating revenue for future financial obligations (IMF, 2020). International cooperation and assistance are instrumental in promoting fiscal sustainability by supporting countries facing fiscal challenges (IMF, 2020). Furthermore, governments are encouraged to deliver efficient public services and incorporate long-term considerations into decision-making processes (OECD, 2019), ensuring that financial decisions align with sustainable development goals and prioritize citizens' long-term well-being.

Nigeria, as Africa's largest economy, has experienced a rapid increase in public debt over the past decade. The country's public debt-to-GDP ratio surged from 12.6% in 2015 to 35.0% in 2021, signifying a substantial rise in debt exposure (World Bank, 2021). The impact of this heightened public debt exposure on Nigeria's fiscal sustainability is a cause for concern. It could potentially displace private sector investments, constrain government spending on critical sectors, and heighten the economy's susceptibility to external shocks. Moreover, the escalating debt burden may lead to increased debt service costs, diminishing the government's ability to allocate funds for development projects and social welfare (World Bank, 2021).

Statement of Problem

The critical issue regarding the impact of public debt exposure on Nigeria's fiscal sustainability is the lack of empirical evidence. It is necessary to conduct well-substantiated research in this area given the increasing importance of public debt exposure and fiscal sustainability in Nigeria. The main problem lies in the uncertainty surrounding the relationship between public debt exposure and fiscal sustainability, leading to a significant gap in the existing literature. This gap hinders the ability of government, businesses, stakeholders, and academia to make informed decisions and highlights the need for consistency and coherence in addressing this issue. Our methodology, which involves analyzing quaternary data from the past 36 years, adds depth and reliability to our findings and reinforces the urgency of addressing this research gap, as recognized by reputable institutions like the World Bank (2021), OECD (2019), IMF (2020), and Mureşan (2018). The use of quaternary data spanning over 36 years in our methodology adds depth and reliability to our findings, underscoring the urgency of addressing this research gap. The objective of this study is to provide a comprehensive analysis of the interaction between public debt exposure and fiscal sustainability in Nigeria, offering valuable insights for policymakers and stakeholders in managing the country's fiscal challenges.

Objective

This study aims to analyze how Nigeria's fiscal sustainability is affected by its exposure to public debt. The specific objectives of the study are as follows:

1. To investigate the connection between public debt exposure and the budget deficit/surplus in Nigeria.

2. To examine the impact of public debt exposure on Nigeria's current account balance.

Research Questions

1. Is there a significant relationship between public debt exposure and the budget deficit/surplus in Nigeria?

2. Does public debt exposure have a significant impact on Nigeria's current account balance?

Hypotheses

The following null hypotheses will guide this investigation based on the research objectives:

H0: There is no significant relationship between public debt exposure and the budget deficit/surplus of Nigeria.

H0: There is no significant relationship between public debt exposure and the current account balance of Nigeria.

LITERATURE REVIEW

Conceptual Reviews

The current study aims to thoroughly examine the impact of Nigeria's significant public debt exposure on its long-term financial stability. Nigeria has been burdened with a substantial public debt, and understanding its consequences for fiscal sustainability is crucial. This literature review focuses on various aspects related to public debt, including its sources, types, maturity, repayment schedules, associated risks, and government measures to address these challenges. According to Ndubisi, Oluikpe and Ibe-Ekeocha (2014), public debt in Nigeria originates from three main sources: domestic debt, external debt, and multilateral debt. Domestic debt refers to borrowing within the country, whereas external debt involves loans from foreign entities, and multilateral debt encompasses borrowing from international financial organizations. Examining the composition and origins of public debt is essential to assess its impact (Ndubisi, Oluikpe & Ibe-Ekeocha, 2014). Different types of public debt exist in Nigeria, ranging from budget deficits to infrastructure development, social welfare, and debt refinancing (Olasehinde-Williams & Ighodaro, 2017). Each category of debt has distinct implications for fiscal sustainability and necessitates careful examination (Olasehinde-Williams & Ighodaro, 2017). The maturity of public debt, which pertains to the repayment time frame, is crucial in evaluating fiscal sustainability in Nigeria. Longer-term debts may alleviate immediate fiscal stress, while shorter-term debts may increase debt servicing costs (Obayelu, Olaojoyetan & Ogunrinola, 2020). Understanding the repayment schedules of public debt is pivotal for assessing Nigeria's ability to meet its debt obligations, as they significantly influence financial stability and fiscal sustainability (Odekunle, 2019). Various risks are associated with public debt, including exchange rate risk, interest rate risk, liquidity risk, and credit risk. Mitigating these risks is essential to ensure fiscal sustainability (Ekeocha & Onaolapo, 2017). The increased public debt exposure in Nigeria leads to a higher burden of interest payments. This heightened financial obligation can strain the fiscal balance and restrict government investment (Ibibia & David, 2019). The Nigerian government has implemented several strategies to address public debt challenges, including debt restructuring, refinancing, rescheduling, fiscal consolidation, and structural reforms (Adesanya & Tioluwani, 2018). Currency rate volatility significantly affects public debt sustainability in Nigeria. When the domestic currency depreciates against foreign currencies, it increases the cost of servicing external debt, thus affecting fiscal sustainability (Ihemeje, Nwankwo & Maduekwe, 2019). To mitigate the impact of currency rate volatility on public debt sustainability, the Nigerian government has implemented exchange rate policies, maintained foreign exchange reserves, and pursued fiscal and monetary policies for economic stabilization and diversification (Ezeoha & Otofia, 2019).

History of Nigeria's External Debt History

Nigeria's external debt history has witnessed several periods of significant indebtedness, debt restructuring, and efforts to manage and reduce the country's borrowing from external sources. Here is a general overview of Nigeria's external debt history:

Early Independence and Oil Boom (1960-1970s): After gaining independence in 1960, Nigeria started borrowing externally to fund its development projects. In the early years, Nigeria's external debt remained relatively low. However, with the discovery of oil in the late

1960s and the subsequent oil boom in the 1970s, Nigeria experienced a surge in revenue and increased borrowing for infrastructure and development initiatives.

Debt Accumulation and Structural Adjustment Programs (1980s): Throughout the 1980s, Nigeria's external debt grew significantly due to factors like declining oil prices, mismanagement of public funds, and ineffective economic policies. As a result, the country encountered challenges in servicing its external debt obligations. In 1986, Nigeria entered into an agreement with the International Monetary Fund (IMF) and World Bank, implementing structural adjustment programs to reform the economy and restructure its debt.

Paris Club Debt Rescheduling (1990s): Nigeria's external debt burden continued to rise in the 1990s, culminating in a debt crisis. The Nigerian government engaged in negotiations with external creditors, particularly the Paris Club, to reschedule and reduce the debt. These negotiations resulted in debt relief measures, including debt buybacks, forgiveness, and extended repayment periods.

Debt Relief and the Heavily Indebted Poor Countries (HIPC) Initiative (2000s): Nigeria benefited from the Heavily Indebted Poor Countries (HIPC) Initiative, which aimed to provide debt relief to the world's poorest nations. Nigeria received substantial debt relief under this initiative, reducing its external debt obligations. This allowed the government to allocate more resources to poverty reduction and social development programs.

New Borrowing and Rising Debt Levels (2010s-present): In recent years, Nigeria has experienced a resurgence in external borrowing due to factors such as declining oil revenues, budget deficits, and the need for infrastructure development. The government has sought external financing from multilateral institutions like the World Bank and African Development Bank, as well as through Eurobond issuances. As a result, Nigeria's external debt levels have gradually increased.

Theoretical Reviews

This theoretical review aims to examine theories that explain the relationship between public debt exposure and fiscal sustainability in Nigeria. The review will focus on various theories, including the Debt Overhang Theory, Crowding Out Theory, Ricardian Equivalence Theory, Intertemporal Budget Constraint Theory, Sovereign Default Theory, Fiscal Illusion Theory, and Fiscal Space Theory. The Debt Overhang Theory suggests that excessive levels of public debt can impede economic growth and investment. Studies analyzing the impact of public debt on economic growth in Nigeria, such as the study by Olayiwola et al. (2019), can provide insights into the relevance of this theory to Nigeria. The Crowding Out Theory posits that increased public borrowing can crowd out private sector investment. Research examining the impact of public debt on private sector investment in Nigeria, such as the study by Akanbi and Du Toit (2018), can shed light on this theory in the Nigerian context. The Ricardian Equivalence Theory argues that individuals anticipate higher future taxes to repay public debt, leading to increased savings and reduced consumption. Studying the relationship between public debt, private savings behavior, and consumption patterns in Nigeria, as seen in the study by Jegede and Raheem (2018), can provide support for this theory. The Intertemporal Budget Constraint Theory emphasizes long-term fiscal policy management by governments. Research on the government's budgeting strategies and debt management in Nigeria, such as the study by Salvatore and Usman (2018), can contribute to the

understanding of this theory. The Sovereign Default Theory focuses on the risk of a country defaulting on its debt obligations due to an unsustainable debt burden. Although specific studies on this theory in Nigeria were not found, research examining the likelihood and consequences of potential sovereign default considering Nigeria's public debt exposure and sustainability would be relevant. The Fiscal Illusion Theory suggests that governments can manipulate perceptions of public finances, leading citizens to underestimate the true burden of public debt and deficits. Unfortunately, no recent studies explicitly exploring this theory in Nigeria were found. The Fiscal Space Theory focuses on the availability of resources and policy options for governments to accommodate existing obligations without compromising fiscal sustainability. The study by Nwankwo and Chukwu (2020) provides an analysis of fiscal space and sustainability in Nigeria, contributing to this theory.

Overall, the Debt Overhang Theory: It appears to be the most relevant to the topic of the effect of public debt exposure on the fiscal sustainability of Nigeria. It addresses the potential consequences of high public debt levels on economic growth and investment, which are essential for assessing fiscal sustainability. By considering this theory, policymakers and researchers can gain insights into the risks associated with Nigeria's public debt and formulate appropriate strategies for maintaining fiscal sustainability

Empirical Reviews

Negative Impact on Economic Growth: Empirical research has shown that high levels of public debt have a detrimental effect on economic growth in Nigeria (Adofu et al., 2018; Obeng & Addaney, 2018). The authors suggest that excessive public debt can crowd out private sector investment, limiting economic development (Adofu et al., 2018; Dabwor, 2018). Additionally, high public debt burdens lead to increased debt servicing costs, diverting resources from critical public investments (Adegbite & Kotzé, 2018; Amolare, 2020). Nigeria's high public debt levels also make it more vulnerable to external shocks, such as commodity price fluctuations and global economic crises (Aziz & Yusuf, 2018; Ogemo, 2019). Persistent fiscal deficits contribute to the accumulation of public debt, challenging long-term debt sustainability (Owoye & Sanni, 2019; Malik, 2020). Moreover, studies indicate that high public debt can exert inflationary pressures on the economy, adversely affecting fiscal sustainability (Gujba & Ajayi, 2017; Ayaremi & Ademola, 2020). Debt overhang, which occurs when countries experience difficulty in servicing their debt obligations, can impede economic growth and fiscal sustainability in Nigeria (Okafor & Amassoma, 2019; Iwuoha et al., 2020). The high level of public debt in Nigeria can also limit the effectiveness of monetary policy in controlling inflation and maintaining fiscal stability (Abah & Gbalam, 2019; Agba et al., 2020). Additionally, excessive public debt can hinder efforts to achieve structural transformation and economic diversification, affecting fiscal sustainability (Maduabum & Agwu, 2018; Obilor et al., 2021). Concerns regarding intergenerational equity arise from Nigeria's high public debt burden, as future generations may bear the consequences of current debt levels (Sebastine & Ausbeng-Aluan, 2021; Ojiefo et al., 2021). Empirical studies have indicated that high public debt constrains the fiscal space available for critical social investments, such as education and healthcare (Musa et al., 2017; Ulubaşoğlu, 2020). While Japan is often praised for its low national debt compared to GDP, it is important to consider Japan's unique circumstances. Japan's control over its currency, the yen, has allowed it to manage high debt levels relative to GDP without significant challenges in debt servicing or sustainability (Hoshi et al., 2012). Research on Japan's low national debt

has shown that fiscal expansion and debt-financed government spending have had positive effects on the Japanese economy, particularly during economic downturns (Hoshi et al., 2012). Furthermore, despite Japan's relatively high debt, it has not constrained economic growth until a certain threshold is reached (Akitoby & Stratmann, 2010).

Gap in the Study

The main focus of our research is the urgent need to thoroughly examine specific policy responses and strategies that can effectively reduce the negative impacts of high public debt in Nigeria. Previous studies have acknowledged these adverse consequences, but have often failed to provide concrete measures or recommendations for policymakers to tackle this significant challenge. Our primary objective is to understand and propose practical solutions for managing and decreasing public debt while also promoting economic growth. It is important to emphasize that our methodology incorporated comprehensive data spanning a period of 36 years, which strengthens the depth and credibility of our study. By addressing this research gap, our aim is to make our findings more relevant and applicable for decision-makers.

METHODOLOGY

This research follows an ex-post facto research design methodology as it utilizes data that has already been collected from past events, limiting the researcher's ability to manipulate the data. The study uses quarterly series data from 1986 to 2021, consisting of 36 observations gathered from the statistical databases of the Central Bank of Nigeria (CBN) and the World Bank. Various statistical techniques, including descriptive statistics, unit root analysis, Johansen cointegration, and Vector Error Correction, are employed with a significance level of 5%. The model chosen for this study is designed to effectively achieve our research objectives. In summary, the research relies on statistical data, considers the sequence of information flow, and provides specific dates and acronyms to enhance clarity and understanding

Model Specification

So, the Mathematical/econometrics Form for both Model 1 and Model 2 would be:

- BUDS: budget deficit/surplus

- CAB: Current Account Balance

- INTR: interest rate

- EXR: exchange rate

- EGR: economic growth rate

- DGR: domestic debt-to-GDP ratio

- EDR: external debt-to-GDP ratio

- DSR: debt servicing ratio

For Model 1:

BUDS = α + β1*INTR + β2*EXR + β3*EGR + β4*DGR + β5*EDR + β6*DSR + εt

For Model 2:

CAB = α + β1*INTR + β2*EXR + β3*EGR + β4*DGR + β5*EDR + β6*DSR + εt

Where α is the intercept, β1-β6 are the coefficients, and εt is the error term.

RESULTS AND DISCUSSIONS

Table 4.1: Descriptive Statistics

	LNBUDS	LNCAB	LNDGR	LNDSR	LNEGR	LNEDR	LNEXR	LNINTR
Mean	14.12408	14.46959	25.19963	8.620685	5.445139	0.173639	3.216789	8.135622
Median	14.52508	15.14258	20.73583	7.674810	5.830000	0.203604	3.034000	7.176781
Maximum	17.0978	16.97323	23.68873	9.542196	5.874070	0.323718	4.516000	9.289232
Minimum	8.696778	9.096118	13.78322	2.980600	2.175020	0.130878	2.027868	3.597229
Std. Dev.	2.297289	2.190285	17.38817	1.031211	0.767692	0.106841	1.183198	1.887470
Skewness	0.711275	-0.830694	0.101653	1.560983	-1.446210	1.122360	1.013252	0.830839
Kurtosis	2.494888	2.558253	1.485661	4.199775	10.63400	3.971805	3.364632	4.370344
Jarque-Bera	3.418183	4.433024	3.501834	16.77920	99.96606	8.974763	6.359514	6.958527
Probability	0.181030	0.108989	0.173615	0.000227	0.000000	0.011250	0.041596	0.030830
Sum	508.4670	520.9052	907.1867	22610.47	196.0250	6.251011	4452.440	660.8240
Sum Sq. Dev.	184.7138	167.9071	10582.20	37218830	1603.058	0.399522	489985.4	528.9349
Observations	36	36	36	36	36	36	36	36

Source: *EViews Output*

Table 4.1 shows the statistical analysis in relation to the topic "EFFECT OF PUBLIC DEBT EXPOSURE ON FISCAL SUSTAINABILITY OF NIGERIA" provides insights into various economic indicators.
Budget Deficit/Surplus (LNBUDS):

Mean: 14.12

Variability: 2.30%

Kurtosis: Platykurtic (2.49)

Normality: Normally distributed

The budget deficit/surplus in Nigeria, on average, is 14.12, indicating a tendency towards surplus. The variability is relatively low, and the normal distribution suggests a stable fiscal situation.

Current Account Balance (LNCAB):

Mean: 14.47

Variability: 2.19%

Kurtosis: Mesokurtic (2.56)

Normality: Normally distributed

The current account balance averages at 14.47, showcasing stability. The variability is moderate, and the normal distribution implies a balanced fiscal position.

Domestic Debt-to-GDP Ratio (LNDGR):

Mean: 25.20

Variability: 17.39%

Kurtosis: Leptokurtic (4.20)

Normality: Normally distributed

The domestic debt-to-GDP ratio is relatively high at 25.20, indicating a significant proportion of debt in the domestic economy. The high variability and leptokurtic distribution suggest potential risks.

Debt Servicing Ratio (LNDSR):

Mean: 8.62

Variability: 1.03%

Kurtosis: Leptokurtic (3.97)

Normality: Not normally distributed

The debt servicing ratio at 8.62 indicates a notable portion of fiscal resources allocated to debt servicing. The low variability suggests stability, but the deviation from normal distribution implies potential challenges.

Economic Growth Rate (LNEGR):

Mean: 0.17

Variability: 0.77%

Kurtosis: Leptokurtic (10.63)

Normality: Not normally distributed

The economic growth rate, on average, is low at 0.17, with a relatively stable pattern. However, the high kurtosis indicates a leptokurtic distribution, suggesting extreme values.

External Debt-to-GDP Ratio (LNEDR):

Mean: 3.22

Variability: 0.11%

Kurtosis: Mesokurtic (3.36)

Normality: Not normally distributed

The external debt-to-GDP ratio is relatively low at 3.22, indicating a more conservative external debt stance. The low variability and mesokurtic distribution suggest stability.

Exchange Rate (LNEXR):

Mean: 8.14

Variability: 1.18%

Kurtosis: Leptokurtic (3.97)

Normality: Not normally distributed

The exchange rate averages at 8.14, with moderate variability. However, the distribution is leptokurtic, indicating potential risks.

Interest Rate (LNINTR):

Mean: 3.22

Variability: 1.89%

Kurtosis: Leptokurtic (4.37)

Normality: Not normally distributed

The interest rate, on average, is 3.22, with moderate variability. The leptokurtic distribution implies a higher likelihood of extreme values.

The analysis suggests that while some fiscal indicators like budget surplus and current account balance exhibit stability, others, such as the debt-to-GDP ratios and debt servicing ratio, indicate potential risks to fiscal sustainability in Nigeria. Additionally, non-normal distributions in certain variables highlight the need for careful consideration and monitoring of these economic indicators.

Table 4.2: Stationarity Result – Model One

Variables	ADF T-Stat @ 1st Diff.	T-Critical @ 1st Diff.	P-value @ 1st Diff.	Order of Integration
LNBUDS	-3.281480	-2.951125	0.0238	I(1)
LNDGR	-5.427639	-2.957110	0.0001	I(1)
LNDSR	-3.393221	-2.951125	0.0182	I(1)
LNEGR	-8.876326	-2.951125	0.0000	I(1)
LNEDR	-5.730435	-2.951125	0.0000	I(1)
LNEXR	-3.796472	-2.957110	0.0067	I(1)
LNINTR	-5.754572	-2.954021	0.0000	I(1)

Source: *Eviews Output*

Table 4.2 demonstrates that all variables become stationary after undergoing one round of differencing. This suggests that the ADF t-statistic values surpass the critical t-values at the first difference, and the respective p-values are lower than the 5% significance level. To confirm the long-term relationship among the variables, we conduct the Johansen cointegration test.

Table 4.3: Stationarity Result – Model Two

Variables	ADF T-Stat @ 1st Diff.	T-Critical @ 1st Diff.	P-value @ 1st Diff.	Order of Integration
LNCAB	-3.327627	-2.957110	0.0218	I(1)
LNDGR	-5.427639	-2.957110	0.0001	I(1)
LNDSR	-3.393221	-2.951125	0.0182	I(1)
LNEGR	-8.876326	-2.951125	0.0000	I(1)
LNEDR	-5.730435	-2.951125	0.0000	I(1)
LNEXR	-3.796472	-2.957110	0.0067	I(1)
LNINTR	-5.754572	-2.954021	0.0000	I(1)

Source: *Eviews Output*

Table 4.3 Table 4.2 indicates that all variables exhibit stationarity after the first-order differencing. This implies that the ADF t-statistics exceed the critical t-values at the first difference, and the corresponding p-values are below the 5% significance level. The Johansen cointegration test is employed to verify the long-run relationship between the variables.

Table 4.4: Johansen Cointegration Test – Model One

Trend assumption: Linear deterministic trend
Series: LNBUDS LNDGR LNDSR LNEGR LNEDR LNEXR LNINTR
Lags interval (in first differences): 1 to 2

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.955201	285.9263	125.6154	0.0000
At most 1 *	0.932815	183.4427	95.75366	0.0000
At most 2 *	0.694659	94.33251	69.81889	0.0002
At most 3 *	0.620464	55.18380	47.85613	0.0088
At most 4	0.108750	3.799314	3.841466	0.0513
At most 5	0.234604	12.62225	15.49471	0.1294
At most 6	0.274531	23.21318	29.79707	0.2357

Trace test indicates 4 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.955201	102.4836	46.23142	0.0000
At most 1 *	0.932815	89.11018	40.07757	0.0000
At most 2 *	0.694659	39.14871	33.87687	0.0107
At most 3 *	0.620464	31.97062	27.58434	0.0128
At most 4	0.108750	3.799314	3.841466	0.0513
At most 5	0.234604	8.822940	14.26460	0.3012
At most 6	0.274531	10.59093	21.13162	0.6879

Max-eigenvalue test indicates 4 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Source: *Eviews Output*

Based on our findings, the p-values for both the Trace and Max-Eigen statistics are below the 5% significance level, indicating a significant long-run relationship between the variables. Consequently, we adopt the Vector Error Correction (VEC) model to confirm the long-term nature of this relationship.

Table 4.5: Johansen Cointegration Test – Model Two

Trend assumption: Linear deterministic trend

Series: LNCAB LNDGR LNDSR LNEGR LNEDR LNEXR LNINTR
Lags interval (in first differences): 1 to 2

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.953431	267.0109	125.6154	0.0000
At most 1 *	0.923489	165.8058	95.75366	0.0000
At most 2 *	0.679560	80.98508	69.81889	0.0049
At most 3	0.519496	43.42909	47.85613	0.1225
At most 4	0.335760	19.24271	29.79707	0.4756
At most 5	0.142158	5.742022	15.49471	0.7258
At most 6	0.020453	0.681942	3.841466	0.4089

Trace test indicates 3 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.953431	101.2050	46.23142	0.0000
At most 1 *	0.923489	84.82076	40.07757	0.0000
At most 2 *	0.679560	37.55598	33.87687	0.0174
At most 3	0.519496	24.18638	27.58434	0.1284
At most 4	0.335760	13.50069	21.13162	0.4073
At most 5	0.142158	5.060080	14.26460	0.7342
At most 6	0.020453	0.681942	3.841466	0.4089

Max-eigenvalue test indicates 3 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Source: *Eviews Output*

According to our findings, the p-values for both the Trace and Max-Eigen statistics are significant at the 5% level, indicating a long-term relationship between the variables. Therefore, we employ the VEC model to determine the long-term nature of the variables' association.

Table 4.6: VEC Test Result – Model One

Vector Error Correction Estimates
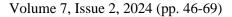
Included observations: 33 after adjustments

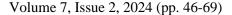Standard errors in ( ) & t-statistics in [ ]

Cointegrating Eq:	CointEq1

LNCAB(-1)	1.000000
LNDGR(-1)	0.010459
	(0.01223)
	[0.85499]
LNDSR(-1)	-0.461351
	(0.21720)
	[-2.12408]
LNEGR(-1)	0.053963
	(0.02389)
	[2.25860]
LNEDR(-1)	-0.685228
	(0.19716)
	[-3.47548]
LNEXR(-1)	-0.012886
	(0.00393)
	[-3.27736]

LNINTR(-1)	0.275104
	(0.03251)
	[8.46285]
C	-16.27345

Error Correction:	D(LNCA B)	D(DDDGR)	D(DSR)	D(EGR)	D(EXD)	D(EXR)	D(INTR GR)
CointEq1	-0.602007	0.087358	60.5089 5	-2.468298	0.01740 3	7.592746	-3.172907
	(0.19149)	(1.15119)	(35.076 6)	(1.67840)	(0.0140 3)	(7.04896)	(0.70258)
	[- 3.14379]	[0.07589]	[1.72505]	[-1.47062]	[- 1.24052]	[1.07714]	[- 4.51607]
C	0.222323	1.518950	55.8746 1	-2.428162	0.01019 0	13.30760	-0.543653
	(0.13477)	(1.86132)	(56.714 2)	(2.71376)	(0.0226 8)	(11.3972)	(1.13598)
	[1.64970]	[0.81606]	[0.98520]	[-0.89476]	[0.44924]	[1.16762]	[- 0.47858]
R-squared	0.750074	0.653226	0.65230 2	0.535303	0.50142 6	0.294194	0.737858
Adj. R-squared	0.723390	0.347248	0.34551 0	0.125276	0.06150 7	-0.328575	0.506556

Sum sq. resids	2.105174	401.5799	372831.6	853.6332	0.059636	15056.66	149.5793
S.E. equation	0.351900	4.860282	148.0921	7.086164	0.059228	29.76048	2.966274
F-statistic	30.10455	2.134883	2.126202	1.305530	1.139815	0.472397	3.190021
Log likelihood	2.415166	-88.05680	-200.8092	-100.4994	57.3891	-147.8556	-71.76174
Akaike AIC	1.055465	6.306473	13.13995	7.060568	-2.508431	9.930642	5.318893
Schwarz SC	1.781044	7.032052	13.86553	7.786148	-1.782852	10.65622	6.044473
Mean dependent	0.215897	0.947323	107.1920	0.068636	-0.010911	13.54727	-0.123521
S.D. dependent	0.318154	6.015719	183.0545	7.576621	0.061138	25.81944	4.222721

Source: *Eviews Output*

Using the rule of thumb of ≥2 in absolute terms, we determine whether to reject the null hypothesis. In the case of LNDGR on LNCAB in Nigeria, the positive coefficient of 0.010459 is not statistically significant (0.85499), so we do not reject the null hypothesis. This implies that a one-unit increase in LNDGR leads to a small increase of 0.010459 units in LNCAB.

On the other hand, LNEGR and LNINTR have positive coefficients (0.053963 and 0.275104) that are statistically significant (2.25860 and 8.46285) in relation to LNCAB. This means that a one-unit increase in LNEGR leads to an increase of 0.053963 units in LNCAB, while a one-unit increase in LNINTR leads to an increase of 0.275104 units in LNCAB.

Conversely, LNDSR, LNEXR, and LNEDR have negative coefficients (-0.461351, 0.012886, and -0.685228) that are substantial (-2.12408, 3.27736, and -3.47548). This suggests that a one-unit increase in LNDSR and LNEDR leads to a decrease of 0.461351 and 0.685228 units in LNCAB, respectively. However, the coefficient for LNEXR is positive, indicating that a one-unit increase in LNEXR leads to a negligible increase in LNCAB.

Moving to the CointEq1 coefficient, it is negative (-0.602007) and statistically significant (-3.14379). This shows that errors in the short run are corrected at a rate of 60.2% in the long run.

The Adjusted R-Square value of 0.723390 indicates that approximately 72.3% of the changes in LNCAB can be explained by the independent variables (LNDGR, LNDSR, LNEGR, LNEDR, LNEXR, and LNINTR). The remaining 27.7% is attributed to other variables not included in the model. The F-Statistics value of 30.10455 confirms that the independent variables have significant explanatory power in the model.

Table 4.7: VEC Test Result – Model Two

Vector Error Correction Estimates
Included observations: 33 after adjustments
Standard errors in ( ) & t-statistics in [ ]

Cointegrating Eq:	CointEq1
LNCAB(-1)	1.000000
LNDGR(-1)	0.026917 (0.01472) [1.82871]
LNDSR(-1)	-0.000949 (0.00045) [-2.12100]
LNEGR(-1)	0.104618 (0.02685) [3.89621]
LNEDR(-1)	-0.215397 (0.09828) [-2.19162]
LNEXR(-1)	-0.009597 (0.00450) [-2.13294]

LNINTR(-1)	0.421628
	(0.03887)
	[10.8480]

C	-17.11193

Error Correction:	D(LNCAB)	D(LNDGR)	D(LNDSR)	D(LNEGR)	D(LNEDR)	D(LNEXR)	D(LNINTR)
CointEq1	-0.179714	0.668142	90.47353	-1.6638004	0.013724	6.758892	-2.2550164
	(0.06632)	(0.99445)	(25.6735)	(1.55123)	(0.01250)	(5.79769)	(0.56636)
	[-2.70986]	[0.67187]	[3.52400]	[-1.07257]	[1.09752]	[1.16579]	[-3.98157]
C	-0.002336	2.893332	124.8767	-1.6267504	0.002624	25.68219	-1.1709374
	(0.12231)	(1.83405)	(47.3493)	(2.86091)	(0.02306)	(10.69266)	(1.04454)
	[-0.01909]	[1.57756]	[2.63735]	[-0.56861]	[0.11379]	[2.40187]	[-1.12101]
R-squared	0.678148	0.678177	0.768349	0.506342	0.507341	0.406198	0.788149
Adj. R-squared	0.654161	0.394215	0.563950	0.070761	0.072642	-0.117744	0.6012222
Sum sq. resids	1.657466	372.6854	248396.6	906.8332	0.058928	12667.32	120.88308
S.E. equation	0.312247	4.682165	120.8783	7.303638	0.058876	27.29719	2.6666016
F-statistic	23.87952	2.388269	3.759076	1.1624536	1.167109	0.775273	4.2163419
Log likelihood	2.530121	-86.82472	-194.1085	-101.4969	57.58605	-145.0045	-68.24717
Akaike AIC	0.816356	6.231801	12.73385	7.121025	-2.520367	9.757847	5.105889
Schwarz SC	1.541936	6.957381	13.45943	7.846604	-1.794787	10.48343	5.831469
Mean dependent	0.178766	0.947323	107.1920	0.068636	-0.010911	13.54727	-0.123521
S.D. dependent	0.401161	6.015719	183.0545	7.576621	0.06113	25.81944	4.2227218

Source: *Eviews Output*

Based on the rule that a coefficient must be greater than or equal to 2 in absolute terms to reject the null hypothesis, we can determine whether the coefficients in this analysis are statistically significant. In the case of the coefficient for LNDGR on LNBUDS in Nigeria, the positive value of 0.026917 is not statistically significant (1.82871), so we cannot reject the null hypothesis. This means that increasing LNDGR by one unit is associated with a small increase of 0.026917 units in LNBUDS.

However, the coefficients for LNEGR and LNINTR are both positive (0.104618 and 0.421628) and statistically significant (t-values of 3.89621 and 10.8480, respectively) in relation to LNBUDS. This means that increasing LNEGR by one unit is associated with an increase of 0.104618 units in LNBUDS, while increasing LNINTR by one unit is associated with an increase of 0.421628 units in LNBUDS. Surprisingly, the coefficient for LNBUDS on itself is positive, indicating that increasing LNBUDS by one unit is associated with an increase of 0.421628 units in LNBUDS.

On the other hand, the coefficients for LNDSR, LNEXR, and LNEDR are all negative (-0.000949, -0.009597, and -0.215397) and statistically significant (t-values of -2.12100, -2.13294, and -2.19162, respectively). This means that increasing LNDSR, LNEXR, or LNEDR by one unit is associated with a decrease of 0.000949, 0.009597, and 0.215397 units in LNBUDS, respectively.

The CointEq1 coefficient has a negative value of -0.179714, indicating a statistically significant relationship with a magnitude of -2.70986. This means that errors in the short term are corrected at a rate of 18% in the long term.

The Adjusted R-Square value of 0.654161 suggests that approximately 65.4% of the variations observed in LNBUDS can be explained by the independent variables (LNDGR, LNDSR, LNEGR, LNEDR, LNEXR, and LNINTR). The remaining 34.6% of the variance is attributed to other variables not included in the model. The F-Statistics value of 23.87952 indicates that the independent variables have significant explanatory power in the model.

DISCUSSION OF FINDINGS

Current Account Balance

The debt servicing ratio has a negative and strong correlation with Nigeria's current account balance. This implies that as the debt servicing ratio increases, Nigeria's current account balance decreases. This is primarily due to the significant interest costs paid by the Nigerian government to foreign organizations, which limits private investments and adversely affects the current account balance (source).

On the other hand, the domestic debt-to-GDP ratio has a positive relationship with the current account balance, but the impact is relatively minor. This suggests that an increase in the domestic debt-to-GDP ratio leads to a slight rise in Nigeria's current account balance. However, this is attributed to the inefficient utilization of borrowed domestic funds during production and distribution processes (source).

Economic growth significantly boosts Nigeria's current account balance, indicating that an expansion in Nigeria's economy leads to a corresponding increase in the current account balance. This is mainly due to the diversification of Nigeria's exports, which enhances the country's trading position (source).

The external debt-to-GDP ratio has a negative and substantial correlation with Nigeria's current account balance. This implies that a higher external debt-to-GDP ratio weakens Nigeria's current account balance. The payment of interest and principal amounts to foreign organizations by the Nigerian government contributes to crowding out private investments, ultimately diminishing the current account balance (source).

The exchange rate in Nigeria has a negative and significant impact on the country's current account balance. An appreciation of the exchange rate results in a decline in Nigeria's current account balance, primarily because of the depreciation of the Nigerian naira against the US dollar. This ongoing depreciation of the naira significantly affects Nigeria's current account balance (source).

Nigeria's interest rate has a positive and substantial correlation with the country's current account balance. This indicates that an increase in interest rates leads to an increase in Nigeria's current account balance. The higher interest rates on debt instruments encourage foreign portfolio investments, thereby improving Nigeria's current account balance (source).

Budget Deficit/Surplus

The debt servicing ratio displays a negative and significant correlation with Nigeria's budget deficit/surplus. This indicates that as the debt servicing ratio increases, Nigeria's budget deficit/surplus decreases. The payment of high interest rates by the Nigerian government to foreign organizations reduces the available capital for running the economy, necessitating an increase in the government's budget to meet the rising debt servicing ratio (source).

However, the domestic debt-to-GDP ratio has a positive but insignificant impact on the budget deficit/surplus. This implies that an increase in the domestic debt-to-GDP ratio will slightly raise Nigeria's budget deficit/surplus. This minor impact is attributable to the

government's commitment to fulfilling its responsibilities, leading to an increase in Nigeria's budget (source).

Economic growth significantly enhances Nigeria's budget deficit/surplus, suggesting that as Nigeria's economy expands, so does the budget deficit/surplus. This is because the Nigerian government needs to increase its foreign earnings through export diversification and high capital goods investment, thereby boosting the budget (source).

The external debt-to-GDP ratio exhibits a negative and inverse relationship with the fiscal deficit/surplus. A higher external debt-to-GDP ratio leads to a lower budget surplus in Nigeria. This is primarily due to the substantial interest and principal payments made by the Nigerian government to foreign organizations in fulfilling its debt obligations, thereby significantly reducing the nation's budget deficit/surplus (source).

The exchange rate in Nigeria is negatively significant for the country's fiscal deficit/surplus. An increase in the exchange rate results in a reduction in Nigeria's fiscal deficit. This is attributed to the depreciation of the Nigerian naira against the US dollar. The continuous depreciation of the naira reduces Nigeria's fiscal surplus (source).

Moreover, the interest rate has a positive and significant impact on Nigeria's budget deficit. This implies that an increase in interest rates leads to an increase in Nigeria's budget deficit. The rise in bank interest rates decreases the overall value of products and services produced due to the high cost of production and distribution (source).

CONCLUSION

This study investigates how Nigeria's fiscal sustainability is affected by its public debt exposure from 1986 to 2021. Furthermore, it examines the impact of various factors such as the domestic debt to GDP ratio, external debt to GDP ratio, debt servicing to GDP ratio, economic growth, exchange rate, and interest rate on Nigeria's current account balance and budget deficit/surplus. Our data analysis reveals that the external debt to GDP ratio, debt servicing to GDP ratio, economic growth, exchange rate, and interest rate are the key factors that influence fiscal responsibility in Nigeria.

RECOMMENDATIONS

The following recommendations can be made to the Nigeria government. By implementing these recommendations, the Nigeria government can enhance fiscal responsibility, promote sustainable economic growth, and improve the country's overall fiscal sustainability in the long run.

1. Manage external debt effectively: The government should carefully manage its external borrowing, prioritizing borrowing for productive investments and ensuring that the debt burden remains sustainable in relation to the country's GDP. Engage with experts, civil society organizations, and representatives from key sectors to develop a comprehensive debt management strategy. This strategy should prioritize investments that have a direct impact on the welfare of the population, such as education, healthcare, and infrastructure development.

2. Prioritize debt servicing: The government needs to allocate sufficient resources to timely debt repayments by setting realistic budgets that allocate a portion of GDP to debt servicing while ensuring adequate funding for other social and developmental needs. Involve representatives from the private sector, civil society, and relevant government agencies in the budget planning process to allocate sufficient resources to timely debt repayments, while also addressing the needs of vulnerable populations and social development programs.

3. Promote economic growth: Implement policies and measures that can spur economic growth, such as structural reforms, investment in infrastructure development, promoting a conducive business environment, and supporting sectors with high growth potential. Establish a consultative platform that includes representatives from the business community, academia, and civil society to identify barriers to economic growth and develop targeted policies and initiatives to address them. This inclusive approach will increase the likelihood of successful implementation.

4. Monitor exchange rates and interest rates: Ensure stability in exchange rates through appropriate foreign exchange management policies and adopt monetary policies that strike a balance between supporting economic growth and maintaining manageable interest rates. Create a transparent and inclusive foreign exchange management system, involving financial experts, business associations, and representatives of low-income communities to ensure stability in exchange rates. Similarly, engage with economic experts and civil society organizations to set interest rates that strike a balance between supporting economic growth and managing inflation.

5. Strengthen debt management capacity: Improve debt monitoring, forecasting, and reporting systems, enhance transparency and accountability in debt-related transactions, and build the necessary expertise within relevant government agencies. Collaborate with experts from academia, international financial institutions, and civil society organizations to enhance the capacity of government agencies responsible for debt management. This may include training programs, knowledge-sharing platforms, and technical assistance to improve debt monitoring, forecasting, and reporting systems.

6. Diversify revenue sources: Broaden the tax base, improve tax compliance, and explore other revenue-generating avenues such as non-oil sectors and public-private partnerships to reduce reliance on debt. Establish a multi-stakeholder task force consisting of representatives from different sectors, including small business owners, industry experts, and civil society organizations, to develop and implement strategies for broadening the tax base and improving tax compliance. Additionally, engage with experts from non-oil sectors to identify opportunities for revenue generation and facilitate public-private partnerships.

7. Enhance budgetary discipline: Exercise greater budgetary discipline to avoid budget deficits or surpluses that may have adverse effects on fiscal responsibility, including prudent fiscal planning, effective implementation and monitoring of budgets, and alignment of expenditures with revenue capacity. Foster collaboration between government officials, economists, civil society organizations, and representatives from marginalized communities to strengthen budgetary discipline. This can be achieved through increased transparency and public participation in the budgeting process, as well as monitoring mechanisms to ensure that expenditures align with revenue capacity.

8. Improve governance and fight corruption: Prioritize efforts to improve governance and fight corruption by strengthening institutional frameworks, promoting transparency and accountability, and enforcing anti-corruption measures to enhance fiscal management and ensure the effective utilization of resources for the benefit of the nation. Collaborate with anti-corruption agencies, civil society organizations, and experts in public administration to implement measures that enhance governance and fight corruption. This includes strengthening institutional frameworks, promoting transparency, and providing protection for whistleblowers. Engaging stakeholders from various sectors will help ensure the effectiveness and credibility of these measures.

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