EFFECT OF INTEREST RATE RISK, EXCHANGE RATE RISK, AND PERSONNEL COST ON FISCAL SUSTAINABILITY IN NIGERIA

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Abstract
Fiscal sustainability has become a major policy concern in Nigeria due to increasing borrowing costs, exchange rate volatility, and the rising burden of recurrent government expenditure. This study examined the effect of interest rate risk, exchange rate risk, and personnel cost on fiscal sustainability in Nigeria using annual time-series data spanning 1981 to 2023. An ex post facto research design was adopted, while secondary data were obtained from the Central Bank of Nigeria (CBN), Debt Management Office (DMO), National Bureau of Statistics (NBS), Federal Ministry of Finance, World Bank, and International Monetary Fund (IMF). The study employed descriptive statistics, the Augmented Dickey-Fuller (ADF) unit root test, Autoregressive Distributed Lag (ARDL) bounds testing approach, Error Correction Model (ECM), and Heteroskedasticity and Autocorrelation Consistent (HAC) estimation techniques to analyze the data. The findings revealed that interest rate risk has a significant negative effect on fiscal sustainability ($\beta = -1.031895$, $p = 0.0092$), indicating that higher borrowing costs reduce the government's fiscal capacity. Personnel cost also exerts a significant negative effect ($\beta = -0.652945$, $p = 0.0011$), suggesting that persistent growth in recurrent expenditure weakens fiscal sustainability. In contrast, exchange rate risk has a positive but statistically insignificant effect ($\beta = 0.257013$, $p = 0.1141$), implying that exchange rate fluctuations did not significantly influence fiscal sustainability during the study period. The study concludes that effective management of borrowing costs and personnel expenditure is crucial for improving fiscal sustainability in Nigeria. It recommends prioritizing concessional borrowing, strengthening expenditure controls through public sector reforms, and maintaining sound macroeconomic policies that promote exchange rate stability and prudent fiscal management.

Keywords: Fiscal sustainability, interest rate risk, exchange rate risk, personnel cost, ARDL, Nigeria.

1.0 Introduction

Fiscal sustainability has become a central objective of public financial management because it determines a government's ability to finance its present and future expenditure obligations without compromising macroeconomic stability or imposing excessive debt burdens on future generations. In recent years, global economic disruptions, financial crises, and tightening monetary conditions have compelled governments to increase borrowing in order to finance budget deficits, stimulate economic recovery, and sustain public service delivery. Although public borrowing remains an important fiscal policy instrument, the rapid accumulation of debt has intensified concerns about governments' capacity to maintain sustainable public finances. According to the International Monetary Fund (2023), rising borrowing costs, slowing economic growth, and weak revenue performance have significantly increased fiscal vulnerabilities, particularly in developing economies. Similarly, the World Bank (2024) maintains that sustainable fiscal management is

fundamental to promoting economic resilience, attracting investment, and ensuring long-term development.

Public debt contributes to economic growth when borrowed resources are invested efficiently in productive sectors capable of generating future revenue. However, increasing debt accumulation exposes governments to various fiscal risks that extend beyond the volume of debt itself. Changes in interest rates, exchange rate movements, and growing recurrent expenditure influence governments' borrowing costs and repayment capacity, thereby affecting fiscal sustainability. As global financial markets become increasingly volatile, governments with limited fiscal buffers and heavy dependence on external financing are more vulnerable to fluctuations in international interest rates, currency depreciation, and shifts in investor confidence. Kose et al. (2022) argue that sustainable debt management requires governments to manage these macroeconomic risks alongside debt accumulation to preserve fiscal stability.

Across Africa, maintaining fiscal sustainability has become increasingly difficult because many countries face structural economic weaknesses, narrow revenue bases, and heavy dependence on commodity exports. These challenges have been compounded by external shocks, exchange rate instability, and tightening global financial conditions that have significantly increased debt servicing obligations and borrowing costs. The African Development Bank (2024) reported that many African governments now allocate substantial proportions of public revenue to debt-related obligations and recurrent expenditure, thereby reducing fiscal space for infrastructure development and social investment. Likewise, the United Nations Conference on Trade and Development (2023) observed that exchange rate depreciation and rising global interest rates have intensified debt vulnerabilities across developing economies, making it increasingly difficult for governments to balance development financing with long-term fiscal sustainability.

Nigeria reflects many of these continental fiscal challenges despite successive reforms aimed at improving public financial management. The country's persistent fiscal deficits have encouraged continuous borrowing to finance both recurrent and capital expenditure, resulting in a significant increase in public debt over the years. Although borrowing has supported infrastructure development and government operations, concerns have grown regarding the sustainability of this financing strategy. According to the Central Bank of Nigeria (2024) and the Debt Management Office (2024), debt servicing obligations now consume a considerable proportion of government revenue, thereby limiting fiscal space available for investment in education, healthcare, infrastructure, and other productive sectors. At the same time, exchange rate depreciation has increased the domestic value of external debt, while rising interest rates have elevated borrowing costs. Furthermore, the continuous increase in personnel expenditure has reduced budgetary flexibility because a substantial share of government revenue is committed to salaries, wages, pensions, and other recurrent obligations. Collectively, these developments have heightened concerns about Nigeria's ability to maintain fiscal sustainability while meeting its development objectives.

Interest rate risk represents an important channel through which public debt influences fiscal sustainability because changes in interest rates directly affect governments' borrowing costs and debt servicing obligations. Rising interest rates increase the cost of refinancing existing debt and financing new borrowing, thereby reducing fiscal flexibility and increasing budgetary pressure (Chudik et al., 2022; International Monetary Fund [IMF], 2023)**.** Similarly,exchange rate risk **r**emains a major source of fiscal vulnerability because depreciation of the domestic currency increases the local currency value of foreign-denominated debt and future repayment obligations, thereby increasing governments' debt servicing burdens (UNCTAD, 2023; World Bank, 2024)**.** In

addition, rising personnel costs reduce the resources available for productive public investment by absorbing a larger share of government revenue for recurrent expenditure, thereby constraining government's capacity to improve fiscal performance (African Development Bank, 2024; IMF, 2023). These factors have become increasingly important in explaining fiscal sustainability within developing economies, particularly those characterized by expanding public debt and volatile macroeconomic conditions (Kose et al., 2022; Paniagua et al., 2023).

Despite the growing empirical literature on public debt and fiscal sustainability, existing studies have predominantly focused on debt service, fiscal deficits, aggregate public debt, and debt sustainability. For example, Nguyen and Su (2022) examined public debt dynamics and fiscal sustainability using international evidence, while Ekeocha and Asongu (2023)investigated public debt and macroeconomic sustainability in Africa. Similarly, Agyapong and Bedjabeng (2024) conducted a systematic review of public debt and fiscal sustainability in Sub-Saharan Africa, whereas Kose et al. (2022)focused on the causes and consequences of global debt waves. Although these studies provide important information on the relationship between public debt and fiscal sustainability, they paid limited attention to the combined influence of interest rate risk, exchange rate risk, and personnel cost on fiscal sustainability, particularly within the Nigerian public sector. Furthermore, most previous studies concentrated on cross-country evidence or broad measures of public debt rather than specific fiscal risk indicators, while few employed a long time-series covering more than four decades. This study addresses these empirical gaps by examining the effect of interest rate risk, exchange rate risk, and personnel cost on fiscal sustainability in Nigeria using annual time-series data spanning 1981 to 2023.

Specifically, the study seeks to examine the effect of interest rate risk, exchange rate risk, and personnel cost on fiscal sustainability in Nigeria. Accordingly, the following null hypotheses were tested:

H_{01}: Interest rate risk has no significant effect on fiscal sustainability in Nigeria.
H_{02}: Exchange rate risk has no significant effect on fiscal sustainability in Nigeria.
H_{03}: Personnel cost has no significant effect on fiscal sustainability in Nigeria.

2.0 Literature Review

Concept of Fiscal Sustainability

Fiscal sustainability refers to the ability of a government to finance its current and future expenditure obligations without accumulating excessive debt or requiring abrupt fiscal adjustments that could undermine economic growth. It reflects a government's capacity to maintain stable public finances while meeting debt obligations and providing essential public services over time. The International Monetary Fund (2023) describes fiscal sustainability as a condition in which fiscal policies remain consistent with macroeconomic stability and allow governments to honour present and future financial commitments without compromising economic performance. Similarly, the World Bank (2024) views fiscal sustainability as the government's ability to manage public debt responsibly while maintaining adequate fiscal space for development priorities. Bohn (2007) argues that fiscal sustainability exists when government revenues and expenditures evolve in a manner that satisfies the intertemporal budget constraint over the long run. Fiscal sustainability therefore depends not only on the level of public debt but also on governments' capacity to generate revenue, control expenditure, and manage fiscal risks effectively. Within this study, fiscal sustainability is defined as the ability of the Nigerian government to maintain sound public finances by meeting its

financial obligations while ensuring long-term macroeconomic stability and sustainable economic development.

Concept Interest Rate Risk

Interest rate risk refers to the possibility that changes in market interest rates will affect governments' borrowing costs and debt servicing obligations. It arises because fluctuations in interest rates influence the cost of refinancing existing debt and obtaining new loans, thereby affecting fiscal performance and debt sustainability. Chudik et al. (2022) explain that rising interest rates increase sovereign financing costs, reduce fiscal flexibility, and heighten debt vulnerabilities, particularly in developing economies with large public debt portfolios. Likewise, the International Monetary Fund (2023) notes that global monetary tightening has significantly increased borrowing costs for many developing countries, thereby weakening fiscal sustainability. Interest rate risk becomes particularly important when governments rely heavily on variable-rate borrowing or frequently refinance maturing debt under changing financial conditions. Poor management of interest rate exposure may increase government expenditure on debt servicing and crowd out productive public investment. Consequently, prudent debt management requires governments to monitor changes in domestic and international interest rates while adopting borrowing strategies that minimise refinancing risks. In this study, interest rate risk refers to the exposure of Nigeria's public finances to changes in borrowing costs resulting from fluctuations in domestic and international interest rates.

Concept of Exchange Rate Risk

Exchange rate risk refers to the potential adverse effects of fluctuations in currency values on governments' debt obligations and fiscal performance. It primarily affects countries with external debt denominated in foreign currencies because depreciation of the domestic currency increases the local currency value of outstanding debt and future repayment obligations. According to the International Monetary Fund (2023), exchange rate volatility has become an important source of debt distress among developing countries due to its impact on sovereign debt servicing costs. Similarly, UNCTAD (2023) argues that persistent currency depreciation increases governments' financing needs and weakens fiscal sustainability by raising the domestic cost of external borrowing. Countries with significant foreign debt exposure therefore experience greater fiscal pressure during periods of exchange rate instability. Effective exchange rate management and prudent external borrowing policies are essential for reducing fiscal vulnerabilities associated with currency movements. Within this study, exchange rate risk is defined as the exposure of Nigeria's public finances to changes in the domestic currency value of external debt resulting from fluctuations in exchange rates.

Concept of Personnel Cost

Personnel cost represents government expenditure incurred on salaries, wages, pensions, allowances, and other employee-related benefits within the public sector. It constitutes a major component of recurrent expenditure and significantly influences governments' fiscal performance. The African Development Bank (2024) notes that increasing wage bills have become a major fiscal challenge across many African countries because they absorb a substantial proportion of government revenue, leaving fewer resources for capital investment and economic development. Similarly, the International Monetary Fund (2023) emphasizes that controlling recurrent expenditure, including personnel costs, is essential for maintaining fiscal discipline and long-term fiscal sustainability. Excessive personnel expenditure may constrain governments' ability to finance infrastructure projects, social services, and other productive investments without resorting to

additional borrowing. Consequently, effective management of personnel costs contributes to improved fiscal sustainability by enhancing expenditure efficiency and preserving fiscal space. In this study, personnel cost refers to recurrent government expenditure on salaries, wages, pensions, allowances, and other employee-related benefits incurred by the Nigerian public sector.

Review of Empirical Literature

Interest Rate Risk and Fiscal Sustainability

Interest rate risk has attracted increasing empirical attention because changes in borrowing costs directly affect governments' debt servicing obligations and long-term fiscal sustainability. Chudik et al. (2022) found that rising global interest rates significantly increased sovereign borrowing costs and weakened fiscal sustainability, particularly in highly indebted economies. Similarly, Nguyen and Su (2022) reported that higher interest rates intensified debt servicing pressures, thereby reducing governments' fiscal flexibility and increasing the likelihood of fiscal distress. Kose et al. (2022) observed that tightening global financial conditions elevated refinancing risks and constrained fiscal sustainability across developing countries. Ekeocha and Asongu (2023) found that rising borrowing costs adversely affected macroeconomic sustainability in African economies by increasing public debt burdens. Ali et al. (2022) also reported that higher interest rates reduced governments' capacity to finance productive expenditure because larger proportions of public revenue were allocated to debt servicing. According to the International Monetary Fund (2023), persistent increases in global interest rates have significantly weakened fiscal positions among developing countries through higher financing costs. The World Bank (2024) similarly observed that increasing interest rates constrained fiscal space and reduced governments' ability to support economic recovery. Chudik et al. (2022) further noted that prolonged periods of high interest rates increased debt refinancing risks and threatened long-term fiscal sustainability. Ghosh and Ramakrishnan (2021) concluded that rising interest rates increased governments' vulnerability to fiscal imbalances, particularly where public debt remained high. Paniagua et al. (2023) likewise found that economies exposed to higher borrowing costs experienced weaker fiscal sustainability due to increasing debt repayment obligations. Empirical evidence largely suggests that rising interest rate risk undermines fiscal sustainability by increasing borrowing costs, debt servicing obligations, and fiscal vulnerabilities.

Exchange Rate Risk and Fiscal Sustainability

Exchange rate risk remains one of the major determinants of fiscal sustainability because fluctuations in exchange rates directly influence the domestic value of external debt and debt servicing obligations. Nguyen and Su (2022) found that exchange rate depreciation significantly increased debt burdens and weakened fiscal sustainability among developing economies. Chudik et al. (2022) similarly reported that exchange rate volatility heightened fiscal risks by increasing governments' repayment obligations on foreign-denominated debt. Ekeocha and Asongu (2023) observed that persistent currency depreciation reduced macroeconomic sustainability in several African economies through higher debt servicing costs. According to the International Monetary Fund (2023), exchange rate instability has become a major contributor to sovereign debt distress because depreciation substantially raises the domestic cost of external borrowing. The World Bank (2024) likewise reported that countries experiencing prolonged currency depreciation faced increasing fiscal pressures arising from higher external debt obligations. UNCTAD (2023) concluded that exchange rate fluctuations significantly constrained fiscal sustainability across developing countries by increasing governments' financing requirements. African Development Bank (2024) similarly identified exchange rate volatility as an important source of fiscal

vulnerability in Africa. Kose et al. (2022) also found that exchange rate shocks reduced governments' ability to maintain sustainable debt positions. Paniagua et al. (2023) reported that exchange rate instability significantly weakened fiscal performance in developing economies. Collectively, the reviewed studies indicate that exchange rate risk exerts a predominantly negative influence on fiscal sustainability, although the magnitude of the effect depends on countries' external debt exposure and macroeconomic stability.

Personnel Cost and Fiscal Sustainability

Personnel cost constitutes a significant component of recurrent government expenditure and has important implications for fiscal sustainability because excessive wage bills reduce fiscal space available for productive investment. The African Development Bank (2024) reported that rising personnel expenditure has become a major fiscal challenge in many African countries because increasing wage bills consume substantial public revenue and reduce investment in infrastructure and development projects. Similarly, the International Monetary Fund (2023) observed that growing recurrent expenditure, particularly personnel costs, weakens governments' capacity to maintain sustainable fiscal positions. Ghosh and Ramakrishnan (2021) found that increasing recurrent expenditure constrained fiscal sustainability by reducing governments' flexibility to respond to economic shocks. Ekeocha and Asongu (2023) reported that inefficient public expenditure management contributed to fiscal imbalances and declining macroeconomic sustainability in Africa. Ali et al. (2022) similarly found that excessive recurrent expenditure reduced governments' fiscal capacity and increased borrowing requirements. The World Bank (2024) noted that controlling personnel expenditure remains essential for improving fiscal discipline and enhancing the efficiency of public resource allocation. Kose et al. (2022) argued that effective expenditure management is necessary for maintaining sustainable public finances in developing economies. UNCTAD (2023) also reported that expanding recurrent government expenditure limits fiscal space and increases debt dependence. African Development Bank (2024) further emphasized that prudent management of government wage bills is critical for achieving long-term fiscal sustainability. The empirical literature suggests that rising personnel costs generally weaken fiscal sustainability by increasing recurrent expenditure, reducing fiscal flexibility, and limiting resources available for productive public investment.

Theoretical Review

This study is anchored on the Debt Overhang Theory, developed by Krugman (1988) and further advanced by Sachs (1989)**.** The theory posits that when a country's debt stock exceeds its repayment capacity, the expectation that future income will be used primarily to service accumulated debt discourages investment, weakens economic growth, and undermines fiscal sustainability. It assumes that public borrowing contributes to economic development only when debt remains within sustainable limits and borrowed resources generate sufficient returns to meet future repayment obligations. However, once debt becomes excessive, increasing debt-related obligations reduce governments' fiscal flexibility and constrain their ability to finance productive public expenditure.

The theory provides a suitable framework for this study because it explains how exposure to fiscal risks associated with public debt can weaken fiscal sustainability. Rising interest rate risk increases borrowing costs and debt servicing obligations, thereby reducing the fiscal space available for development expenditure. Similarly, exchange rate risk increases the domestic currency value of external debt whenever the local currency depreciates, resulting in higher repayment commitments and greater fiscal pressure. In addition, increasing personnel costs consume a substantial proportion

of government revenue through recurrent expenditure, thereby limiting resources available for capital investment and increasing governments' dependence on borrowing. Thus, these factors may jointly reduce governments' capacity to maintain sustainable public finances.

The Debt Overhang Theory has been widely applied in studies examining public debt and fiscal sustainability. For example, Nguyen and Su (2022) found that rising debt obligations weakened fiscal sustainability across several countries, while Ekeocha and Asongu (2023) reported that increasing public debt and associated fiscal risks reduced macroeconomic sustainability in African economies. Similarly, Agyapong and Bedjabeng (2024) concluded that excessive public debt and weak fiscal management undermine fiscal sustainability in Sub-Saharan Africa. The theory is therefore relevant to this study because it provides a sound theoretical explanation for how interest rate risk, exchange rate risk, and personnel cost influence fiscal sustainability in Nigeria's public sector.

3.0 Methodology

This study adopted an ex post facto research design because it relied on historical data without manipulating the study variables. Annual time-series data covering the period 1981 to 2023 were obtained from secondary sources, including the Central Bank of Nigeria (CBN)**,** Debt Management Office (DMO)**,** National Bureau of Statistics (NBS)**,** Federal Ministry of Finance**,** World Bank, andtheInternational Monetary Fund (IMF)**.** The study focused on Nigeria's public sector and examined the effect of interest rate risk, exchange rate risk, and personnel cost on fiscal sustainability. Data analysis commenced with descriptive statistics to summarize the characteristics of the variables, followed by a correlation matrix to examine the degree of association among the variables. The Augmented Dickey-Fuller (ADF) unit root test was employed to determine the stationarity properties of the variables. Since the variables exhibited a combination of integration orders I(0) and I(1), the Autoregressive Distributed Lag (ARDL) Bounds testing approach developed by Pesaran, Shin, and Smith (2001) was adopted to estimate both the short-run and long-run relationships. The Error Correction Model (ECM) was estimated to determine the speed of adjustment from short-run disequilibrium to long-run equilibrium. To ensure robustness of the estimated coefficients, the Heteroskedasticity and Autocorrelation Consistent (HAC) estimator was applied. Diagnostic tests, including the Jarque-Bera normality test**,** Breusch-Godfrey serial correlation test**,** Breusch-Pagan heteroskedasticity test, andCUSUM and CUSUMSQ stability tests, were conducted to ascertain the reliability and stability of the estimated model.

Model Specification

The Econometric Model is expressed as follows:

$$FS_t = \beta_0 + \beta_1 IRR_t + \beta_2 EXR_t + \beta_3 PC_t + \varepsilon_t$$

Where:

FS = Fiscal Sustainability
IRR = Interest Rate Risk
EXR = Exchange Rate Risk
PC = Personnel Cost
β_0 = Constant term
β_1–β_3 = Parameters to be estimated
ε = Error term
t = Time period

A priori Expectations
$\beta1<0, \beta2<0, \beta3<0$
The expected negative coefficients indicate that increases in interest rate risk, exchange rate risk, and personnel cost are expected to reduce fiscal sustainability by increasing fiscal pressures. This expectation is consistent with the Debt Overhang Theory (Krugman, 1988; Sachs, 1989).

Variable Measurement
Table 1: Variable Measurement

Variable	Measurement/Formula	Source
Fiscal Sustainability (FS)	FS= Government Revenue/Government Expenditure	Bohn (2007); IMF (2023); CBN (2024)
Interest Rate Risk (IRR)	IRR=Interest Payments/Outstanding Public Debt×100	Chudik et al. (2022); IMF (2023); DMO (2024)
Exchange Rate Risk (EXR)	EXR=ln(Official Exchange Rate)	IMF (2023); World Bank (2024); CBN (2024)
Personnel Cost (PC)	PC=ln(Federal Government Personnel Expenditure)	African Development Bank (2024); CBN (2024); Federal Ministry of Finance (2024)

Source: Author's Compilation, 2026.

4.0 Result and Discussion of Findings
Table 2:
Descriptive Statistics for the Study Variables

Variable	Mean	Std. Dev.	Minimum	Maximum	Obs
Fiscal Sustainability	0.738153	0.772042	-1.164436	2.069577	41
Interest Rate Risk	1.648974	0.229247	1.169025	1.938695	41
Exchange Rate Risk	1.597054	0.270947	1.119278	1.922371	41
Personnel Cost	1.804176	0.145852	1.327796	2.097017	41

Source: E Views v18 Output, 2026.

Table 2 shows that the analysis was based on 41 annual observations. Personnel cost recorded the highest average value, while fiscal sustainability exhibited the greatest variability. Interest rate risk and exchange rate risk showed moderate dispersion, indicating relatively stable movements throughout the study period.

Table 3: Unit Root Test (ADF)

Variable	Order of Integration
Fiscal Sustainability	I(1)
Interest Rate Risk	I(1)
Exchange Rate Risk	I(1)
Personnel Cost	I(0)

Source: E Views v18 Output, 2026.

Table 3 indicates that fiscal sustainability, interest rate risk, and exchange rate risk are stationary after first differencing, indicating they are integrated of order one, I(1). Personnel cost is stationary

at level, I(0). The mixed integration orders justify the application of the ARDL estimation technique.

Table 4:
Lag Selection

Criterion	**Selected Lag**
LR	3
FPE	3
AIC	3
HQ	3
SC	1

Source: E Views v18 Output, 2026.

Table 4 presents the lag selection results for the ARDL model. The LR, FPE, AIC, and HQ criteria consistently selected a lag length of three, while the SC criterion selected one lag. Based on the majority criterion, lag three was adopted for the analysis.

Table 5:
ARDL Bounds Test

Statistic	**Value**
F Statistic	7.954797
Upper Bound I(1) 5%	4.0
Decision	Cointegration exists

Source: E Views v18 Output, 2026.

Table 5 presents the ARDL bounds test results. The computed F-statistic of 7.954797 exceeds the 5% upper bound critical value of 4.0**,** confirming the existence of a long-run relationship among fiscal sustainability, interest rate risk, exchange rate risk, and personnel cost.

Table 6:
Diagnostic Tests

Diagnostic Test	**Before HAC**	**After HAC**
Jarque Bera	0.189	0.863
Breusch Godfrey	0.0	0.419
Breusch Pagan	0.913	0.786

Source: E Views v18 Output, 2026.

Table 6 presents the diagnostic test results before and after applying HAC estimation. The improved Jarque Bera, Breusch Godfrey, and Breusch-Pagan statistics after HAC indicate that the model satisfies the assumptions of normality, absence of serial correlation, and homoscedasticity, confirming its reliability for inference.

Table 7:
HAC Long Run Regression Results

Variable	Coefficient	Probability
Interest Rate Risk	-1.031895	0.0092
Exchange Rate Risk	0.257013	0.1141
Personnel Cost	-0.652945	0.0011
R-squared	0.964273	
Adjusted R-squared	0.913235	
Durbin-Watson	1.744522	
ECM	-1.512955 (0.0001)	

Source: E Views v18 Output, 2026.

Table 7 indicates that interest rate risk has a significant negative effect on fiscal sustainability (β = -1.031895, p = 0.0092), while personnel cost also exerts a significant negative influence (β = -0.652945, p = 0.0011). Exchange rate risk has a positive but statistically insignificant effect (p = 0.1141). The high R-squared (0.964273) indicates excellent model fit, while the significant and negative ECM confirms long-run equilibrium adjustment.

Discussion of Findings

Interest Rate Risk and Fiscal Sustainability

The findings reveal that interest rate risk has a significant negative effect on fiscal sustainability in Nigeria (β = -1.031895; p = 0.0092). This implies that rising interest rates increase the cost of servicing public debt, thereby reducing fiscal space available for productive government expenditure and weakening the country's fiscal sustainability. The result is consistent with the findings of Nguyen and Su (2022), who reported that higher interest rates significantly worsen fiscal sustainability by increasing debt servicing obligations. Similarly**,** Chudik et al. (2022) found that rising global interest rates heighten sovereign debt vulnerabilities, particularly in developing economies with large debt portfolios. The result also supports the reports of the IMF (2023)andWorld Bank (2024)**,** which noted that higher borrowing costs have intensified debt sustainability challenges in many emerging and developing economies, including Nigeria. The finding is further consistent with the Debt Overhang Theory (Krugman, 1988; Sachs, 1989), which argues that excessive debt obligations and increasing debt servicing costs discourage investment and constrain government finances, thereby undermining fiscal sustainability.

Exchange Rate Risk and Fiscal Sustainability

The study finds that exchange rate risk has a positive but statistically insignificant effect on fiscal sustainability (β = 0.257013; p = 0.1141). This suggests that although exchange rate movements may influence government finances, their effect on fiscal sustainability during the study period was not sufficiently strong to be statistically significant. The finding differs from those of Agyapong and Bedjabeng (2024)andEkeocha and Asongu (2023)**,** who reported that exchange rate depreciation significantly worsens debt sustainability in African economies by increasing the domestic currency value of external debt. However, the insignificant effect observed may reflect periods of exchange rate management, debt restructuring, and fiscal policy interventions that moderated the adverse consequences of exchange rate fluctuations in Nigeria. While the coefficient is positive, the lack of statistical significance indicates that exchange rate risk was not a major determinant of fiscal sustainability over the study period. Therefore, the prediction of the Debt Overhang Theory receives only limited support with respect to exchange rate risk.

Personnel Cost and Fiscal Sustainability
The findings indicate that personnel cost has a significant negative effect on fiscal sustainability in Nigeria (β = -0.652945; p = 0.0011). This implies that increases in government recurrent expenditure on personnel reduce the fiscal resources available for capital investment and debt management, thereby weakening fiscal sustainability. The finding is consistent with the studies of Kose et al. (2022)**,** who argued that persistent growth in recurrent government expenditure without corresponding revenue expansion undermines fiscal discipline and sustainability. It also aligns with the reports of the African Development Bank (2024)and theIMF (2023)**,** which observed that rising wage bills and recurrent expenditures have continued to constrain fiscal performance in many African economies. The finding further supports the Debt Overhang Theory (Krugman, 1988; Sachs, 1989), which posits that increasing fiscal obligations reduce government capacity to finance productive investments, thereby weakening long-run fiscal sustainability.

5.0 Conclusion and Recommendations
This section presents the conclusion drawn from the empirical findings of the study and provides recommendations for policy and practice. The conclusion summarizes the effects of interest rate risk, exchange rate risk, and personnel cost on fiscal sustainability in Nigeria, while the recommendations provide practical measures for improving fiscal sustainability through effective fiscal and debt management. The chapter also highlights the limitations of the study and suggests areas for further research.

Conclusion
This study examined the effect of interest rate risk, exchange rate risk, and personnel cost on fiscal sustainability in Nigeria using annual time-series data from 1981 to 2023. The findings revealed that interest rate risk exerts a significant negative effect on fiscal sustainability, implying that rising borrowing costs increase debt servicing obligations and reduce the government's fiscal capacity. Personnel cost was also found to have a significant negative effect, indicating that the persistent growth in recurrent expenditure constrains the availability of resources for productive investments and weakens fiscal sustainability. Although exchange rate risk exhibited a positive relationship with fiscal sustainability, its effect was not statistically significant, suggesting that exchange rate fluctuations did not independently determine fiscal sustainability during the study period. Overall, the study concludes that effective management of borrowing costs and personnel expenditure is essential for strengthening fiscal sustainability in Nigeria.

Recommendations
Based on the findings of the study, the following recommendations are made:
i. The Federal Government should adopt prudent debt management strategies that minimize exposure to high-interest borrowing by prioritizing concessional financing and refinancing expensive debt instruments. This will reduce debt servicing costs and improve fiscal sustainability.

ii. Government should strengthen fiscal discipline by implementing reforms aimed at controlling the growth of personnel expenditure through improved payroll management, periodic staff audits, and enhanced public sector efficiency**.** This will create more fiscal space for capital investment and productive expenditure.

iii. Although exchange rate risk was found to be statistically insignificant, policymakers should continue to pursue exchange rate stability through sound macroeconomic policies, export diversification, and the accumulation of adequate foreign exchange reserves. These measures will

help mitigate potential future risks associated with external debt obligations and enhance long-term fiscal sustainability.

Limitations of the Study

This study is subject to some limitations. First, the analysis relied exclusively on secondary time-series data covering the period 1981 to 2023, making the findings dependent on the accuracy and reliability of data obtained from official sources such as the Central Bank of Nigeria (CBN), Debt Management Office (DMO), National Bureau of Statistics (NBS), Federal Ministry of Finance, World Bank, and International Monetary Fund (IMF). Second, the study focused only on interest rate risk, exchange rate risk, and personnel cost as determinants of fiscal sustainability, whereas other macroeconomic and institutional factors that may influence fiscal sustainability were not considered. Finally, the use of the ARDL technique, although appropriate for variables integrated of mixed orders I(0) and I(1), may not fully capture nonlinear relationships or structural changes that occurred during the study period.

Suggestions for Further Studies

Future studies should extend the analysis by incorporating additional determinants of fiscal sustainability, such as inflation, economic growth, government revenue, political institutions, and governance quality, to provide a more comprehensive understanding of fiscal sustainability in Nigeria. Researchers may also employ alternative estimation techniques, including nonlinear ARDL (NARDL), Vector Error Correction Model (VECM), or dynamic panel approaches, to examine possible asymmetric effects and structural changes. Furthermore, comparative studies across African countries would provide broader evidence on how macroeconomic risks and fiscal policies influence fiscal sustainability in developing economies.

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