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DEBT AS A CATALYST FOR NIGERIA'S ECONOMIC GROWTH: A CRITICAL ANALYSIS OF THE DEBT-GROWTH NEXUS

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Abstract

The research examined the effect of debt on Nigeria's economic growth over the period from 1981 to 2022. Time - series data obtained from the Central Bank of Nigeria (CBN) Statistical Bulletin, Annual Report, and Statement of Accounts were analyzed. The research employed Autoregressive Distributed Lag (ARDL) approach, Variables including domestic debt stock, external debt stock, total debt servicing, total revenue, and Gross Domestic Product (GDP) were used. The findings revealed significant long-term relationships between debt, debt servicing, and revenue with GDP. In terms of short-term dynamics, domestic debt was found to have a strong positive impact on GDP growth, with total revenue playing a crucial role. On the other hand, external debt and debt servicing obligations do not show a statistically significant impact on GDP growth. Granger causality tests indicate a unidirectional effect from debt to GDP growth. These results offer valuable insights for policy makers aiming to manage public debt and revenue generation efficiently to promote sustainable economic growth in Nigeria. The research recommended strengthening efforts to manage domestic debt effectively to foster economic growth, while mitigating the risks of excessive borrowing.

Keywords: *Economic Growth; Gross Domestic Product (GDP); DebtServicing; PublicDebt; Total Revenue*

Introduction

Debt has long represented a double-edged sword for nations aiming to stimulate economic growth, while preserving fiscal stability. In Nigeria, a country blessed with abundant natural resources and a growing population - the management of debt has become a vital policy challenge with significant implications for economic growth. As the country forges its path towards sustained growth and prosperity, an important question emerges: Can debt act as a catalyst for economic advancement, or does it pose a risk to progress?

As Essiien (2024) noted, if borrowed funds are utilized wisely and profitably, the borrower benefits. However, if such funds are misappropriated, both the borrower and all associated parties suffer the consequences. When borrowed money transforms into debt that must be repaid, the rationale for government borrowing is rooted in the neoclassical growth models, which advocate for capital-scarce countries to borrow to boost capital accumulation and achieve a higher steady-state level of output per capita. Global economic crises, such as the COVID-19 pandemic, have further propelled countries, particularly developing ones, to borrow, as they often face increased expenditure needs and declining capital inflows (Babatunde, 2016).

According to Otiko and Iheonkhan (2022), in Nigeria, financial resources are typically allocated to capital projects and recurrent expenditures in the national budget based on revenue forecasts. However, these projected revenues often fall short in most fiscal years. As a result, budget deficits occur, prompting the government to resort to debt to fund capital projects and meet recurrent expenditures. Given the limited financial resources available domestically due to the underdevelopment of

the Nigerian capital market, low productivity, reduced investment, and inadequate savings, Nigeria often turns to external borrowing sources.

Over the past forty years, Nigeria's economic journey has been marked by significant fluctuations in both debt levels and economic performance. Between 1981 and 2022, the country saw a dramatic increase in both external and domestic debt stocks, with external debt rising from ₦2.33 billion to ₦18,702.25 billion, and domestic debt climbing from ₦11.19 billion to ₦22,210.36 billion. These trends highlight Nigeria's dependence on borrowing to finance developmental projects and address budget deficits, raising concerns about the sustainability of its debt management strategy. Alongside these trends in debt accumulation, Nigeria's GDP growth rate has shown significant variability, ranging from periods of double-digit growth to times of economic contraction. Despite encountering external shocks and domestic challenges, Nigeria has experienced notable periods of strong economic growth, with the GDP growth rate peaking at 15.3% in 2003. These fluctuations underscore the complex interplay of factors influencing Nigeria's economic performance, including macroeconomic policies, global economic conditions, and domestic structural reforms.

In the context of Fortune, et al (2023), who conduct an investigation on the impact of Nigeria's public debt on economic growth using data from 1990 through 2021, their specific objectives were to ascertained the impact of external debt on Nigeria's GDP growth rate, examined effect of domestic debt on Nigeria's GDP growth rate, assessed influence of debt service payment on Nigeria's GDP growth rate and determined direction of causality between public debt and economic growth in Nigeria. They adopted the Ordinary Least Square (OLS) approach to analyze the public debt-GDP growth rate nexus. Furthermore, the Auto-regressive Distributed Lag (ARDL) model was used to test for co-integration. The empirical Findings showed that while external debt had a negative effect on GDP growth rate on the short-run, it indicated long-run positive effect on GDP growth rate. Implying that a unit change in External Debt will lead GDP to decrease by 5.334285 in the short run but increase by 4.120591 in the long run. Domestic debt exerted a negative influence on GDP growth rate both in the short and long run.as a unit change in domestic debt will lead GDP to decrease by 8.347697 in the short run and by 9.860784 in the long run. Debt Service payment had a negative impact on GDP growth rate both in the short-run and the long-run. Results of Granger causality tests indicated a unidirectional causality between external debt and GDP, as well as debt service payment and GDP growth rate in Nigeria. The authors concluded that borrowing for expansionary fiscal policies is not detrimental if debts are properly utilized. They therefore recommended that Nigeria's economic growth should be internally determined through enhanced economic activities.

In light of Nigeria's changing debt landscape and economic conditions, examining the "debt-growth nexus" becomes increasingly important. This paper explores the relationship between debt accumulation and economic performance. By analyzing debt levels, GDP, and indicators of fiscal sustainability, the aim is to shed light on the factors influencing debt dynamics and their impact on Nigeria's development path. This comprehensive analysis seeks to support evidence-based policymaking and encourage informed discussions on effective debt management strategies for achieving sustainable economic growth in Nigeria.

Theoretical Literature

This research is grounded in the debt overhang theory and Ricardian Equivalence theory, both of which were relevant as they explain the relationship between debt and economic growth.

Ricardian Equivalence Theory: As proposed by Ricardo (1951), this theory suggests that taxation and borrowing are equally effective in funding public expenditures, allowing governments to finance spending through either method. Dawood et al. (2020) further explain that the economic effects of financing government spending through current taxes or future taxes are the same. Borrowing is viewed as equivalent to future taxation because any government spending that leads to a deficit

will necessitate a corresponding increase in taxes. Consumers anticipate this by saving money from current tax cuts to prepare for future tax increases, thereby neutralizing the impact of tax cuts financed by borrowing on overall demand.

Debt Overhang Theory

Introduced by Krugman in 1988, the theory describes a scenario where a country's debt surpasses its capacity to repay in the future. The theory suggests that if the debt exceeds the country's ability to repay, the expected debt servicing may decrease the country's output level. This situation can lead to a significant portion of the country's investment income being diverted to pay off its outstanding foreign debt, which can deter both domestic and new foreign investments.

The research employed the Autoregressive Distributed Lag (ARDL) method to analyze time series data spanning from 1981 to 2022. The data was primarily obtained from the Central Bank of Nigeria (CBN) Statistical Bulletin and the CBN Annual Report & Statement of Accounts. While the study's population was not defined in terms of a specific number, it focuses on aspects related to debt servicing, using total debt servicing as a proxy to represent public debt in Nigeria. To capture this, the research utilized data on domestic debt stock, external debt stock, total revenue, and economic growth, which was represented by Gross Domestic Product (GDP). The model specification for the research was informed by empirical findings reviewed and aligned with the theoretical framework. Consequently, the study's model was based on the models of Pattillo, Ricci, and Poirson (2001), with necessary modifications.

Methodology

GDP = (EDB, DDB, TDBS, TR) equation …… (1)
Where: EDB means external debt stock
DDB means domestic debt stock
TDBS means total debt service
TR means Total Revenue
GDP means gross domestic product
Linearizing equation (1) becomes:
$GDPt = \beta 0 + \beta 1EDBt + \beta 2DDBt + \beta 3TBDSt + \beta 4TRt + \varepsilon t$. …….. (2)
For an appropriate coefficient for the GDPGR with respect to the explanatory variables to be produce I would transform the model equation (2) on log-linear econometrics form as seen below.
$GDPt = \beta 0 + In\beta 1EDBt + In\beta 2DDBt + In\beta 3TBDSt + In\beta 4TRt + \varepsilon t$. ……. (3).

Results and Discussion

Descriptive statistics provide an analysis of data that helps to describe, display, or summarize the characteristics of the data in a meaningful manner, facilitating easier interpretation. This section outlines the properties of the variables, including their mean values, minimum and maximum values, and standard deviations. The results for the descriptive statistics of both the dependent and independent variables used in this study are presented in Table 1.

Table 1: Results for the descriptive statistics for the dependent and independent variables used

	LGDP	LEDB	LDDB	LTDBS	LTR
Mean	3.855500	2.838157	2.900449	0.943353	2.419891
Median	3.988195	2.825433	3.037004	1.037877	2.792263
Maximum	5.306135	4.271894	4.346556	1.580227	3.795157
Minimum	2.143984	0.367580	1.048931	-0.201600	0.636428
Std. Dev.	1.069760	0.921261	0.991819	0.443932	1.126030

Skewness	-0.292137	-0.807045	-0.316762	-0.908833	-0.373232
Kurtosis	1.652567	3.267676	1.902136	3.049169	1.571327
Jarque-Bera	3.774667	4.684642	2.811651	5.786070	4.547051
Probability	0.151475	0.096104	0.245165	0.055408	0.102949
Sum	161.9310	119.2026	121.8189	39.62083	101.6354
Sum Sq. Dev.	46.91983	34.79758	40.33186	8.080118	51.98573
Observations	**42**	**42**	**42**	**42**	**42**

Table 1 of the descriptive statistics outlines the characteristics of the variables under study. For the logarithm of GDP (LGDP), the mean is approximately 3.856, reflecting a moderate level of economic activity. The median is slightly higher at around 3.988, indicating a right-skewed distribution with most data points clustered towards higher values. LGDP ranges from about 2.144 to 5.306, showing significant variability in economic output. The standard deviation of LGDP is approximately 1.070, indicating moderate dispersion. The skewness of -0.292 suggests a slight left skew, and the kurtosis of 1.653 indicates slightly heavier tails than a normal distribution. The Jarque-Bera test statistic of 3.775 with a probability of 0.151 indicates that LGDP does not significantly deviate from normality at the 5% significance level. Similar analyses of the logarithms of external debt (LEDB), domestic debt (LDDB), debt service (LTDBS), and total revenue (LTR) reveal comparable insights regarding their distributions, variability, skewness, kurtosis, and adherence to normality assumptions.

Unit Root Test

A unit root test was conducted to assess the statistical properties of the variables. Since time series data are often non-stationary, it is crucial to test for stationarity to avoid misleading results. This study utilized the Augmented Dickey-Fuller (ADF) test to examine the presence of a unit root in the data. The results of this test are presented below.

Table 2: Unit Root Test Results(ADF)

Null Hypothesis: the variable has a unit root

	At Level					
		LGDP	LEDB	LDDB	LTDBS	LTR
With Constant	t-Statistic	-3.5004	-1.4715	-1.5527	-1.8041	-1.1761
	Prob.	***.0131*** **	***0.5376*** n0	***0.4970*** n0	***0.3734*** n0	***0.6756*** n0
With Constant & Trend	t-Statistic	-0.8787	-1.9849	-1.5461	-2.1548	-0.2634
	Prob.	***0.9486*** n0	***0.5916*** n0	***0.7957*** n0	***0.5011*** n0	***0.9892*** n0
Without Constant & Trend	t-Statistic	2.0651	1.1689	2.5127	-0.7186	2.0496
	Prob.	***0.9894*** n0	***0.9349*** n0	***0.9964*** n0	***0.3992*** n0	***0.9891*** n0
	At First Difference					
		d(LGDP)	d(LEDB)	d(LDDB)	d(LTDBS)	d(LTR)

With Constant	t-Statistic	-1.4549	-4.9286	-4.7571	-2.6016	-4.7167
	Prob.	***0.5460***	***0.0002***	***0.0004***	***0.1017***	***0.0005***
		n0	***	***	n0	***
With Constant & Trend	t-Statistic	-3.5879	-4.8441	-4.9772	-2.8188	-4.9029
	Prob.	***0.0451***	***0.0018***	***0.0013***	***0.1999***	***0.0016***
		**	***	***	n0	***
Without Constant & Trend	t-Statistic	-1.0820	-4.5476	-1.9716	-2.6192	-1.0007
	Prob.	***0.2480***	***0.0000***	***0.0477***	***0.0103***	***0.2787***
		No	***	**	**	No

Note a: (*) Significant at the 10%; (**)Significant at the 5%; (***) Significant at the 1% and (no) Not Significant

Table 2 presents the results of the Augmented Dickey-Fuller (ADF) test conducted at both levels and first differences. The null hypothesis for this test is that each variable contains a unit root, indicating non-stationarity. At the 5% critical value, the results show that the logarithm of GDP (LGDP) is stationary at the level, with a significant t-statistic of -3.5004 and a p-value of 0.0131, thus rejecting the null hypothesis of a unit root. In contrast, the logarithms of external debt (LEDB), domestic debt (LDDB), debt service (LTDBS), and total revenue (LTR) do not provide enough evidence to reject the null hypothesis at the 5% significance level, suggesting they may be non-stationary. At the first difference level, LGDP, LEDB, LDDB, and LTR all show stationarity, supported by significant t-statistics and p-values. However, the stationarity of LTDBS depends on whether a constant or trend is included in the model.

Co-integration test

The co-integration test is employed to assess the presence of a long-run equilibrium relationship among the series. Given the results of the unit root test, the ARDL-Bound testing method is selected as the most suitable estimation technique for co-integration analysis because it accommodates variables with different orders of integration. The results of the Bounds Co-integration test are presented below.

Table 3: F-Bounds Test Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	22.71514	10%	2.2	3.09
K	4	5%	2.56	3.49
		1%	3.29	4.37

Source: Author's computation

The results indicate that the F-statistic exceeds both the lower bound I(0) and the upper bound I(1) at the 5% significance level. This suggests that there is a long-run relationship among the variables.

ARDL Analysis

This subsection presents the results from estimating both the ARDL unrestricted error correction model (for short-run or dynamic analysis) and the ARDL long-run (static) model. Based on these results, the study examines and estimates the short-run dynamics and long-run relationships between external debt, domestic debt stock, foreign direct investment, and government expenditure.

ARDL Long - Run

Table 4: Long run Estimate

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LEDB	0.043092	0.052921	0.814264	0.4226
LDDB	0.686149	0.066956	10.24782	0.0000
LTDBS	-0.051331	0.071089	-0.722060	0.4765
LTR	0.282161	0.082595	3.416191	0.0020
C	1.277936	0.107084	11.93392	0.0000

Table 4 shows that, in the long run, domestic debt (LDDB) has a strong positive association with the dependent variable, with a coefficient of 0.69 and a highly significant t-statistic of 10.2. This indicates that a one-unit increase in domestic debt is associated with a 0.69 increase in GDP, suggesting that domestic borrowing may stimulate GDP growth, possibly through enhanced government spending or investment activities. In contrast, external debt (LEDB) and debt service (LTDBS) do not show a statistically significant relationship with GDP, indicating that these factors do not have a direct impact on GDP in the long run. However, total revenue (LTR) has a significant positive effect on GDP, with a coefficient of 0.28 and a t-statistic of 3.4, suggesting that higher revenue improves fiscal health and positively influences GDP, potentially through increased government spending or better economic conditions.

ARDLECM

Given the presence of co-integration relationships among the variables identified in the ARDL Bound test, the Auto-Regressive Distributed Lag Error Correction Model (ARDL-ECM) is the suitable method to analyze the short-run behavior of the variables. The table below presents the results of the short-run dynamics from this model.

Table 5: Short-Run Estimate

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.581793	0.083681	6.952495	0.0000
LGDP(-1)*	-0.455260	0.081985	-5.552996	0.0000
LEDB(-1)	0.019618	0.021819	0.899117	0.3765
LDDB(-1)	0.312376	0.065318	4.782411	0.0001
LTDBS(-1)	-0.023369	0.030432	-0.767899	0.4492
LTR**	0.128457	0.052290	2.456629	0.0207
D(LEDB)	-0.053186	0.031527	-1.686993	0.1031
D(LEDB(-1))	-0.029838	0.031973	-0.933243	0.3590
D(LEDB(-2))	-0.076801	0.033456	-2.295594	0.0297
D(LDDB)	0.044530	0.082699	0.538458	0.5947
D(LTDBS)	-0.001882	0.031453	-0.059820	0.9527
D(LTDBS(-1))	0.046720	0.025538	1.829418	0.0784
CointEq(-1)*	-0.455260	0.035821	-12.70944	0.0000

The error correction coefficient (CointEq(-1)) in the model is -0.455260 with a standard error of 0.035821. This coefficient measures the rate at which deviations from the long-run equilibrium are corrected. A negative coefficient indicates that adjustments are made to restore equilibrium. Specifically, the coefficient of -0.455260 suggests that deviations from the long-run equilibrium are corrected at a rate of approximately 45.53% per period. The high magnitude and statistical significance (t-statistic = -12.70944, p-value = 0.0000) of this coefficient imply a rapid and significant adjustment process, ensuring that the system returns to equilibrium over time. The results reveal several key relationships between debt, revenue, and GDP growth rate:

1. External Debt (LEDB(-1)) and Domestic Debt (LDDB(-1)): Positive coefficients for the lagged values of these debts indicate that past levels of debt are positively associated with the current GDP growth rate. This supports the notion that debt can stimulate economic activity through financing investments and boosting aggregate demand. Particularly, the significant coefficient for LDDB (-1) highlights the importance of managing domestic debt effectively to promote economic growth.

2. Total Debt Service (LTDBS (-1)): The negative relationship with GDP growth rate is not statistically significant, suggesting that debt service obligations may not significantly impact economic growth in the current model. This underscores the need for further research into how debt servicing affects economic performance, as its impact may depend on debt management efficiency and debt composition.

3. Total Revenue (LTR): The significant positive relationship with GDP growth rate indicates that higher revenue positively influences economic growth. This suggests that greater fiscal capacity from higher revenue allows governments to invest in infrastructure, education, and other growth-enhancing areas, thereby fostering economic expansion.

4. First Differences of External Debt (D (LEDB)) and Total Debt Service (D (LTDBS)): The non-significant relationships for these variables suggest that short-term changes in debt and debt service do not have a statistically significant immediate impact on GDP growth. This highlights the importance of focusing on long-term trends and policies in debt management and revenue generation.

Granger Causality Test

The Granger causality test results in Table 6 examine the relationships between debt, revenue, and GDP growth in Nigeria. The findings reveal that past levels of both external debt (LEDB) and domestic debt (LDDB) have a statistically significant impact on future GDP growth (LGDP), suggesting that these debt variables may drive economic activity. Notably, there is no evidence that past GDP growth Granger causes future debt levels, indicating a unidirectional influence from debt to growth in this model. Furthermore, the tests show that total debt service (LTDBS) and total revenue (LTR) do not have a statistically significant Granger causal relationship with GDP growth.

Table 6: Granger causality test results

Null Hypothesis:	Obs	F-Statistic	Prob.
LEDB does not Granger Cause LGDP	40	4.22912	0.0226
LGDP does not Granger Cause LEDB		1.95564	0.1566
LDDB does not Granger Cause LGDP	40	5.22612	0.0103
LGDP does not Granger Cause LDDB		0.40675	0.6689
LTDBS does not Granger Cause LGDP	40	0.24549	0.7837
LGDP does not Granger Cause LTDBS		1.21201	0.3098
LTR does not Granger Cause LGDP	40	0.99331	0.3805

LGDP does not Granger Cause LTR	0.56154	0.5754

Conclusion

This paper explores the effects of public debt—specifically internal and external debt alongside total debt service and total revenue on GDP in Nigeria from 1981 to 2022. The ARDL-bound test for co-integration identifies long-term relationships among debt components, debt servicing, total revenue, and GDP. Short-run dynamics are analyzed using an error correction mechanism, followed by long-term analyses. The findings indicate that lagged values of both external and domestic debt positively impact GDP growth in the short run. This suggests that past debt levels contribute to current economic activity, possibly by funding investment projects or boosting aggregate demand. In the long run, domestic debt shows a strong positive association with GDP growth, implying that increases in domestic debt can drive economic expansion through enhanced government spending or investment. Conversely, external debt and debt service obligations do not show significant long-term relationships with GDP growth, indicating they may not directly influence economic growth over extended periods.

Recommendations

Based on the findings of this study, the following recommendations were proposed:

- Strengthen efforts to manage domestic debt effectively to foster economic growth while mitigating the risks of excessive borrowing.
- Adopt prudent fiscal policies to optimize revenue generation and manage expenditures, ensuring sustainable economic development.
- Focus on investments in infrastructure, education, and other growth-enhancing sectors to stimulate economic activity and improve long-term productivity.
- Develop robust mechanisms for monitoring and evaluating the impacts of debt, debt servicing, and revenue generation on GDP growth to support evidence-based decision-making and timely policy adjustments.

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