INTERNALLY GENERATED REVENUE, DEBT INSTRUMENTS AND BUDGET IMPLEMENTATION IN SOUTHWEST, NIGERIA.

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Abstract

The study examined internally generated revenue, debt instruments and budget implementation in southwest, Nigeria. Data were gleaned secondarily from the annual reports of the six states in Southwestern States Nigeria. The sample size consists of all six states in Southwestern States Nigeria and spanned the period of 2003 to 2022. All data generated were analyzed using the econometric technique. The result of the causality among internally generated revenue, debt instruments (domestic and external debt), and budget performance showed that there was no granger causality between budget performance and internally generated revenue (chi-square = 0.243, p>0.05) and debt instruments (chi-square=0.021, p>0.05), while internally generated revenue granger cause debt instrument (chi-square=-0.420, p<0.05).The result of the analysis indicates that internally generated revenue had a significant positive effect on the state budget performance (t-value=2.02, p<0.05) and it was also discovered that

aids and grants enhanced the budget performance of the state (t-value=2.56, p<0.05).Furthermore, the interaction between IGR and external debt stock (IGREDS) was examined and the result showed that there was no significant relationship (t-value =-0.80, p>0.05). The interaction between domestic debt and IGR was found to be non-significant, indicating that domestic debt alone does not have a clear-cut impact on budget performance when combined with internally generated revenue (t-value =-0.24,p>0.05). The study concluded that there was significant relationship among internally generated revenue, debt instruments, and budget implementation in Southwestern States of Nigeria. therefore, the study recommends that states should diversify their economic activities and develop alternative sources of revenue beyond traditional ones. This requires investment in various sectors, including agriculture, tourism, and technology, which have the potential to generate significant revenue for the country.

Keywords: Domestic debt, External debt, debt instruments, budget performance, budget implementation

Introduction

Government budgeting represents a core instrument of public finance through which economic growth is stimulated, macroeconomic conditions are regulated, and state activities are coordinated. As a fiscal policy framework, the budget articulates government priorities and translates policy intentions into allocative decisions across ministries, departments, and agencies (Simon, Yu and Pierre, 2019; Rianti, Suwadi and Alexandra, 2020). Effective budget implementation, particularly in relation to capital expenditure, enhances infrastructure development, improves productive capacity, attracts foreign investment, and sustains long term economic growth (Uhuaba and Siyanbola, 2020; Angahar and Olalere, 2023). Consequently, the credibility of public budgeting depends not only on formulation but more critically on the extent to which approved budgets are executed.

The availability and management of financial resources constitute a decisive factor in determining budget implementation outcomes. Within Nigeria's decentralised fiscal structure, state governments are increasingly responsible for mobilising internal revenue to finance public expenditure, given the volatility of federal allocations and rising expenditure obligations (Alhassan, Francis and Ude, 2020). Although statutory allocations provide fiscal support, sustainable governance requires states to maintain independent revenue bases. Internally generated revenue is therefore derived largely from tax sources such as personal income tax, sales and consumption taxes, and administrative fees, as well as non tax revenues collected by public institutions (Ibrahim and Ozioma, 2019; Adinogbe et al., 2022). The effectiveness of budget implementation is thus shaped not merely by revenue mobilisation capacity but by the efficiency with which these resources are allocated and utilised to meet expenditure priorities (Ackah, Bobio and Graham, 2020).

When internally generated revenue and statutory transfers prove inadequate, Nigerian governments frequently rely on debt financing to meet budgetary obligations. Borrowing expands fiscal space by enabling governments to finance both capital and recurrent expenditures (Barykin, Mikheev and

Kiseleva, 2020). However, persistent reliance on debt without corresponding investment returns generates fiscal vulnerability. Excessive or poorly managed debt accumulation increases debt servicing costs, crowds out productive investment, and constrains future fiscal flexibility (Bhatia, 2001; Bo, Wu and Zhong, 2020). Liu, Song and Hu (2020) further argue that excessive domestic borrowing disrupts economic activity, while rising external debt obligations weaken budget implementation capacity and undermine long term growth prospects.

Budget implementation challenges are particularly evident in the southwestern states of Nigeria, including Lagos State, the most economically active subnational economy. Since the creation of additional states in 1996, budget execution across the region has been characterised by persistent inefficiencies and performance volatility. Although some states recorded relatively high implementation rates in selected years, including Lagos and Oyo in 2021, these outcomes remain inconsistent due to inadequate and poorly managed internally generated revenue, rising debt burdens, delayed fund releases, corruption, and excessive reliance on federal allocations. While reform initiatives such as the State Fiscal Transparency, Accountability and Sustainability programme, strengthened audit frameworks, and Treasury Single Account systems have been introduced, empirical evidence on how internally generated revenue and debt instruments jointly influence budget implementation at the subnational level remains limited. This gap necessitates a focused examination of the interaction between revenue mobilisation, debt dynamics, and budget execution in Southwestern Nigeria. Specifically, the study focused on the following hypotheses.

H_{01}: There is no causality among internally generated revenue, debt instruments (domestic and external debt) and budget performance in Southwestern States of Nigeria

H_{02}: External debt has no significant interacting effect on the relationship between internally generated revenue and budget implementation in Southwestern States of Nigeria

H_{03}: Domestic debt has no significant interacting effect on the relationship between internally generated revenue and budget implementation in Southwestern States of Nigeria

Conceptual Exploration and Hypotheses Development

Internally Generated Revenue Debt Instruments and Budget Performance

Internally generated revenue constitutes the primary source of fiscal autonomy for subnational governments and reflects their capacity to finance public expenditure without excessive reliance on federal transfers or borrowing. Conceptually, strong internally generated revenue enhances budget

credibility by ensuring the availability of funds required to execute approved expenditure plans. Improved revenue mobilisation strengthens expenditure predictability, reduces project abandonment, and supports timely budget implementation (Ibrahim and Ozioma, 2019; Adinogbe et al., 2022). Conversely, weak internally generated revenue constrains fiscal operations and increases the likelihood of budget deviations and under implementation (Ackah, Bobio and Graham, 2020).

Debt instruments comprising domestic and external debt are typically employed to supplement revenue shortfalls and stabilise fiscal operations. From a theoretical standpoint, debt can support budget performance by expanding fiscal space and enabling governments to meet expenditure obligations when revenue inflows are insufficient (Barykin, Mikheev and Kiseleva, 2020). However, the relationship among internally generated revenue, debt instruments, and budget performance is inherently complex and potentially bidirectional. Rising debt servicing obligations may weaken future budget execution by crowding out productive expenditure, while poor budget performance may undermine revenue mobilisation capacity and increase borrowing needs. Given these interdependencies, the existence and direction of causality among internally generated revenue, debt instruments, and budget performance cannot be theoretically predetermined and must be empirically examined.

Hypotheses Development

Based on this conceptual ambiguity and the dynamic fiscal interactions involved, this study hypotheses that the causal relationship among internally generated revenue, domestic debt, external debt, and budget performance is not deterministic at the subnational level. Accordingly, the following null hypothesis is proposed:

H01: There is no causality among internally generated revenue, debt instruments comprising domestic and external debt, and budget performance in Southwestern States of Nigeria.

External Debt Interaction Internally Generated Revenue and Budget Implementation

External debt is commonly justified within development finance theory as a means of financing large scale capital projects that exceed the capacity of domestic revenue mobilisation. Conceptually, external borrowing may strengthen the relationship between internally generated revenue and budget implementation by supplementing fiscal resources and enabling governments to execute approved expenditure plans more fully. When external debt is prudently managed and directed toward productive investment, it may complement internally generated revenue and enhance budget execution efficiency (Liu, Song and Hu, 2020).

However, external debt also introduces significant fiscal risks, including foreign exchange exposure, rigid repayment schedules, and policy conditionalities. These factors can weaken the effectiveness of internally generated revenue by diverting resources toward debt servicing rather than budget execution (Bo, Wu and Zhong, 2020; Wang, Xue and Zheng, 2021). As a result, the moderating role of external debt in the relationship between internally generated revenue and budget implementation remains theoretically indeterminate, as it may either reinforce or undermine revenue driven budget performance depending on debt sustainability conditions.

Hypotheses Development

Given the competing theoretical perspectives regarding the interaction between external debt and internally generated revenue, this study advances the following null hypothesis to allow for empirical testing:

H02: External debt has no significant interacting effect on the relationship between internally generated revenue and budget implementation in Southwestern States of Nigeria.

Domestic Debt Interaction Internally Generated Revenue and Budget Implementation

Domestic debt is often perceived as a relatively flexible financing option due to its local currency denomination and reduced exposure to external shocks. From a conceptual standpoint, domestic borrowing may enhance the impact of internally generated revenue on budget implementation by

addressing short term liquidity constraints and smoothing mismatches between revenue inflows and expenditure commitments (Bhatia, 2001). In this context, domestic debt may act as a fiscal stabiliser that strengthens budget execution when internally generated revenue is uneven or volatile.

Nonetheless, persistent reliance on domestic debt can generate adverse fiscal consequences. Rising interest costs and increased competition with the private sector for domestic credit may crowd out productive investment and weaken fiscal discipline. Additionally, excessive domestic borrowing may reduce incentives for effective revenue mobilisation, thereby diminishing the contribution of internally generated revenue to budget performance over time (Ehikioya et al., 2020; Siong et al., 2021). These opposing conceptual outcomes suggest that the moderating role of domestic debt in the internally generated revenue budget implementation relationship is theoretically ambiguous.

Hypotheses Development

In light of this uncertainty, and to avoid presupposing the direction of the interaction effect, this study proposes the following null hypothesis:

H03: Domestic debt has no significant interacting effect on the relationship between internally generated revenue and budget implementation in Southwestern States of Nigeria.

Here is the theoretical review rewritten without any hyphens, maintaining academic rigor:

Theoretical Review: Fiscal Federalism Theory

Fiscal Federalism Theory provides a robust framework for understanding the dynamics between internally generated revenue, debt instruments, and budget implementation at the subnational level. The theory, rooted in the works of Oates (1972), posits that decentralized governments such as states within a federation are better positioned to allocate resources efficiently, generate revenue, and deliver public services when granted fiscal autonomy. In this context, internally generated revenue becomes a critical determinant of a state's capacity to execute its budget, as it enables local governments to independently finance development projects, respond to citizens' needs, and reduce excessive dependence on central

transfers. The theory emphasizes the importance of aligning revenue sources with expenditure responsibilities to promote fiscal discipline, accountability, and economic efficiency.

Fiscal Federalism Theory also provides insight into the role of debt instruments and external resources in budget performance. While states may use domestic or external debt to complement internally generated revenue, the theory cautions that borrowing must be strategically structured to avoid fiscal inefficiencies or overdependence on central government support. Properly managed debt, combined with robust internal revenue mechanisms, can enhance budget execution by funding growth oriented projects, supporting service delivery, and stimulating economic development. Conversely, mismanaged debt or overreliance on statutory allocations may undermine budget performance and create fiscal vulnerabilities. In line with this theory, the interaction between internally generated revenue and debt instruments, as well as the allocation of aids and grants, can significantly influence a state's ability to implement its budget effectively, highlighting the theoretical relevance of fiscal decentralization in subnational financial management.

Empirical Review

Several empirical studies have investigated the relationship between internally generated revenue, debt instruments, and budget implementation, highlighting both the significance and complexity of these fiscal variables. Angahar and Olalere (2023) examined the effect of internally generated revenue on state budget performance in Nigeria and found mixed outcomes, indicating that while higher internal revenue can positively influence budget execution, the effect varies depending on management efficiency and governance quality. Similarly, Adinozie, David, and Aderibige (2022) reported that specific revenue sources such as PAYE, withholding tax, and direct assessment did not significantly influence capital budget performance, suggesting that internal revenue alone may not guarantee improved budget outcomes without complementary fiscal policies.

Regarding debt instruments, Ehikioya, Omankhanlen, Osuma, and Inua (2020) found that public debt beyond a certain threshold could adversely affect economic growth in African countries, which indirectly influences budget implementation. Siong, Chee, Ali, and Zhi (2021) further revealed that high levels of

public debt have a statistically significant negative impact on economic growth, whereas lower levels may be insignificant, underscoring the importance of strategic debt management. Wang, Xue, and Zheng (2021) observed that both total and external public debt can predict slowdowns in short and medium term growth, emphasizing the potential constraints on future budget execution when debt obligations are not well structured. These findings reinforce the notion that while debt can supplement budgetary resources, its management is crucial to prevent negative outcomes on fiscal performance.

The interaction of internally generated revenue with debt instruments has also been explored. Olaoye and Olaniyi (2022) demonstrated that statutory allocation, value added tax allocation, and share of excess crude oil exerted insignificant positive effects on actual capital expenditure, suggesting that the interplay between federal transfers, internal revenue, and debt instruments may influence budget execution unevenly. Hammayo, Shitu, and Abdulahi (2020) found that federal government allocation positively reflected on state infrastructure provision, whereas internal revenue showed negative or minimal reflection, indicating that reliance on internally generated revenue alone may not always yield proportional improvements in budget implementation. Similarly, Ibrahim (2020) highlighted that recurrent expenditure moderates the effect of tax revenue on budget performance, suggesting a complex relationship between revenue collection, expenditure obligations, and effective budget execution.

The role of aids and grants as external fiscal support has also been documented. Akinola and Akinrinola (2023) established a strong relationship between externally sourced funds and infrastructural development, implying that grants can significantly enhance budget performance when appropriately allocated. Oyewumi, Otusanya, and Adeyeye (2020) reported that tax revenue positively affects infrastructure provision, indicating that internally generated revenue combined with external support can improve budget execution outcomes. Collectively, these studies highlight that budget implementation is not solely dependent on any single fiscal variable but is influenced by a combination of internal revenue, debt instruments, statutory allocations, and external aids, which interact in complex ways depending on governance quality, debt management, and fiscal policy orientation.

Despite the extensive literature, a noticeable gap remains in examining the simultaneous interactive effects of domestic and external debt on the relationship between internally generated revenue and budget implementation in Southwestern Nigeria. Most prior studies treat debt as a control variable rather than a key variable of interest. This research addresses this gap by investigating both internal revenue and debt instruments as primary predictors, thereby providing a more comprehensive understanding of their combined impact on budget performance within the region.

Methodology

This study adopted a longitudinal ex post facto research design to examine fiscal dynamics over time across the Southwestern region of Nigeria, covering all six states in the zone namely Lagos, Oyo, Osun, Ondo, Ekiti, and Ogun States to ensure comprehensive regional representation. A purposive sampling technique was employed, informed by the economic relevance of the region and the researcher's proximity to the study area, which facilitated contextual accuracy and reliable data access. The study utilised both descriptive and inferential analytical techniques, with descriptive statistics including mean, standard deviation, minimum and maximum values, complemented by graphical trend analysis to address the first research objective. Inferential analysis involved correlation and regression techniques, with Granger causality tests employed to examine causal relationships for the second objective. In addition, panel vector autoregression was applied to address the second and third objectives, while panel regression estimation procedures comprising pooled ordinary least squares, fixed effects, and random effects models were used to address the fourth objective, alongside the Hausman test and relevant post estimation diagnostics to ensure robustness of the empirical results.

Model Specifications

This study adapted the model of Agahar and Olalere (2023) in which economic viability measured as total expenditure was taken as dependent variables and expressed as a function of total debt and internally generated revenue. The model was specified thus:

Functional Form

$$EXP = f(TDS, IGR) \dots\dots\dots\

This study however modified using two models to capture objective two and three. In the first model, the budget implementation (proxied by expenditure performance) was expressed as a function of internally generated and control variables (statutory allocation, aids and grants). On the other hand, second model involves the budget implementation as function of domestic and external debt with control variables (statutory allocation, aids and grants, sales taxes). Hence, the model for this study was specified as thus

Model for Hypothesis One:

Model for Causal relationship between internally generated revenue and total debt stock

$$IGR_t = \sum_{i=1}^{n} \delta_i IGR_{t-i} + \sum_{j=1}^{n} \theta_j TDS_{t-j} + U_{1t} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (3)$$

$$TDS_t = \sum_{e=1}^{n} \mu_e TDS_{t-e} + \sum_{m=1}^{n} \gamma_m IGR_{t-m} + U_{1t} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (4)$$

Model for Causal relationship between internally generated revenue and budget implementation in Southwestern States of Nigeria.

$$IGR_t = \sum_{i=1}^{n} \delta_i IGR_{t-i} + \sum_{j=1}^{n} \theta_j BIMP_{t-j} + U_{1t} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (5)$$

$$BIMP_t = \sum_{e=1}^{n} \mu_e BIMP_{t-e} + \sum_{m=1}^{n} \gamma_m IGR_{t-m} + U_{1t} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (6)$$

Where:

BIMP=Budget Implementation Performance

IGR=Internally generated revenue

TDS=Total Debt Stock

Model for Hypothesis Two

Interaction of effect of external debt stock in the relationship between internally generated revenue and budget implementation

$$BIMP = f(IGR, IGR * EDS, STA, AIG)$$

$$BIMP_t = \delta_0 + \delta_1 IGR_t + \delta_2 IGR * EDS_t + \delta_3 STA_t + \delta_4 AIG_t + u_t \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots 7$$

BIMP=Budget implementation performance

IGR= Internally generated revenue

IGR*EDS= interaction terms between internally generated revenue and external debt stock

STA=Statutory allocation

AIG= Aids and grant

Model for Hypothesis Three

Interaction of effect of domestic debt in the relationship between internally generated revenue and budget implementation

$$BIMP = f(IGR, IGR * DDS, STA, AIG) \ldots\ldots\ldots\

Budget implementation performance (BIMP) exhibits a mean of 81.854 with substantial dispersion (standard deviation = 32.581), revealing pronounced differences in the ability of states to meet budgetary targets. The range from 31.063 to 148.32 indicates that while some states exceed expectations, others perform significantly below target. A positive skewness of 0.260 and platykurtic kurtosis of 1.790 suggest a few states achieving exceptionally high budget implementation. Statutory allocation (STA) averages 48.133 billion naira, with moderate variability across states (standard deviation = 16.432) and near-perfect symmetry (skewness = 0.022). Minimum and maximum values of 20.755 and 76.988 billion naira indicate a wide spread, while kurtosis of 1.727 and JB of 8.118 (p = 0.017) reveal slight non-normality. Similarly, aids and grants (AIG) show a mean of 4.511 billion naira and a standard deviation of 2.255, reflecting moderate dispersion across states, with a weak positive skewness of 0.287 and a slightly platykurtic distribution (kurtosis = 1.959). The JB statistic of 7.061 (p = 0.029) indicates minor deviation from normality. Collectively, these descriptive statistics underscore the heterogeneous fiscal environment across Southwestern Nigeria, highlighting differences in debt exposure, revenue generation capacity, and budget execution performance that warrant further econometric investigation.

Pairwise Correlation

Table 2: Correlation

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) bimp							
(2) tds	-0.113	1.000					
	(0.220)						
(3) igr	0.117	-0.064	1.000				
	(0.204)	(0.488)					
(4) sta	-0.039	0.015	0.154	1.000			
	(0.675)	(0.870)	(0.093)				
(5) aig	0.147	0.023	0.161	-0.111	1.000		
	(0.110)	(0.804)	(0.080)	(0.226)			
(6) igreds	0.063	-0.002	0.608	0.206	0.061	1.000	
	(0.492)	(0.980)	(0.000)	(0.024)	(0.511)		
(7) igrdds	0.024	0.032	0.556	0.152	0.190	0.589	1.000
	(0.796)	(0.730)	(0.000)	(0.097)	(0.038)	(0.000)	

Source: Author's compilation (2024)

Here is a refined, academically rigorous interpretation of your correlation results in **two cohesive paragraphs**, written with clarity and analytical depth suitable for a journal-quality results section:

The correlation analysis indicates that budget implementation performance (BIMP) exhibits a weak negative relationship with total debt stock (TDS, -0.113) and statutory allocation (STA, -0.039), although these correlations are statistically insignificant (p-values > 0.05). Conversely, BIMP is weakly positively correlated with internally generated revenue (IGR, 0.117), aids and grants (AIG, 0.147), interaction of IGR with external debt stock (IGREDS, 0.063), and interaction of IGR with domestic debt stock

(IGRDDS, 0.024), yet none of these correlations reach statistical significance. These findings suggest that while higher internal revenue and supplementary resources such as aids and grants may be associated with better budget execution, the strength of these relationships is currently minimal and does not provide conclusive evidence of a direct linear association at the bivariate level. Total debt stock similarly shows weak correlations with all other variables, indicating that borrowing alone does not exhibit a simple linear relationship with budget implementation or other fiscal variables in the Southwestern states.

Notably, internally generated revenue demonstrates strong and significant positive correlations with its interactions with external debt (IGREDS, 0.608, p = 0.000) and domestic debt (IGRDDS, 0.556, p = 0.000), highlighting the critical role of IGR in mediating the fiscal impact of debt instruments on budget execution. Moderate positive associations are also observed between IGR and statutory allocation (0.154, p = 0.093) and aids and grants (0.161, p = 0.080), suggesting near-significant fiscal linkages that may influence budget performance. Furthermore, statutory allocation correlates positively with IGREDS (0.206, p = 0.024), indicating that states receiving higher statutory transfers tend to exhibit stronger interaction effects between internally generated revenue and external debt. Similarly, aids and grants show a positive association with IGRDDS (0.190, p = 0.038), implying that these resources amplify the interaction between IGR and domestic debt. Overall, the results underscore the pivotal role of internally generated revenue not only in direct fiscal capacity but also in enhancing the effectiveness of both external and domestic debt stocks in supporting budget implementation, with these interaction effects demonstrating clear statistical significance and policy relevance.

Variance Inflation Factor

Table 3 Variance inflation factor

	VIF	1/VIF
Igreds	1.94	.516
Igr	1.844	.542
Igrdds	1.806	.554
Aig	1.136	.88
Sta	1.1	.909
Tds	1.044	.958

Source: Author's compilation (2024)

Variance Inflation Factor. It indicates how much the variance of a regression coefficient is inflated due to multicollinearity with other predictors. The VIF for IGREDS is 1.94, suggesting that there is low multicollinearity between IGREDS and the other variables. The VIF for IGR is 1.844, indicating a low level of multicollinearity. The VIF for IGRDDS is 1.806, which shows low multicollinearity. The variance of its regression coefficient is increased by about 80.6% because of its correlation with the other predictors. The VIF for AIG is 1.136, indicating very low multicollinearity. The VIF for STA is 1.1, showing minimal multicollinearity. The VIF for TDS is 1.044, which suggests negligible multicollinearity. The result shows that all the predictors VIF were less than 4, which shows that there is less likely of encountering serious collinearity.

Causality among internally generated revenue, debt instruments (domestic and external debt), and budget performance in Southwestern States of Nigeria

Table 4: Juodis, Karavias and Sarafidis (2021) Panel Granger non-causality Test

	Bimp	Tds	IGR
Bimp(-1)		0.049(0.543)	-0.001(0.976)
Tds(-1)	-0.021(0.795)		0.001(0.976)
Igr(-1)	0.243(0.395)	-0.420(0.000)	
HPJ Wald test	0.9096	18.6482	0.0010
p-value	0.6346	0.0001	0.9995

P-value in parenthesis

Source: Author's compilation (2024)

The researcher used the Juodis, Karavias, and Sarafidis (2021) Granger non-causality test to determine the causality of internally generated revenue, debt instruments (domestic and external debt), and budget performance in the southwestern states of Nigeria. Based on the Table 4 result, it was found that there is no significant prediction of TDS by the lagged value of BIMP. The large value of p (0.543) shows that the null hypothesis of non-causality cannot be rejected. This indicates that the TDS of the states are not influenced by the past values of budget performance. The lagged B IMP does not also significantly predict IGR, as in the same line. The non-causality hypothesis is supported by the p-value (0.976) being extremely high. It also indicates the fact that the budget performance of the states in Nigeria is exogenous to debt and internally generated revenue. This finding suggests that the efficiency and effectiveness of the implementability of their budget by the states are not directly influenced by their debt and levels of internally generated revenues. As an example, a state which has a high or a low budget implementation performance must be conditioned by a factor of administrative efficiency, policy options or an unexpected turn of economic events and not because of previous debt or revenue rates. The lagged value of TDS does not significantly predict BIMP. The p-value (0.795) indicates there is no causality between TDS and BIMP. On the same note, a lagged TDS does not have a significant effect on IGR. The p-value (0.976) is high, which implies non-causality. The lagged value of IGR is not significantly predicted by BIMP. The reason is that the p-value (0.395) is not sufficiently small to disapprove the null hypothesis of non-causality. Nonetheless, TDS is highly predicted by the lagged value of IGR. The p-value (0.000) is very low, which means that we can reject the null hypothesis of non-causality, which implies that IGR Granger causes TDS. The HPJ Wald test is the joint test of the significance of all lagged variables. IGR has a big impact on TDS, whereas BIP and TDS do not have a causal relationship with BIP. The states which are effective in raising their internally generated revenue may then decide to implement changes in the amount of total debt stock. This may imply that the higher the capacity of a state to raise revenue in-house, the more debts it incurs in order to fund big projects or the less it is dependent on debt since it is getting more revenue. An illustration is when a state is booming in the local industries, IGR may rise, and the state can take advantage or cut down on the debt as a result. As found in the HPJ Wald Statistic of BIMP, it was found that there is no significant joint test of the effect of all the lagged variables on BIMP. The p-value (0.6346) indicates that the null hypothesis claiming that BIMP does not cause the changes cannot be rejected, but in the case of the TDS, the HPJ

Wald Statistic of 18.6482 and 0.0001 indicate that all lagged variables have a very significant effect on TDS. The p-value (0.0001) shows that one of the lagged variables is predictively significant on TDS. The combined effect test of all lagged variables on IGR is not significant. The p-value is very high at (0.9995), which supports the hypothesis of IGR as non-causal. The output reveals that the past values of TDS or BIMP do not significantly affect the result of IGR. This means that the ability of a state to raise revenue domestically is not influenced by the amount of debt that a state had previously been in and the success of its budgets. This implies that there are other determinants of revenue in a state, including economic growth, taxation policies and business environment, which are more critical determinants of revenue. As an example, IGR may increase as a result of policy reforms or diversification attempts to economise regardless of the budgetary or debt situation in the past.

$H0_1$: Interaction of effect of external debt stock in the relationship between internally generated revenue and budget implementation

Table 5: Model Estimate

	(Pooled OLS) Bimp	(Fixed Effect) Bimp	(Random Effect) Bimp	(Robust Random) bimp
Igr	0.299	0.233	0.299	0.299**
	(0.87)	(0.65)	(0.87)	(2.01)
Igreds	0.0191	0.281	0.0191	0.0191
	(0.02)	(0.30)	(0.02)	(0.02)
Sta	-0.0809	-0.101	-0.0809	-0.0809
	(-0.43)	(-0.52)	(-0.43)	(-0.24)
Aig	1.816	1.538	1.816	1.816**
	(1.34)	(1.07)	(1.34)	(2.56)
_cons	69.47***	71.53***	69.47***	69.47***
	(5.55)	(5.47)	(5.55)	(5.50)
N	120	120	120	120
R^2	0.032	0.026		0.032
adj. R^2	-0.002	-0.054		
pseudo R^2				
ll_0	-587.8	-586.6		
Ll	-585.9	-585.0		
chi2			3.806	13.652(0.000)
Hausman test			0.8994(1.07)	
Serial Correlation			0.033(0.8622)	
Heteroskedasticity test			18.46(0.0413)	

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
Source: Author's compilation (2024)

In this study, four econometric models including pooled OLS, fixed effects, random effects, and robust random effects were employed to estimate the coefficients comprehensively. The Hausman test was conducted to determine the most appropriate model between fixed and random effects, and the results indicated that the random effects model was superior. Diagnostic tests further revealed that residuals were free from serial correlation with p value greater than 0.05, although heteroskedasticity was present, suggesting that the standard random effects model alone would be inefficient. To address this limitation, a robust random effects model was applied which corrects for inefficiencies in the standard errors and ensures more reliable coefficient estimates. This approach strengthens the empirical rigor of the analysis by providing accurate and robust standard errors for all estimates.

The results indicate that internally generated revenue IGR has a positive and statistically significant effect on budget implementation performance BIMP with a coefficient of 0.299 and t value of 2.01 at the 5 percent level, implying that states with higher internal revenue perform better in executing their budgets. The interaction between IGR and external debt stock IGREDS is positive 0.0191 but not statistically significant, suggesting a weak and inconsistent relationship between external borrowing and internal revenue in influencing budget performance. Statutory allocation STA exhibits a negative coefficient of -0.0809 with an insignificant t value of -0.24, indicating that fluctuations in federal transfers have an ambiguous effect on budget execution. Conversely, aids and grants AIG demonstrate a strong positive and significant impact on BIMP with a coefficient of 1.816 and t value of 2.56, highlighting the importance of supplementary resources in enhancing budget performance. While the model explains only 3.2 percent of the variation in budget implementation, the overall Chi squared statistic χ^2 of 13.652 with a p value of 0.000 confirms that the combination of predictors significantly affects budget performance, suggesting that other unobserved factors may also contribute to budgetary outcomes.

$H0_2$: Interaction of effect of domestic debt in the relationship between internally generated revenue and budget implementation

Table 6: Model Estimate

	(Pooled OLS) Bimp	(Fixed Effect) Bimp	(Random Effect) Bimp	(Robust Random) Bimp
Igr	0.421	0.380	0.421	0.421**
	(1.29)	(1.13)	(1.29)	(2.38)
Igrdds	-0.598	-0.434	-0.598	-0.598
	(-0.68)	(-0.47)	(-0.68)	(-0.80)
Sta	-0.0677	-0.0836	-0.0677	-0.0677
	(-0.36)	(-0.44)	(-0.36)	(-0.21)
Aig	1.941	1.618	1.941	1.941**

	(1.42)	(1.12)	(1.42)	(2.52)
_cons	69.85***	71.86***	69.85***	69.85***
	(5.59)	(5.49)	(5.59)	(5.71)
N	120	120	120	120
R^2	0.036	0.027		0.036
adj. R^2	0.002	-0.053		
pseudo R^2				
ll_0	-587.8	-586.6		
Ll	-585.6	-584.9		
chi2			4.282	14.8(0.0000)
Hausman test			0.9340(0.83)	
Serial Correlation			0.024(0.8822)	
Heteroskedasticity test			19.31(0.0367)	

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Source: Author's compilation (2024)

The results indicate the interactive influence of domestic debt on the relationship between internally generated revenue and budget implementation performance. The Hausman test identified the random effects model as the best fit; however, the violation of homoskedasticity in the residuals necessitated the adoption of a robust random effects model to ensure reliable coefficient estimates. Internally generated revenue IGR demonstrates a strong positive and significant effect on budget performance, with a coefficient of 0.421 and t value of 2.38. This finding aligns with the theory of fiscal federalism, which suggests that states with higher revenue-generating capacities are better able to execute their budgets, deliver public services, and invest in infrastructure development. Budget performance is particularly enhanced in states that maintain effective tax collection systems and diversify their revenue sources, highlighting the critical role of internal fiscal capacity in shaping budget outcomes.

The interaction between IGR and domestic debt stock IGRDDS, with a coefficient of -0.598, is not statistically significant, suggesting that domestic debt does not have a clear impact on budget performance unless it is strategically managed. This result is consistent with debt management theory, which emphasizes that the effects of debt depend on its structure and use, particularly when combined with internally generated revenue to fund growth-oriented projects. Statutory allocation STA has a negative coefficient of -0.0677 and is insignificant, indicating that changes in federal transfers alone do not significantly influence budget performance without robust governance and accountability mechanisms. Conversely, aids and grants AIG exhibit a strong positive effect on budget implementation, with a coefficient of 1.941 and t value of 2.52, supporting fiscal dependency theory. External funds that are properly allocated to critical sectors such as health and education can significantly enhance budget

execution. The model explains only 3.6 percent of the variation in budget performance, suggesting that other factors, including governance quality, economic conditions, and socio-political stability, are likely to play substantial roles and could be incorporated in future research.

Discussion of Findings

The analysis of causality between internally generated revenue, debt instruments (both domestic and external), and budget performance in the Southwestern States of Nigeria reveals complex interdependencies. The findings of the Granger non-causality test indicate that the past value of internally generated revenue did not have a significant impact on their current value of budget performance, whereas past values of IGR had a significant impact on their total debt stocks, hence improving state budgets by alleviating their debts. States with greater IGR reflected a greater decline in the accumulation of debts and also good budgetary performances. Interaction effect of Domestic Debt Stock of the Relationship Division Internally Generated Revenue and Budget Implementation: The outcome of the regression indicates that there exists a negative non-significant relationship between the interaction of IGR and domestic debt stock on-budget performance. This means that the relationship between these factors can potentially affect the implementation of the budget negatively. The debt management theory asserts that proper management of debt is important in economic growth and stability. A high domestic debt may result in high interest being paid on it so that productive spending is crowded out unless this is combined with revenue collection. According to the findings of the study, the research shows that the adverse effect of domestic debt is offset by high internal revenue, but this is a complicated relationship that is determined by a number of factors, such as the structure of the debt and the economic policies. States that are good at the management of their domestic debt by making sure that it is in tandem with the revenue abilities and productive investments tend to have good budget results. On the other hand, elevated domestic debt status, as well as inefficient management of revenues, can introduce fiscal strains that adversely affect the performance of the budget. Thus, the dynamics between domestic debt and high revenue collection and sound fiscal policies should be the way towards the best budgetary outcomes. This is consistent with the works of Ibrahim (2020); Oyewumi, Otusanya and Adeyeye (2020); and Akinola and Akinrinola (2023).

The effect of the interaction of external debt stock with the relationship between internally generated revenue and budget implementation indicates that there is no significant relationship. Although high levels of external debt may at times improve the performance of the budget since they increase financial resources, this is only possible under the conditions of a number of factors. Efficient utilisation of the external funds, sticking to the sustainable debt policies and strategic alignment with the goals of the revenue generation are essential in taking advantage of the benefits of external debt. In places where the external debt is effectively used in developmental projects that enhance economic activity, the relationship with strong IGR may result in better budget results. Nevertheless, when the debt service of external debt-related activities exceeds the advantage, the fiscal resources of the state can be overloaded, and it will have a negative impact on the budget implementation, especially in relatively less diversified states. This result corroborates the research result of Ibrahim (2020); Oyewumi, Otusanya and Adeyeye (2020); and Akinola and Akinrinola (2023).

Conclusion

This study examined the relationship between internally generated revenue, debt instruments, and budget implementation in the Southwestern States of Nigeria. The findings reveal that internally generated revenue has a strong and positive influence on budget performance, confirming that states with higher revenue-generating capacity are better positioned to execute their budgets and deliver public services effectively. Conversely, domestic and external debt instruments, while potentially useful for supplementing internal revenue, exhibit mixed effects on budget implementation depending on how they are managed and allocated. Statutory allocations alone do not significantly drive budget performance, emphasizing that federal transfers must be complemented by effective governance, transparency, and accountability structures. Aids and grants demonstrate a positive and significant impact, indicating that external financial support, when properly utilized, can strengthen state budget execution. Overall, the study underscores that effective budget implementation is a function of both internal fiscal capacity and prudent management of debt and external resources.

Recommendations

Based on the findings, several policy implications emerge:

1. Enhance Internally Generated Revenue: States should strengthen local revenue mobilization through improved tax administration, economic diversification, and expansion of non-tax revenue sources to reduce overreliance on federal allocations.
2. Strategic Debt Management: Domestic and external debt should be carefully planned and structured, ensuring that borrowed funds are directed towards growth-oriented projects with clear repayment strategies to avoid fiscal instability.
3. Strengthen Governance and Accountability: The effectiveness of statutory allocations and external aids depends on robust governance frameworks. States must adopt transparent budgeting processes, stringent monitoring, and regular audit mechanisms to optimize fund utilization.
4. Leverage Aids and Grants: External funds should be strategically allocated to priority sectors such as health, education, and infrastructure to maximize their impact on service delivery and budget performance.
5. Integrated Fiscal Planning: Policymakers should adopt a holistic approach that combines internally generated revenue, statutory allocations, debt instruments, and external aids to enhance budget execution, ensure fiscal sustainability, and promote economic development across Southwestern Nigeria.

These recommendations are intended to provide practical guidance for state governments to improve financial management and achieve more consistent and effective budget implementation.

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