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Governments' Deficits and Private Savings in Nigeria: An Empirical Analysis

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Abstract

This study explores effects of governments' deficits measured as federal, state, local and quasi-fiscal on private sector savings in Nigeria over period, 1981 to 2022, utilizing the Autoregressive Distributed Lag (ARDL) model. The analysis undertook to ascertain significant implications for fiscal policy. The outcomes suggest nuanced short-term dynamics. Federal and state deficits exhibited positive lagged effects on private savings, indicating that the impacts of these deficits are not immediately realized but materialize over time. This delayed response could reflect changes in economic conditions i.e., higher interest rates or increased government spending, which may encourage private savings in later periods. Conversely, quasi-fiscal deficits showed substantial negative short-term impact on private deposits, suggests that contingent liabilities, like government-backed loans that default can induce financial instability and

diminish economy-wide private sector confidence. Over the long run, the results showed negative association by federal and state deficits with private sector savings, driven by concerns over fiscal sustainability and the crowding-out effect of increased government borrowing. However, local government deficits are positively correlated with private savings, possibly due to their more localized economic impact. Interestingly, while quasi-fiscal deficits harm private savings in the short term, they are associated with higher private savings in the long run. This may be due to the stabilization of financial systems and liquidity improvements over time. With the model explaining 78% of the variation in private savings, the study underscores the importance of managing fiscal deficits prudently while promoting local government-driven economic growth to foster private savings in Nigeria.

Keywords: Fiscal Deficits, Private Sector Savings, Quasi-Fiscal Deficits, ARDL Model, Nigeria

1. Introduction

The implications for national savings, investment, and overall economic stability are profound, and government deficits continue to be a central theme in macroeconomic discussions. The deficits, which are broadly classified as fiscal and quasi-fiscal deficits, are indicative of discrepancies between public expenditure and revenue. Central banks frequently assume off-budget obligations, while fiscal deficits are the result of budgetary imbalances. The quasi-fiscal deficits of the Central Bank of Nigeria (CBN) in Nigeria have garnered prominence as a result of their association with the Agricultural Credit Guarantee Scheme (ACGS). This initiative, which aims to increase agricultural production by promoting credit access, encounters obstacles, comprising loan defaults that impose substantial financial obligations on the Central Bank of Nigeria. In spite of the theoretical and policy importance of these deficits, their implications for private savings in Nigeria are still unexplored.

Private deposits are essential for the stimulation of economic development, as they supply the capital required for production and investment activities. The efficient utilisation of private resources or private investment is one of the primary factors driving sustainable development and growth, as per the International Monetary Fund (2023) ^[15]. Boma, Ahmed, and Bidemi (2021) ^[10] contend that private sector growth has a more significant impact on the economy than public sector growth, which is frequently the result of the public sector's lesser efficiency levels. This perspective is consistent with the aforementioned. As a result, numerous emerging economies, Nigeria inclusive, have de-emphasized extra-market institution driven development approach for free market-based strategy, which emphasize market forces and decrease public sector production (Kasali, 2020) ^[17].

Complex mechanisms, comprising government deficits, affect private savings. In accordance with neoclassical economic theory, deficits inhibit private investment by reallocating savings away from private firms through increased interest rates

(Choi and Holmes, 2014)^[12]. The loanable funds theory and the term structure of interest rates, which posit that budget deficits increase interest rates, are consistent with this crowding-out effect. Nevertheless, empirical results are inconsistent. For instance, Akinboade (2004)^[2] discovered that government deficits in South Africa did not have a substantial impact on interest rates. In contrast, Bonga-Bonga (2012)^[11] discovered that long-term interest rates were positively influenced by systematic and unexpected deficits over the long term, while short-term rates were less affected, employing a vector autoregressive (VAR) framework that was adjusted for the Fisher effect. The correlation between savings and deficits was more clearly demonstrated by the COVID-19 pandemic. In 2020, Sawyer posited that budget deficits shifted the relationship between fiscal deficits and savings by increasing household incomes and savings as a result of their positive income effects. Nevertheless, profitability constraints during the Dotcom era required a rise in corporate dissaving and increased investment. These variations serve to emphasize the diverse consequences of fiscal deficits in various economic environments.

The dynamics between government deficits and private savings are particularly significant in Nigeria, where fiscal imbalances persist. With fiscal deficits averaging 4.5% of GDP over the past decade and private savings below optimal levels for sustained growth, understanding these dynamics is crucial. Empirical studies offer mixed results on this relationship. The Ricardian Equivalence Hypothesis suggests that private agents increase savings in anticipation of future taxation to finance deficits. Conversely, Keynesian perspectives argue that fiscal deficits crowd out private savings by raising interest rates and inflationary pressures. Nigeria's unique structural imbalances and fiscal dynamics, however, present a distinct context for analysis.

Quasi-fiscal deficits, particularly those linked to the ACGS, add complexity. Defaults under the scheme, absorbed by the CBN, strain resources and influence private sector behaviour. This issue is critical given agriculture's contribution of about 25% to Nigeria's GDP and its employment of a substantial portion of the population. However, the literature on the implications of such deficits for private savings is sparse, necessitating further investigation. Addressing this gap is essential for designing policies that balance fiscal interventions aimed at development with the imperative to foster private savings.

By incorporating both fiscal and quasi-fiscal deficits into its analysis, this study bridges existing gaps and provides a comprehensive understanding of Nigeria's fiscal dynamics. It draws on theoretical frameworks i.e. the Ricardian Equivalence Hypothesis, the Keynesian paradigm, and the financial repression hypothesis to interpret the empirical upshots. These perspectives illuminate the mechanisms through which deficits influence private savings, offering insights into policy trade-offs. Therefore, the current research undertook the effects of governments' deficits indicated as federal, state, local and quasi-fiscal deficits on private sector savings in Nigeria considering data for the sample period, 1981 to 2022.

2. Literature Review

2.1 Conceptual Clarification

A deficit occurs when the anticipated current expenses exceed the anticipated current income in an effort to achieve macroeconomic balance. Fiscal policy, or the budget, is a widely recognised approach to propelling a nation's economic expansion (Momodu & Monogbe, 2017)^[25]. As per Obinabo and Agu (2018)^[26] and Saysombath and Kyophilavong (2013)^[32], fiscal shortage (deficit) become apparent as anticipated expenditures surpass anticipated revenue in effort of achieving broad economic equilibrium. It financially portrays circumstance where the aggregate budget of government exceeds total revenue generated, excluding borrowed finances in same budgetary year (Onyele, Ikwuagwu & Opara, 2023)^[28]. Consequently, the fiscal deficit is determined by subtracting the total expenditure from the total receipts (excluding borrowings). In the event that the government is lacking in funds, it may utilize the budget deficit to ascertain the amount of borrowing it will require (Abubakar & Mamman, 2021)^[1]. Even in situation where the economy did not experience shortage in revenue, fiscal deficit may exist if the following conditions are satisfied, as opined by Uremadu and Onyele (2019)^[36]. Financial institutions, comprising banks, hold the funds that private individuals and businesses deposit. These deposits are essential for the economy's operation, as they provide banks with the capital necessary to extend loans and credit to other clients. Savings accounts, credit accounts, and term deposits are among the many forms of private sector deposits. Banks provide incentives for individuals and businesses to conserve their funds through the interest they earn on these deposits. Furthermore, the quantity of private sector deposits is indicative of economic stability and consumer confidence. In general, private sector deposits are essential for the facilitation of financial intermediation and economic growth. Private investment, which is mostly fueled by private deposits, depicts capital assets acquisition for expected value stimulation, propel income growth, or perform both, as defined by macroeconomics. Capital assets encompass real estate, machinery, equipment, and buildings, as per ThankGod (2014)^[35] and Huntley (2014)^[14].

2.2 Theoretical Framework

2.2.1 The Ricardian Equivalence Theory

The foundation of this research is the theory of Ricardian Equivalence. David Ricardo introduced the idea, and Barro (1989)^[8] developed it. The hypothesis states that a deficit usually leads to a decrease in government savings, which in turn produces a rise in private savings. The urge for national investment and saving remains unchanged as a result. This is because it takes more government spending than tax collection to finance a deficit. Borrowing would be utilised to cover the deficit, and tax hike in future for possibly repaying the debt (Barro, 1989)^[8]. The theory states that people would always continue to consume in the same ways throughout their lives and that an expansionary fiscal policy would not affect people's current spending as they would continue saving for the inescapable future rise in tax (Albato, 2012; Isah, 2012)^[4, 16]. This is because the rising tax would serve the purpose of debt service for borrowed funds.

2.2.2 Keynesian Theory

In 1936, John Maynard Keynes introduced the concept of a budget deficit (Keynes, 1936)^[20]. Two fundamental assumptions served as the foundation of his budget deficit theory: Initially, it contemplates the possibility that certain resources may not experience unemployment. The second assumption is that a significant number of individuals are short-sighted, with

possession of insufficient amount of money (Vincent & Clem, 2013) ^[37]. Keynes opined in 1936 that, a substantially debt country should be seen as possessing economic strength not vulnerability. The key to a nation's swift economic growth and progress, in congruent with Keynes, is constant expenditure. Keynes' perspective differs from that of the classical schools. Classical economics was opposed to government intervention in the economy. Keynes maintained his conviction that a nation's economic development necessitated government involvement in the economy, despite the Great Depression. Yellen (2012) ^[38] posits that an increase in aggregate demand renders private investments more profitable, thereby increasing investment at any given interest rate.

2.2.3 Modern Monetary Theory

Additionally, contemporary monetary theorists have proposed an alternative viewpoint to that of neoclassical theory. For example, Kelton (2015, 2020) ^[18, 19] made a number of assertions, the first of which is crucial to this work. Funded domestically, fiscal deficits generate financial assets for the private sector and increase the aggregate level of private deposits, in congruent with her. Households increase their savings by exchanging non-interest-earning cash for interest-generating debt instruments. Interest-earning assets are the newly formed assets. In congruent with Kelton (2015) ^[18], the government's liabilities are the private sector's assets, and deficits allow the private sector to achieve its savings objectives while simultaneously reducing its balance sheet leverage.

2.3 Review of Empirical Literature

Recent empirical research has extensively investigated the relationship between government deficits and savings, revealing a variety of mechanisms and outcomes in various contexts. In congruent with Sawyer (2020) ^[31], budget deficits have a positive income effect that tends to increase household incomes and savings. The COVID-19 pandemic further exacerbated this dynamic by increasing net corporate savings and reorienting the structural relationship between fiscal deficits and savings. Nevertheless, Sawyer also observes that corporate savings experienced a decline during the Dotcom era due to the dissaving that resulted from increased investment requirements and profitability constraints. These insights establish the foundation for comprehending the intricate interactions between economic conditions, savings, and fiscal policies.

Marire (2023) ^[24] discovered that debt-financed fiscal deficits increase savings and decrease interest rates by generating financial assets that enhance liquidity, utilising the Toda-Yamamoto vector autoregressive model. The study emphasises that a fiscal deficit that is well-managed can stabilise financial systems by supplying liquidity, while also cautioning against budgetary surpluses that pose a risk of financial instability. Conversely, Kida (2020) ^[21] investigated the savings of the government, private savings, and family consumption in Southeast Europe from 2004 to 2018. Kida discovered a positive long-term correlation between government savings and family consumption; however, he did not observe any short-term causality. This suggests that there are alternative mechanisms for savings behaviour in various contexts.

Kioko (2015) ^[22] conducted an investigation into fiscal decay at the local government level, which revealed that the restriction of taxing and spending powers since the late 1970s has reduced their capacity to effectively manage fiscal resources. Marire's argument for fiscal flexibility is at odds with the fact that these constraints limit the ability of local governments to respond to fiscal disruptions. In the interim, Macgee, Pugh, and See (2022) ^[23] investigated the influence of COVID-19 on household debts and savings, with a particular emphasis on low-income households. Their upshots underscored the importance of counter-cyclical fiscal policies during crises, as they discovered that fiscal transfers reduced savings depletion.

Demographic dynamics further influence the relationship between savings and fiscal deficit. Deb (2016) ^[13] conducted an analysis of data from 31 provinces in China to investigate the influence of pensions and ageing on savings. The research revealed that pension systems have a positive impact on household savings, which challenges the conventional belief that ageing results in a decrease in savings. In a similar vein, Taguchi, Lar, and Ky (2021) ^[34] revealed that the working-age population and saving rates are significant factors in the economic development of 17 Asian countries from 1970 to 2018. Their projections for 2018–2050 caution against the detrimental effects of ageing on economic growth and savings, emphasising the increasing demographic pressures in these regions.

Richard and Ogiji (2016) ^[30] implemented Augmented Dickey-Fuller co-integration analysis to evaluate the economic consequences of deficit financing in Nigeria from 1970 to 2013. Their results demonstrate that foreign finance has a beneficial impact on economic stability, as deficit financing improves employment and reduces inflation. Akbaş and Lebe (2016) ^[7] conducted an additional investigation of the "triplet deficit hypothesis" throughout the G7 countries from 1994 to 2011, which verified a causal relationship between the current account deficit, budget deficit, and savings imbalance. They emphasised the significance of savings as a determinant of fiscal imbalances, which is consistent with the hypothesis.

From 2000 to 2015, Bayramoğlu and Öztürk (2018) ^[9] expanded the twin and triple deficit hypotheses to account for 15 developing economies. Their research verified that budget deficit is primarily blamable for recording deficit in current account (twin deficit hypothesis). However, the triple deficit hypothesis is only partially applicable, as domestic savings are essential for bridging the savings-investment imbalance. Lastly, Aggarwal, Auclert, Rognlie, and Straub (2023) ^[6] demonstrated that debt-financed fiscal transfers increase global savings and generate persistent current account deficits, thereby bolstering the nuanced comprehension of the effects of fiscal policies in a variety of economic conditions. Collectively, these studies demonstrate the intricate relationship between contextual and structural factors, fiscal deficits, and savings, likewise broader economic dynamics.

3. Materials and Methods

3.1 Research Design

The ex-post facto research design is well-suited for the examination of government deficits in Nigeria, as it is owing to the analysis of extant data without the inclusion of experimental manipulation (Shrestha and Bhatta, 2018) ^[33]. Researchers acquire secondary data from a variety of sources, i.e. government reports and statistical databases. These variables comprise private

reserves and government deficits (fiscal and quasi-fiscal). This investigation utilised data obtained from the statistical bulletin Nigeria’s apex bank. This suggests utilisation of secondary, pre-existing data collection method. Fiscal deficit and quasi-fiscal deficit (proxied by the Central Bank of Nigeria’s settlement payment of ACGS claims) are the two primary explanatory variables for this study. Conversely, private savings serve as the dependent variable.

3.2 Model Specification

Keynesian economics provides valuable insights into how government deficits can impact the Nigerian economy, particularly in the context of stimulating aggregate demand and addressing economic downturns. In congruent with Keynesian theory, government deficits can play a crucial role in stabilizing the economy by injecting additional spending into the system, thereby boosting consumption, investment, and savings. In applying this theory, the functional form of the model is shown below:

$$Private\ savings = f(fiscal\ deficit, quasi - fiscal\ deficit) \tag{3.1}$$

However, the functional model for this research is shown. Therefore, the econometric model for this study is specified as follows where the government deficits consisting of federal, state and local government deficits and the quasi-fiscal deficit which is proxied by claims of commercial banks’ ACGS loan guarantees are show as follows:

$$PSD_t = \partial_0 + \partial_1FEDDEF_t + \partial_2STADEF_t + \partial_3LOCDEF_t + \partial_4QFD_t + \mu_{1t} \tag{3.2}$$

Where:

- PSD_t = Private savings as a percentage of the gross domestic product at time t.
- $FEDDEF_t$ = Fiscal deficit of federal government, measured as percentage ratio of gross domestic product at time t.
- $STADEF_t$ = Fiscal deficit of state government, measured as percentage ratio of gross domestic product at time t.
- $LOCDEF_t$ = Fiscal deficit local government, measured as percentage ratio of gross domestic product at time t.
- QFD_t = Quasi-fiscal deficit proxied by claims by the commercial banks at time t to the CBN on loan guarantees of the agricultural credit guarantee scheme (ACGS).
- μ_{1t} = Stochastic (white noise) error term at time t.
- $\partial_1 - \partial_4$ = Coefficient estimates of each explanatory variable.
- ∂_0 = The position of the dependent variable given absence of the explanatory variables.

Drawing from a selection of theoretical and empirical reviews, this study employs the Autoregressive Distributed Lag (ARDL) approach, also known as the Bound Testing approach, to cointegration as proposed by Pesaran, Shin, and Smith (2001) [29]. Akinola (2017) [3] have also utilized this approach for comparable studies conducted in Nigeria. Additionally, in order to better suit the Nigerian economy, the accepted model was slightly adjusted to show evidence for both the long-run and short-run dynamics between government deficit and private savings directly in Nigeria. The applied model of ARDL is represented as shown below:

$$\begin{aligned} \Delta(PSD)_t = & \delta_0 + \delta_{1t}\Delta(PSD_{t-1}) + \delta_{2t}\Delta(FEDDEF_{t-1}) + \delta_{3t}\Delta(STADEF_{t-1}) + \delta_{4t}\Delta(LOCDEF_{t-1}) + \\ & \delta_{5t}\Delta(QFD_{t-1}) + \sum_{i=1}^m \alpha_{1i}\Delta(PSD_{t-1}) + \sum_{i=1}^m \alpha_{2i}\Delta(FEDDEF_{t-1}) + \sum_{i=1}^m \alpha_{3i}\Delta(STADEF_{t-1}) + \\ & \sum_{i=1}^m \alpha_{4i}\Delta(LOCDEF_{t-1}) + \sum_{i=1}^m \alpha_{5i}\Delta(QFD_{t-1}) + \mu_{1t} \end{aligned} \tag{3.3}$$

Where: α_0 = Intercept, $\partial_1 - \partial_5$ = long-run dynamic coefficients, $\alpha_1 - \alpha_5$ = short-run coefficients of the regressors, μ_t = White Noise Error term, Δ = first difference operator and n =maximum lag operator. Owing to the theoretical frameworks like the Keynesian and Neoclassical (crowding out) theory, deficit spending could have both negative and positive relationship with the private sector savings tabulated in Table 1 below.

Table 1: The Apriori Expectations

Dependent Variable: PSD Independent Variables	Expectations
FEDDEF	-/+
STADEF	-/+
LOCDEF	-/+
QFD	-/+

Source: Researchers’ Ideas (2024)

3.3 Method of Data Analysis

The variables employed in this investigation will be the subject of descriptive statistical analysis in order to comprehend their characteristics. This analysis will not only offer insights into the characteristics of each variable within the model, but it will also assess the normality of the data by utilising skewness and kurtosis measures. Time series data frequently exhibit non-stationarity, as emphasised in econometric studies i.e., Shrestha and Bhatta (2018) [33], which can result in inconsistent and

biased estimates. Therefore, it is imperative to implement a unit root test in order to ascertain the most suitable estimation methodology.

The analysis for unit root detection employed the augmented version of Dickey-Fuller (DF) method. Outcomes of this unit root test will determine the estimation technique. The ARDL-ECM model can be employed for ARDL estimation if stationarity and cointegration are confirmed, or if the variables have a mixture of integration orders. The ECM component allows for the pace of adjustment towards the long-run equilibrium, while the ARDL model captures the short-run dynamics between variables. It is possible to represent the ECM employing the following specification:

$$\Delta(PSD_t) = \delta_0 + \delta_{1i} \Delta(PSD_{t-1}) + \delta_{2i} \Delta(FEDDEF_{t-1}) + \delta_{3i} \Delta(STADEF_{t-1}) + \delta_{4i} \Delta(LOCDEF_{t-1}) + \delta_{5i} \Delta(QFD_{t-1}) + \sum_{i=1}^m \alpha_{1i} \Delta(PSD_{t-1}) + \sum_{i=1}^m \alpha_{2i} \Delta(FEDDEF_{t-1}) + \sum_{i=1}^m \alpha_{3i} \Delta(STADEF_{t-1}) + \sum_{i=1}^m \alpha_{4i} \Delta(LOCDEF_{t-1}) + \sum_{i=1}^m \alpha_{5i} \Delta(QFD_{t-1}) + \alpha ECM_{t-1} + \mu_{1i} \tag{3.4}$$

Where variables and elements in the model are as earlier defined. After estimating the ARDL-ECM, diagnostic tests are conducted to assess the model's overall fit. These tests will verify normality the of the model employing Jarque-Bera statistic, the absence of autocorrelation and heteroscedasticity, and confirm the correctness of the specified model.

4. Results and Discussion

4.1 Descriptive Statistics

It is imperative to comprehend the characteristics of the variables employed in research prior to conducting data analysis, as per Apuke (2017) [5]. This phase entails the examination of the summary or descriptive statistics, which offer a comprehensive view of the primary characteristics of the data. Descriptive statistics aid in the evaluation of the normality of the distribution of the variables utilised in the research by offering a comprehensive understanding of their characteristics and features. Table 2 below illustrates the descriptive statistics for this investigation:

Table 2 illustrates that the federal fiscal deficit in Nigeria averaged 2.51% of GDP, with a standard deviation of 1.84%, suggesting significant variability. The fiscal deficit is range, which spans from -0.78% to 8.57%, signals periods of substantial fiscal imbalance. The positive skewness (0.82) indicates that although lesser deficits are prevalent, there are sporadic large deficits. This pattern is indicative of the nation's substantial dependence on oil revenues, which are subject to significant volatility as a result of global price fluctuations. Increased borrowing and a rise in public debt are the result of the government's revenue shortfalls that occur when oil prices decline. This scenario underscores the necessity of a more diverse revenue base, as it exacerbates inflationary pressures, depreciates the currency, and discourages investment.

Table 2: Descriptive Statistics Results

	Federal Deficit (% of GDP)	State Deficit (% of GDP)	Local Deficit (% of GDP)	Quasi-fiscal Deficit (% of GDP)	Private savings (% of GDP)
Mean	2.51	147.51	-0.01	0.001	3.90
Median	2.41	11.11	0	0.000003	3.79
Maximum	8.57	1244.52	0.01	0.002	8.32
Minimum	-0.78	-5.54	0.00	0.00	0.00
Std. Dev.	1.84	277.97	0.02	0.003	1.85
Skewness	0.82	2.4	-3.06	5.45	-0.24
Kurtosis	4.28	8.27	12.49	33.05	3.44
Jarque-Berra	7.42	86.8	217.88	1745.73	0.73
Probability	0.02	0	0	0	0.70
Observations	41	41	41	41	41

Source: Researchers' Computation employing E-views 12

The average state government fiscal deficit in Nigeria is 147.51%, which is a remarkable figure when expressed as a percentage of GDP. This remarkably high average suggests a substantial fiscal imbalance at the state level, as it reflects persistent deficits that exceed GDP by a substantial margin. The median deficit of 11.11% indicates that, despite the fact that the majority of states have deficits that are substantially lower than the mean, a small number of outliers with exceedingly high deficits are distorting the average. This discrepancy underscores the existence of substantial fiscal disparities among states. The utmost state deficit is an extraordinary 1,244.52%, a figure that may suggest misreporting anomalies or extreme fiscal distress. The minimum deficit of -5.54%, on the other hand, indicates a fiscal surplus for certain states, despite the fact that it is relatively trivial in comparison to the deficits of other states. Confirming the existence of substantial disparities among states, the standard deviation of 277.97 emphasizes the substantial variability in state deficits. The positive skewness of 2.40 suggests that the distribution is right-skewed, which means that a small number of states with severe deficits are causing the mean to rise, while the majority of states experience more moderate deficits. The presence of outliers is further supported by high kurtosis of 8.27, which indicates that the distribution's tails are heavy with higher values than a normal distribution. The test statistic value of 86.80 for Jarque-Bera, with a probability of 0.00, firmly rejects the null hypothesis of normality, thereby confirming that the distribution of state deficits is not normal. This non-normality implies that the dataset contains a substantial number of anomalies, which have an impact on the distribution and the average deficit figures.

The dataset displays local government deficits as negative values, which have an average of -0.01% of GDP. This suggests that the position is nearly balanced, with minor fiscal surpluses. The median value is -0.00%, which serves to substantiate the notion that numerous local governments are maintaining balanced budgets or minor surpluses. Minimum deficits of -0.08% indicate a minor deficit, while the maximum deficit of -0.00% suggests a minimal surplus. Although the mean indicates that the data is generally neutral, the considerable negative skewness of -3.06 indicates that a significant number of local governments have surpluses, which skew the average towards negative values. The high kurtosis of 12.49 suggests that the distribution has pronounced peaks and hefty tails, indicating that there are few local governments with substantial deviations from the mean, although these deviations are not extreme. The non-normality of the distribution is confirmed by the Jarque-Bera test statistic of 217.88, which has a probability of 0.00. This outcome is in accordance with the skewed distribution, in which a small number of extreme values have a substantial influence on the overall distribution.

The quasi-fiscal deficit, which is characterized by claims by commercial banks on default loan guarantees from the Agricultural Credit Guarantee Scheme (ACGS), has a mean of 0.0001% of GDP, suggesting that this component of the deficit is exceedingly small on average. The median of 0.000003% is nearly negligible, indicating that the majority of observations are extremely close to zero. The highest recorded value is 0.002%, for the utmost quasi-fiscal deficit, while the minimum of 0.00% indicates periods without recorded claims. The minimal variability of the standard deviation of 0.0003 confirms that the majority of values are clustered around the mean. The high positive skewness of 5.45 suggests that the distribution is skewed to the right by a few periods with notably high quasi-fiscal deficits. The data exhibits a distribution with abrupt peaks and very hefty tails, as evidenced by the exceptionally high kurtosis of 33.05, which implies that the data contains a few large values in comparison to a normal distribution. The Jarque-Bera test statistic of 1745.73, with a probability of 0.00, confirms that the distribution is significantly influenced by a few extreme values, indicating a large deviation from normality.

The average quantity of deposits held by the private sector in relation to GDP is 3.90%, expressed as a percentage of GDP. The median of 3.79% is in close proximity to the mean, which implies that the central tendency of the data is not significantly impacted by extreme values. The utmost value of 8.32% indicates a high level of private sector deposits, which may be indicative of periods of economic growth or high liquidity. In contrast, the minimum value of 0.00% implies that private sector deposits were negligible or zero during certain periods, potentially as a result of financial crises or banking sector instability. There is moderate variability in private sector deposits, as evidenced by the standard deviation of 1.85, which is moderately dispersed around the mean. The modest left skew (skewness of -0.24) implies that there are more frequent observations below the mean, despite the fact that the skewness is not extreme. The kurtosis of 3.44 is nearly that of a normal distribution, suggesting a distribution that is relatively symmetrical with moderate tails. 0.73 is the statistic value of Jarque-Bera estimate, with its probability of 0.70, does validate the null hypothesis of normality, suggesting that the distribution of private sector deposits is relatively close to normal.

4.2 Test of Unit Roots

Most time-series data have frequently been unsuitable for forecasting and deriving conclusions due to the unit root issue. Consequently, it is crucial to employ the classical tests (ADF) to conduct these unit root tests, as they have been acknowledged over time. Testable hypotheses comprise: Ho: A unit root is present. H1: The unit root is not present. Table 3 illustrates the outcomes of the unit root test in accordance with the ADF method:

It is evident from the ADF results in Table 3 below, showing the model’s variables are stationary in heterogeneous orders. PSD, FEDDEF, LOCDEF, and QFD are stationary at levels, as indicated by the t-statistic above. Thus, the variables are integrated of order I(0). Conversely, the integration of STADEF at the first difference I(1) implies a unit root issue. The order of integration among the variables in the mode is evidently mixed. Shrestha and Bhatta (2018) [33] justify the utilisation of the ARDL as the estimation model on the basis of this hybrid approach.

Table 3: ADF Unit Root Results

Variables	ADF Statistic	ADF Critical Value			Model	At Levels
		1%	5%	10%		
Dependent Variable						
PSD	-4.57	-4.95	-4.44	-4.19	Constant	Stationary
Independent Variables						
FEDDEF	-3.11	-3.6	-2.94	-2.61	Constant	Stationary
LOCDEF	-5.66	-4.95	-4.44	-4.19	Constant	Stationary
QFD	-5.48	-3.6	-2.94	-2.61	Constant	Stationary
STADEF	-2.88	-4.2	-3.52	-3.19	Constant	Non-Stationary
		ADF Critical Value			Order of Integration	At First Difference
Variable	ADF Statistic	1%	5%	10%		
Explanatory Variable						
STADEF	-5.58	-4.2	-3.52	-3.19	I(1)	Stationary

Source: Researchers’ Computation employing E-views 12

4.3 Bounds Test for Cointegration

This research applied the Bounds test of the ARDL to examine if there is a long-run relationship among the variables in the model. The model has an unrestricted constant with no trend. The result of the ARDL bounds test is presented in Table 4 below. It shows that since the F-statistics value of 12.23 is greater than the 5% level of significance at the higher bound, there is an existence of long-run relationship among the variables in the model.

Table 4: Results of the Bound Test

Estimated Model		F-statistics
PSD (PSD/feddef, stedef, locdef, qfd)	K = 4	12.23**
Critical Value	Critical Value (Lower Bound)	Critical Value (Higher Bound)
1%	3.74	5.06
5%	2.85	5.01
2.50%	2.88	3.87
10%	2.45	3.52

Source: Researchers' Computation employing E-views 12.

Note: Null hypothesis: No level relationship; K = number of regressors; ** denote significance at 5% level.

4.4 ARDL Model Estimation Results

Despite the presence of cointegration, an estimate of the long-run ARDL was required in order to determine the elasticities. Consequently, the results are shown in Table 5 below. The long term ARDL was estimated or unconstrained ECM was estimated and displayed in Table 5.

Table 5: ARDL-ECM Results

Explanatory Variable	Coefficient	Std. Error	t-Statistic	Prob.
Short-Run Result				
C	1.81	0.25	7.15	0.00**
D(PSD(-1))	-0.46	0.12	-3.80	0.00**
D(FEDDEF)	0.05	0.06	0.77	0.45
D(FEDDEF(-1))	0.25	0.07	3.59	0.00**
D(FEDDEF(-2))	0.28	0.07	4.11	0.00**
D(FEDDEF(-3))	0.18	0.07	2.65	0.01**
D(STADEF)	0.002	0.0005	4.71	0.00**
D(STADEF(-1))	0.004	0.0007	5.88	0.00**
D(STADEF(-2))	0.005	0.0008	6.34	0.00**
D(QFD)	0.38	0.26	1.50	0.21
D(QFD(-1))	-2.41	0.39	-6.13	0.00**
D(QFD(-2))	-5.67	1.74	-3.26	0.00**
ECT(-1)	-0.35	0.04	-8.53	0.00**
Long-Run Result				
FEDDEF	-0.71	0.30	-2.40	0.03**
STADEF	-0.01	0.004	-2.30	0.03**
LOCDEF	42.86	19.28	2.22	0.04**
QFD	0.48	0.09	5.27	0.01**
R-Squared = 0.78 Adjusted R-squared = 0.68				

Source: Researchers' Computation employing Eviews 12.

Where: ** denotes significance at 5% level.

The ARDL (Autoregressive Distributed Lag) results for the impact of government deficits on private sector deposits (as a percentage of GDP) in Table 5 above offer substantial insights into the dynamics between fiscal policies and private savings in Nigeria. The analysis provides a comprehensive comprehension of the impact of various categories of government deficits, comprising federal, state, local, and quasi-fiscal deficits, on private sector deposits over the sampled period, encompassing both the short-run and long-run relationships.

The Lagged Private Sector Deposits coefficient (D(PSD(-1))) is -0.46, denoting 5% level of statistical significance. The current period's deposits are negatively impacted by the past values of private sector deposits, as indicated by this negative coefficient. In other words, if private sector deposits were higher in the previous period, they are likely to be lower in the current period, suggesting a potential short-term correction mechanism in private savings behaviour. This is indicative of the adjustment process, in which reductions in savings in subsequent periods occur as individuals and businesses modify their consumption and investment patterns in response to an increase in savings during one period.

In the short term, the fiscal deficit of the federal government (FEDDEF) exhibits a varied effect. While the FEDDEF (D(FEDDEF)) for the current period is not statistically significant (p-value = 0.45), the lagged values of FEDDEF (D(FEDDEF(-1)), D(FEDDEF(-2)), and D(FEDDEF(-3))) are highly significant and positively correlated with private sector deposits. The coefficients for these delays are 0.25, 0.28, and 0.18, respectively, and they are all at 5% level of statistical significance. This implies, consequences of an increase in federal deficit may not be immediately apparent; however, they become apparent in consecutive periods. In the short term, the positive relationship suggests that increases in the federal deficit ultimately resulted in higher private sector deposits. These upshots are consistent with those of Marire (2023) ^[24] and Sawyer (2020) ^[31], who discovered that government deficits have a direct effect on savings. The government's increased borrowing to finance the deficit may be the reason for this, as it could potentially increase interest rates and make saving more appealing to the private sector. The upshots of Kida (2020) ^[21] are in direct opposition to the results. Furthermore, the private sector may experience an increase in income and savings as a result of increased government expenditure, which could stimulate economic activity. Nevertheless, the federal government fiscal deficit (FEDDEF) has a negative coefficient of -0.71 in the long term, which defines 5% statistical significance. This suggests that long term private sector deposits are lower when federal deficits are higher. This is consistent with the results of Kioko (2015) ^[22], who suggested that the negative relationship could be

attributed to the crowding-out effect. This effect occurs when the amount of government borrowing increases, resulting in higher interest rates. Consequently, the amount of money available for private investment and savings decreases. However, Marire (2023) ^[24] contradicts this hypothesis. Furthermore, persistent deficits may result in apprehensions regarding fiscal sustainability, which can lead to a decline in confidence in the economy and a decrease in savings rates.

State government fiscal deficits (STADEF) also have a substantial positive effect on private sector savings in the short term. The current and lagged values' coefficients (D(STADEF), D(STADEF(-1)), and D(STADEF(-2))) are 0.002, 0.004, and 0.005, respectively, all of which are statistically significant at the 5% level. These positive coefficients suggest that private sector deposits increase in response to increases in state deficits, both immediately and in the future. Macgee, Pugh, and See (2022) ^[23] proposed that an increase in fiscal transfers results in an increase in savings, which is in direct opposition to Kioko's (2015) ^[22] research. Increasing government spending or borrowing at the state level stimulates economic activity or raises interest rates, thereby encouraging savings. This is a result of the same mechanisms observed with federal deficits. Conversely, the state government fiscal deficit (STADEF) exhibits a negative coefficient of -0.01, which is statistically significant at the 5% level. Contrary to Sawyer's (2020) ^[31] research, this aligns with Kioko's (2015) ^[22] discoveries. This implies that, in the long term, private sector deposits are lower when state deficits are higher, similar to the federal deficit. As a result of the increased financing by the state, private savings have decreased and interest rates have risen.

Conversely, the local government fiscal deficit (LOCDEF) exhibits a positive long-run coefficient of 42.86, that is significant at 5%. This suggests that private sector deposits are inversely proportional to local deficits over the long term. This outcome is consistent with the upshots of Aggarwal, Adrien, Rognlie, and Straub (2023) ^[6], who demonstrated that debt-financed fiscal transfers increase global savings. The direct impact of local government spending on local economies is a key factor in the positive relationship between the two. This spending stimulates economic activity and increases income levels, which in turn leads to increased savings. Furthermore, local deficits may not have the same crowding-out effect as federal and state deficits, as they are frequently funded through distinct channels and may not have a substantial impact on national interest rates.

A complex relationship exists between the quasi-fiscal deficit (QFD) and private sector savings. Despite the fact that the current period's QFD (D(QFD)) is not statistically significant (p-value = 0.21), the lagged values (D(QFD(-1)) and D(QFD(-2))) are substantially negative, with coefficients of -2.41 and -5.67, respectively. This suggests that the immediate consequences of quasi-fiscal deficits may not be readily apparent; however, the consequences in subsequent periods are exceedingly detrimental. In the subsequent periods, the substantial negative coefficients indicate that quasi-fiscal deficits substantially diminish private sector deposits. The financial system may be subject to uncertainty as a result of quasi-fiscal deficits, which are frequently associated with contingent liabilities, i.e. government guarantees on loans. The realisation of these liabilities can result in a loss of confidence in the financial system, which in turn leads to a decrease in savings as individuals and businesses either discharge their deposits or decrease their savings rates. This inverse relationship is consistent with the results of Kioko (2015) ^[22] but is in direct opposition to Marire (2023) ^[24]. On the other hand, the quasi-fiscal deficit (QFD) has a long-run coefficient of 0.48, which is highly significant at the 5% level. This suggests a robust positive correlation between private sector deposits and quasi-fiscal deficits over the long term. This relationship may appear counterintuitive in light of the negative short-term impact; however, it may be accounted for by the possibility of a substantial revival in private sector deposits once the uncertainties associated with quasi-fiscal deficits are resolved and the financial system stabilises. Furthermore, quasi-fiscal deficits frequently involve government interventions in the financial sector, which may result in increased liquidity and, as a result, higher deposits in the long term.

The Error Correction Term (ECT) coefficient, which quantifies the rate of return to equilibrium following a disturbance, is highly significant (p-value = 0.00) and is -0.35. The ECT's negative sign and significance corroborate that any imbalance in private sector deposits is rectified at a rate of 35% per period. This suggests a relatively moderate adjustment process, in which deviations from the long-term equilibrium are partially rectified within a brief timeframe. The ARDL model explains 78% of the variation in private sector deposits (as a percentage of GDP) (R-squared value: 0.78). This implies that the independent variables (federal, state, local government deficits, and quasi-fiscal deficits) effectively capture the dynamics influencing private sector savings in Nigeria, indicating a strong explanatory power of the model. The adjusted R-squared, which reflects the number of predictors in the model and the degrees of freedom, is marginally lower at 0.68. This connotes that approximately 68% of the variation in private sector deposits after adjusting for the number of variables is captured in the model. Although the adjusted R-squared is lower than the R-squared, it still represents a significant portion of the variance that is explained, which further supports the model's robustness.

Table 6: Post-estimation test results

Test Type	Null Hypothesis	Test Statistic	Prob. Value	Decision
Normality test	H ₀ : Normal distribution of residuals	0.55	0.76	Accept H ₀
Breusch-Godfrey Serial Correlation LM Test	H ₀ : Serial independence	1.99	0.57	Accept H ₀
Breusch-Pagan -Godfrey heteroskedasticity test	H ₀ : Homoscedasticity	14.84	0.54	Accept H ₀
Ramsey stability test	H ₀ : Stability Test	7.41	0.51	Accept H ₀

Source: Author's computation from E-views 12 software

The diagnostic tests shown in Table 6 above indicated that the model is well-specified and stable. The Jarque-Bera test for normality yields a p-value of 0.76, indicating that the residuals are normally distributed. The Breusch-Godfrey LM test for autocorrelation yields a p-value of 0.57, suggesting that there is no significant autocorrelation, while the Breusch-Pagan-Godfrey test for heteroscedasticity yielded 0.54 p-value, indicating no evidence of heteroscedasticity in the model. The Ramsey RESET test results, with p-values of 0.51 indicate that the model does not suffer from specification errors.

5. Conclusion

The outcomes from the econometric analysis provided crucial insights into the implications of government deficits for the private sector savings in Nigeria. Federal and state fiscal deficits have a short-term positive impact on private sector savings but become detrimental in the long run. This suggests that while such deficits can temporarily stimulate savings, they contribute to economic instability over time, potentially due to increased inflation and reduced fiscal sustainability. Local government deficits, though significant only in the long run, indicate that their effects on savings become more apparent over extended periods. The analysis also highlights that federal fiscal deficit influence private sector savings with a delayed response. This lag reflects how increased government spending or expanded money supply can eventually drive private sector savings. Conversely, state and local deficits have minimal immediate effects on private sector savings, suggesting that their influence on the overall level of private sector savings is relatively limited in the short run. Quasi-fiscal deficits display an intermittent relationship with private sector savings, contributing to private sector savings occasionally but not consistently. On the basis of these established findings, the following recommendations are proposed.

- a) The results suggest several strategic recommendations for managing government deficits to enhance private savings in Nigeria. In the short run, the significant negative impact of lagged quasi-fiscal deficits (QFD) on private savings underscores the need for careful management of such deficits to avoid depleting savings. This aligns with practices observed in other economies, i.e., Chile, where stringent fiscal controls and monitoring of quasi-fiscal activities have successfully mitigated adverse impacts on savings.
- b) In the long run, both federal and state fiscal deficits have a detrimental effect on private savings, while local deficits show a positive impact. This pattern indicates that reducing federal and state deficits should be a priority to bolster long-term savings stability. Policies similar to those adopted in Sweden, which focused on reducing fiscal deficits through comprehensive fiscal reforms and targeted budget surpluses, could be beneficial. Sweden's approach demonstrated that effective deficit management fosters a healthier savings environment.
- c) Additionally, addressing the high impact of quasi-fiscal deficits through enhanced transparency and strict regulatory measures can prevent their negative influence on savings, as seen in South Korea's fiscal reforms. Implementing these measures can help Nigeria achieve a more sustainable economic environment conducive to increased private savings and overall financial stability.

6. References

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