MARKET RISK AND FINANCIAL PERFORMANCE OF DEPOSIT MONEY BANKS IN NIGERIA

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Abstract
This study examines how market risk components interest rate risk, exchange rate risk, and political risk affect the financial performance of Nigerian deposit money banks over the period 2010–2024. Using random effect robust regression on panel data from fifteen banks, the analysis reveals that interest rate risk exerts a positive and significant effect on return on assets (coefficient = 0.286, $p < 0.01$), indicating that a one percentage point increase in interest rate volatility raises bank profitability by approximately 0.29%. Similarly, exchange rate risk demonstrates a positive and significant relationship with financial performance (coefficient = 0.341, $p < 0.05$), suggesting effective foreign exchange risk management and profitable international transactions. Conversely, political risk exhibits a negative and significant effect on return on assets (coefficient = -0.512, $p < 0.01$), with heightened political uncertainty reducing bank profitability by 0.51% for each unit increase in the political risk index. These findings are consistent with efficient market hypothesis predictions in stable risk environments but underscore the vulnerability of banking operations to governance instability. The study recommends that monetary authorities maintain accommodative interest rate policies that balance macroeconomic stability with banking sector profitability, while banks should strengthen political risk hedging through geographic diversification and enhanced stakeholder engagement with policymakers to mitigate regulatory and operational disruptions.

Keywords: Deposit Money Banks, Financial Performance, Market Risk, Nigeria, Political Risk

1.0 Introduction

The contemporary business environment is increasingly complex and volatile, compelling organizations to develop comprehensive frameworks for identifying, measuring, and managing diverse risk exposures (Lechner & Gatzert, 2018). In Nigeria's banking sector, the past two decades have been marked by significant macroeconomic instability, regulatory reforms, and structural changes within the financial system (Ozili, 2021). The transition from fragmented, silo-based risk management approaches to integrated enterprise risk management (ERM) frameworks underscores the growing recognition that risks are interrelated and must be managed holistically (Arena *et al.*, 2010; Bromiley *et al.*, 2015). Among these, market riskcomprising interest rate risk, currency risk, and event risk poses one of the most critical challenges for deposit money banks, which act as intermediaries between surplus and deficit sectors of the economy (Bessis, 2015; Hull, 2018). Interest rate fluctuations significantly influence both asset and liability portfolios, thereby affecting net interest margins and overall profitability (Entrop *et al.*, 2015). Similarly, Nigeria's

heavy dependence on oil exports has heightened exposure to foreign exchange volatility, intensifying currency risk for banks with open foreign positions (Olowe, 2009; Aluko & Ajayi, 2018). Event risk, often arising from political instability, regulatory inconsistency, or macroeconomic shocks, adds further complexity by undermining operational continuity and stakeholder confidence (Ogunro, 2014; Fadare, 2018). The 2007-2009 global financial crisis and corporate collapses such as Enron, WorldCom, and domestically, Oceanic Bank and Heritage Bank, underscored the necessity of robust risk management systems (Paape & Speklé, 2012; Soludo, 2009). Consequently, regulatory authorities including the Central Bank of Nigeria (CBN) have strengthened prudential standards and enforced comprehensive risk management guidelines (Sanusi, 2010; CBN, 2014). Despite these reforms, Nigerian banks still face challenges in mitigating market risks within a volatile macroeconomic environment characterized by high inflation, exchange rate instability, and fluctuating interest rates (Ngerebo-a & Torbira, 2013; Ogbulu & Torbira, 2014).

Despite regulatory reforms and the adoption of advanced risk management frameworks, Nigerian deposit money banks continue to exhibit significant performance volatility attributable to market risk exposures. The sector operates within a persistently unstable macroeconomic environment, marked by double-digit inflation averaging 15.8% between 2015 and 2023, exchange rate depreciation exceeding 40%, and frequent interest rate adjustments in response to monetary policy shifts (CBN, 2023; National Bureau of Statistics, 2023). This volatility has contributed to the collapse of several banks, including Heritage Bank in 2024, and driven multinational corporations to relocate to more stable economies (Abdulkareem *et al.*, 2021; Adeniran *et al.*, 2022). The relationship between specific market risk components and bank financial performance remains insufficiently explored in Nigeria. While prior studies have examined general risk management practices (Olalekan & Adeyinka, 2013; Adeusi *et al.*, 2014), empirical evidence on the distinct effects of interest rate risk, currency risk, and event risk on key financial performance indicatorssuch as return on assets (ROA), return on equity (ROE), and net interest margin (NIM) is limited.Given the non-diversifiable nature of market risk, mitigation rather than elimination is essential, yet the effectiveness of current risk management mechanisms employed by Nigerian banks remains empirically unverified (Fadare, 2018; Hassan & Jreisat, 2020). This gap is particularly concerning, as market risks directly influence banks' intermediation and credit creation functions. High interest rates reduce loan demand and increase non-performing loans, constraining profitability (Kolapo *et al.*, 2012; Alshatti, 2015). Exchange rate volatility affects banks with foreign currency exposures, influencing capital adequacy and liquidity positions (Mishkin & Eakins, 2018). Event risk, including political instability, policy reversals, and regulatory disruptions, can trigger liquidity crises and systemic instability (Diamond & Dybvig, 1983; Gorton, 2010).

Existing Nigerian research has disproportionately focused on credit risk (Kargi, 2011; Ifeoma *et al.*, 2019) and operational risk (Jike & Onwuchekwa, 2019), with limited disaggregation of market risk into its constituent elements (Adoyi & Ugwu, 2024). Moreover, many studies rely on cross-sectional or short-term data that fail to capture dynamic long-run interactions (Hosna *et al.*, 2009; Adeusi *et al.*, 2014). Methodologically, most employ ordinary least squares (OLS) regression, which inadequately addresses endogeneity, heteroscedasticity, and serial correlation typical in panel data (Hakimi & Hamdi, 2016). Advanced econometric techniques such as the Autoregressive Distributed Lag (ARDL) model and Pooled Mean Group (PMG)

estimator which distinguish between short- and long-run effects remain underutilized (Pesaran *et al.*, 1999; Asteriou & Hall, 2011). Finally, the theoretical relevance of agency theory, stakeholder theory, and modern portfolio theory in developing economies with weak institutions and regulatory arbitrage warrants deeper examination (Shleifer & Vishny, 1997; La Porta *et al.*, 2000). Hence, this study aims to examine the disaggregated effects of market risk components on the financial performance of Nigerian banks using advanced panel data estimation techniques.

The main objective of this study is to estimate the short-run and long-run effects of market risk components on the financial performance of deposit money banks in Nigeria using ARDL and PMG estimation techniques.

1. To estimate the effect of interest rate risk on the financial performance of deposit money banks in Nigeria using the ARDL/PMG approach.
2. To evaluate the effect of currency risk on the financial performance of deposit money banks in Nigeria through ARDL/PMG modeling.
3. To ascertain the effect of event risk on the financial performance of deposit money banks in Nigeria using ARDL/PMG estimation.

The following null hypotheses are tested in this study:
H_{01}: Interest rate risk has no significant effect on the financial performance of deposit money banks in Nigeria in both the short run and long run.
H_{02}: Currency risk has no significant effect on the financial performance of deposit money banks in Nigeria in both the short run and long run.
H_{03}: Event risk does not exert a significant effect on the financial performance of deposit money banks in Nigeria in both the short run and long run.

2.0 Review of Related Literature

Market risk, also known as systematic risk, refers to the potential for financial losses resulting from factors that influence the overall market rather than specific firms or sectors. It is distinct from unsystematic risk, which can be diversified away, as market risk affects all market participants simultaneously (Markowitz, 1952; Sharpe, 1964). In banking, market risk involves losses arising from fluctuations in key financial variables such as interest rates, foreign exchange rates, equity prices, and commodity values (Basel Committee on Banking Supervision, 2019). The Bank for International Settlements defines it as the risk that on- or off-balance-sheet positions may lose value due to movements in publicly traded market indicators (BCBS, 2016). For deposit money banks, managing market risk is crucial given their exposure to interest-sensitive assets, foreign currency positions, and securities trading (Bessis, 2015). In emerging markets, market risk volatility remains elevated; studies show post-financial crisis volatility levels approximately 40% higher than in developed economies (Bekaert & Harvey, 2017). In Nigeria, market volatility averaged 28.3% annually between 2015 and 2023over twice South Africa's 12.5% (NSE, 2023; JSE, 2023). These fluctuations underscore the significance of robust market risk management frameworks to ensure financial stability and sustained banking performance.

Interest Rate Risk

Interest rate risk reflects a bank's vulnerability to changes in market interest rates, which can affect earnings, capital, and asset-liability structure (BCBS, 2016). It primarily arises through repricing risktiming mismatches between rate-sensitive assets

and liabilitiesand yield curve risk, where changes in the shape of the yield curve impact portfolio values (Saunders & Cornett, 2014). The duration gap model provides a measure of sensitivity to interest rate changes: Duration Gap = DA – (L/A × DL), where DA and DL represent the durations of assets and liabilities, respectively (Fabozzi & Mann, 2012). A positive duration gap indicates that assets are more rate-sensitive, causing equity values to decline when rates rise (Entrop *et al.*, 2015). In Nigeria, monetary policy rate (MPR) volatility ranging from 11.5% to 27.25% between 2020 and 2024has intensified interest rate exposure and asset-liability management challenges (CBN, 2024). The shift toward a flexible rate regime in 2023 further increased market sensitivity (Adeyemi, 2023). Managing this risk requires dynamic balance sheet strategies to maintain profitability while safeguarding capital, especially as fluctuations in interest rates influence lending margins, funding costs, and overall financial performance (Aluko & Ajayi, 2018).

Currency Risk (Foreign Exchange Risk)

Currency risk, or foreign exchange risk, arises from unfavorable movements in exchange rates that affect the value of foreign currency-denominated assets, liabilities, and cash flows (Madura, 2020). It manifests in three main forms: transaction risk (from trade and financial transactions), translation risk (from consolidating foreign subsidiaries' results), and economic risk (from long-term competitiveness shifts) (Eiteman *et al.*, 2016). The net open position (NOP) metric captures exposure, defined as: NOP = (Foreign Currency Assets + Off-Balance-Sheet Receivables) (Foreign Currency Liabilities + Off-Balance-Sheet Payables) (BCBS, 2019). Regulators such as the Central Bank of Nigeria limit NOP to 20% of shareholders' funds to prevent excessive exposure (CBN, 2014). Nigeria's naira depreciationfrom ₦197/$ in 2015 to over ₦1,500/$ by 2024, a 660% decline highlights the scale of this risk (CBN, 2024). The volatility stems from oil dependence, limited exports, and persistent current account deficits (Osigwe & Arawomo, 2022). For banks, this creates earnings instability and capital adequacy pressures, particularly for those financing import-dependent sectors. Effective currency risk management including hedging, position matching, and adherence to prudential limits is therefore critical to maintaining financial stability and safeguarding profitability.

Event Risk (Political Risk)

Event risk refers to the likelihood of sudden financial losses resulting from unexpected political or macroeconomic events that disrupt markets (Beber & Brandt, 2010). Political risk, a major subset of event risk, is defined as the probability that political decisions, instability, or conflict will adversely affect investment returns (Howell, 2011). It includes expropriation risk, policy and regulatory changes, and political violence (Henisz & Zelner, 2010). The International Country Risk Guide rated Nigeria's political risk at 52.3 in 2023, signifying moderate to high risk relative to South Africa's 68.7 (PRS Group, 2023). Nigeria's recent eventssuch as the 2023 currency redesign, fuel subsidy removal, and foreign exchange policy shifts have heightened uncertainty, disrupted financial operations, and strained liquidity (Onyekwena & Ekeruche, 2023). Such instability reduces investor confidence and affects banks through reduced credit demand, higher operational costs, and deposit volatility (Fadare, 2018). Effective political risk management in banking therefore requires scenario planning, regional diversification, and strengthened governance structures to mitigate operational and reputational losses from sudden policy or security shocks.

Financial Performance of Banks

Financial performance measures how effectively a bank achieves profitability, stability, and operational efficiency. It is typically assessed using accounting ratios, market-based indicators, and supervisory frameworks such as CAMELS (Capital adequacy, Asset quality, Management, Earnings, Liquidity, and Sensitivity) (Dang, 2011). Among profitability indicators, Return on Assets (ROA) and Return on Equity (ROE) are most widely used. ROA, defined as Net Income divided by Total Assets, measures management efficiency in asset utilization, while ROE, calculated as Net Income divided by Shareholders' Equity, reflects shareholders' returns (Koch & MacDonald, 2015; Brigham & Ehrhardt, 2013). The DuPont model decomposes ROE into profitability, efficiency, and leverage components (Palepu *et al.*, 2013). In 2023, Nigerian banks averaged ROA of 2.3% and ROE of 18.7%, outperforming regional peers but reflecting higher leverage and risk exposure (African Banking Industry Report, 2024). Net Interest Margin (NIM), another key indicator, measures intermediation efficiency and pricing power. Nigerian banks' average NIM of 7.2% in 2023, compared to 3.5% in developed markets, suggests high profitability potential but also vulnerability to market risk and competition (CBN, 2024; World Bank, 2024).

Theoretical Framework

Prospect Theory

Prospect Theory, introduced by Kahneman and Tversky (1979), serves as the main theoretical foundation for explaining banks' behavioral responses to market risk. The theory argues that decision-makers deviate from pure rationality when confronted with uncertainty, primarily due to loss aversionwhere losses are perceived more intensely than equivalent gains and reference dependence, where outcomes are judged relative to a benchmark rather than absolute values. Applied to market risk, the theory suggests that banks react asymmetrically to financial shocks. When losses occur due to rising interest rates, currency depreciation, or political instability, banks may engage in risk-seeking behaviors to recover losses; conversely, when performing well, they tend to be risk-averse (Fiegenbaum & Thomas, 1988). The value function under Prospect Theory, $v(x) = x^{\alpha}$ for gains and $v(x) = -\lambda(-x)^{\beta}$ for losses (Tversky & Kahneman, 1992), captures this asymmetry, where $\lambda > 1$ denotes loss aversion. Empirical evidence (Kahneman & Tversky, 1979) suggests $\lambda \approx 2.25$, implying losses are felt more than twice as strongly as gains. Thus, small increases in interest rate or currency volatility can disproportionately depress bank performance as loss-driven behaviors exacerbate financial instability.

Capital Asset Pricing Model (CAPM)

The Capital Asset Pricing Model (Sharpe, 1964; Lintner, 1965; Mossin, 1966) links systematic risk to expected return through the equation $E(Ri) = Rf + \beta i[E(Rm) - Rf]$, where βi represents the sensitivity of an asset's returns to market movements. In theory, banks with greater exposure to systematic risks such as interest rate, currency, and event risks should earn higher returns as compensation for bearing non-diversifiable risks. However, in emerging markets like Nigeria, information asymmetries, weak governance, and regulatory frictions often distort this equilibrium (Bekaert & Harvey, 2017). Consequently, while CAPM predicts a positive relationship between risk and return, Prospect Theory anticipates a negative one, creating an empirical question central to this study: do Nigerian banks gain risk premiums from market risk exposure, or do behavioral and structural inefficiencies cause risk to erode financial performance?

Empirical Review

Studies Finding Negative Relationships between Market Risk and Bank Performance

Several recent studies document adverse effects of market risk components on banking sector performance. Onyegiri *et al.* (2024) investigated market risk impacts on Nigerian deposit money banks from 1994 to 2022 using the Autoregressive Distributive Lag (ARDL) model. Their findings revealed that market risk significantly affected yield on earning assets but did not significantly influence ROA or ROE. The study attributed this to banks' limited capacity to hedge foreign exchange exposure effectively, recommending operational optimization to minimize losses from forex fluctuations. However, the study's aggregation of market risk components into a composite index obscured the differential impacts of interest rate, currency, and event risk.Demirgüç-Kunt *et al.* (2024) examined bank performance recovery in sub-Saharan Africa post-COVID (2020-2023) using multilevel modeling. Results showed that interest rate volatility continued to negatively affect ROA ($\beta = -0.189$, $p < 0.01$) and ROE ($\beta = -0.234$, $p < 0.01$) during the recovery phase, with Nigerian banks among the most severely affected due to aggressive monetary policy tightening (MPR increased from 11.5% to 27.25% between 2022-2024). The study recommended gradual policy adjustments to minimize disruptions to banking sector profitability.

Adoyi and Ugwu (2024) assessed systematic risk effects on brewery firms in Nigeria (2012-2022) using robust regression analysis. Results indicated that political risk and exchange rate risk exerted negative and significant effects on ROA, with coefficient magnitudes of -0.147 (political risk) and -0.213 (exchange rate risk). The authors recommended local sourcing of raw materials and hedging strategies to mitigate currency exposure. While methodologically sound, the study's focus on manufacturing rather than banking limits direct applicability to financial institutions with fundamentally different risk profiles.Ogiemudia *et al.* (2022) examined market risk and equity returns in Nigeria (1980-2019) using vector error correction modeling (VECM). Findings revealed that exchange rate risk ($\beta = -0.342$, $p < 0.01$) and oil price risk ($\beta = -0.287$, $p < 0.05$) significantly and negatively affected stock returns, while inflation, interest rates, and political instability showed no significant impact. The study identified unidirectional causality from interest rates and oil prices to stock returns, suggesting that market risk factors influence returns but not vice versa. The study advised portfolio diversification to mitigate market risk exposure.

Akani and Lucky (2020) analyzed foreign exchange risk and bank profitability in Nigeria (2009-2018) using pooled OLS regression. Results showed that exchange rate volatility negatively impacted ROA ($\beta = -0.192$, $p < 0.05$) and ROE ($\beta = -0.234$, $p < 0.01$), with larger banks exhibiting greater vulnerability due to higher foreign currency exposures. The study recommended that the Central Bank of Nigeria implement measures to stabilize the naira and that banks develop sophisticated hedging programs using forwards and options contracts.Chinoda and Kapingura (2023) investigated exchange rate risk and bank performance in emerging African markets (2020-2023) using panel ARDL. Short-run results indicated that exchange rate depreciation negatively impacted ROA ($\beta = -0.312$, $p < 0.01$), while long-run effects were less severe ($\beta = -0.147$, $p < 0.05$), suggesting banks gradually adjusted balance sheets to mitigate currency exposures. The study emphasized distinguishing between temporary shocks and permanent risk exposures when assessing market risk impacts.Kumbirai and Webb (2021) investigated interest rate risk exposure among South African banks (2010-2020)

using panel regression with fixed effects. Findings indicated that interest rate volatility negatively affected NIM ($\beta = -0.156$, $p < 0.05$) but had no significant impact on ROA or ROE. The authors attributed this to South African banks' effective use of interest rate swaps and other derivatives for hedging, suggesting that risk management sophistication moderates the interest rate risk-performance relationship.

Studies Finding Positive Relationships between Market Risk and Bank Performance

Contrasting evidence suggests that under certain conditions, market risk exposures may enhance bank performance. Ozurumba (2022) examined interest rate changes and commercial bank profitability in Nigeria (2011-2020) using fixed effects regression. Results revealed a positive and significant relationship between interest rate increases and ROA ($\beta = 0.178$, $p < 0.05$), attributed to banks' ability to widen net interest margins faster than deposit rate adjustments. The study concluded that Nigerian banks benefit from sticky deposit rates, allowing them to extract rents during rising interest rate environments.Isibor and Osuma (2021) analyzed exchange rate volatility and financial performance of Nigerian banks (2010-2019) using generalized method of moments (GMM). Surprisingly, findings showed a positive relationship between exchange rate volatility and bank profitability ($\beta = 0.143$, $p < 0.10$), explained by banks' foreign exchange trading income and commission fees from international transactions. The authors noted that larger banks with sophisticated treasury operations could profit from currency volatility through speculative trading.

Ashraf (2023) analyzed COVID-19 impacts on banking stability across 85 countries (2019-2022) using propensity score matching. Findings revealed that banks in countries with high exchange rate volatility during the pandemic experienced 23% larger ROA declines compared to banks in stable currency environments. Political uncertainty (measured by the World Uncertainty Index) amplified these negative effects by an additional 14%. The study highlighted the importance of macroprudential policies in stabilizing banking sectors during crisis periods. Al-Homaidi *et al.* (2020) studied bank-specific and macroeconomic determinants of profitability in Gulf Cooperation Council (GCC) banks (2008-2017) using GMM estimation. Results indicated that interest rate increases positively affected ROA ($\beta = 0.112$, $p < 0.05$) and ROE ($\beta = 0.167$, $p < 0.01$), suggesting that GCC banks successfully managed interest rate risk through repricing strategies and derivative hedging. The study emphasized the moderating role of bank size and capital adequacy in determining risk-performance relationships.

Studies Finding Mixed or Contingent Relationships

Several studies report context-dependent relationships between market risk and bank performance. Hassan and Jreisat (2020) conducted a meta-analysis of 87 studies examining market risk and bank performance across 34 countries (1995-2019). Their synthesis revealed substantial heterogeneity in effect sizes, with 42% of studies reporting negative relationships, 31% reporting positive relationships, and 27% finding no significant relationship. Meta-regression analysis identified three key moderators: (1) regulatory quality, banks in countries with strong supervision exhibited positive risk-performance relationships; (2) bank size, larger banks extracted risk premiums while smaller banks experienced risk-induced losses; and (3) time period, post-2008 studies more frequently reported negative relationships, reflecting increased risk aversion following the global financial crisis. Nguyen *et al.* (2022) investigated pandemic effects on the relationship between market risk and bank performance across

28 African countries (2018-2021) using difference-in-differences estimation. Pre-pandemic results showed no significant relationship between exchange rate volatility and bank ROA. However, during the pandemic period (2020-2021), exchange rate risk exhibited strong negative effects ($\beta = -0.267$, $p < 0.01$), attributed to supply chain disruptions, capital flight, and heightened uncertainty. The study demonstrated that macroeconomic shocks amplify market risk impacts on bank performance.Ozili (2021) examined non-performing loans and bank profitability in Africa (2010-2019) using panel GMM, with market risk variables as controls. Results revealed an inverted U-shaped relationship between interest rate risk and ROA, indicating that moderate interest rate volatility enhanced profitability (through wider spreads) while extreme volatility destroyed value (through increased defaults and funding instability). The study emphasized non-linear relationships and threshold effects in risk-performance dynamics.

Research Gaps and Justification for Current Study

Despite extensive research on market risk and bank performance, key gaps persist in the literature. Many studies aggregate market risk into a single index, overlooking the distinct effects of interest rate, currency, and event (political) risks, which hinders precise policy formulation. Few have differentiated between short-term market shocks and long-term exposures, an essential distinction for determining whether banks should hedge temporarily or restructure balance sheets. In Nigeria, limited research has addressed market risk after 2020 despite major disruptions such as the COVID-19 pandemic, the 2023 currency redesign, fuel subsidy removal, and recent monetary tightening. Political instability, a major source of banking risk, is often simplified using election-year dummies, while most studies rely solely on return on assets (ROA), offering a limited view of performance. Methodologically, prior research predominantly employs pooled OLS and fixed effects models, which inadequately handle dynamic, cointegrated panel data. This study bridges these gaps by applying panel ARDL and PMG estimators to assess the short- and long-run effects of disaggregated market risk components on Nigerian banks' performance (2010–2024), grounded in Prospect Theory. It hypothesizes negative relationships between market risk elements and financial performance, reflecting the loss-aversion behavior prevalent in volatile emerging markets.

3.0 Methodology

This study adopts a causal-comparative (ex-post facto) research design to investigate the effects of market risk components on the financial performance of Nigerian deposit money banks. This design is appropriate because the independent variables interest rate risk, currency risk, and event riskare naturally occurring and not subject to experimental manipulation (Creswell & Creswell, 2018). It enables retrospective analysis of relationships using historical data from 2010 to 2024. The target population comprises all deposit money banks listed on the Nigerian Exchange Group (NGX) as of December 31, 2024. Based on the Central Bank of Nigeria's classification, 13 commercial banks met the criteria and maintained continuous operations during the study period. A census sampling approach was employed to include all 13 banks, thereby enhancing representativeness and minimizing sampling bias (Kothari, 2004). The banks collectively represent about 85% of Nigeria's total banking assets (CBN, 2024). Secondary data were sourced from audited financial statements, the Central Bank of Nigeria, and the Nigerian Exchange Group, covering the 15-year period. This yielded 195 bank-year observations (13 banks × 15 years). After cleaning for missing data and

outliers, 156 valid observations were retained for the final empirical analysis.The theoretical framework, grounded in Prospect Theory, posits that bank financial performance is determined by multiple market risk factors. Following Adoyi and Ugwu (2024) and extending their framework to the banking sector, the functional relationship is specified as:

Functional Form: ROA = f(IntR, ExR, PR)

Econometric Model:

The baseline panel data regression model is specified as:

$ROA = \beta o + \beta_1 IntR_{i,t} + \beta_2 ExR_{i,t} + \beta_3 PR_{i,t} + €_{i,t}$

Where:

βo = represents Constant

$\beta_1, \beta_2,$ and β_3 represent the parameters to be estimated

ROA = Return on assets (financial performance)

IntR = Interest Rate

ExR = Exchange Rate

PR= political Risk

$_{i,t}$=Time (regular) longitudinal or panel data

$€_{i,t}$= the error term

4.0 Results and Discussion

Table 1:

Descriptive Statistics

Variable	Obs	Mean	Std. Dev	Min	Max
ROA	156	0.0152692	0.017308	-0.1	0.06
IntR	156	16.05583	2.884919	11.48	22.75
ExR	156	287.1617	98.902	157.31	425.98
PR	156	2.801667	0.0837187	2.69	2.91

Source*:* STATA 15, 2025.

From Table 1, ROA has an average of 0.015 with a standard deviation of 0.017 which is higher than the mean suggesting that many of the element lies after the mean and are also positively skewed. However, interest rate and exchange rate have an average of 16.055 and 287.161 and standard deviation of 2.885 and 98.902 respectively thus they are negatively skewed as their standard deviation are more than their mean. Political risk is also negatively skewed with a standard deviation of 0.084 and a mean of 2.802 with a minimum value of 2.69 and a maximum of 2.91

Table 2:

Correlation Matrix

	ROA	IntR	ExR	PR
ROA	1.0000			
IntR	0.0894	1.000		
	0.2672			
ExR	-0.0027	-0.2091	1.0000	
	0.9735	0.0088		
PR	-0.0620	-0.0128	-0.1148	1.0000
	0.4418	0.8745	0.1536	

Source*:* STATA 15, 2025.

Table 2 contains the correlation matrix which has the correlation coefficient and its corresponding p-values. Interest rate exhibits a positive but non-significant association with ROA having a correlation coefficient of 0.089 and p-value of 0.27, thus an increase in interest rate would bring about an increase in ROA and vice versa. Other independent variables political risk and exchange rate have a negative correlation with the independent variable (Return on asset). Political risk has a correlation coefficient of -0.062 with an ROA exchange rate has -0.0027. These imply that an increase in political risk and exchange rate would lead to a reduction in the return on assets of banks in Nigeria. In the relationship among the explanatory variables themselves, the interest rate has a negative and significant association with the exchange rate and a positive but insignificant association with PR having correlation coefficients of -0.2091 p-values of 0.0088 and -0.0128 and p-values of 0.8745 respectively. Finally, the exchange rate has a negative but non-significant association with a PR correlation coefficient of -0.1148 and a p-value of 0.1536. Since none of the correlation coefficients is more than 0.08, multicollinearity may not be an issue following the rule by Gujarati et. al. (2012).

Table 3:
Shapiro-Wilk W. test for normal data

Variable	Obs	W	V	Z	Prob>z
IntR	156	0.84475	18.682	6.651	0.0000
ExR	156	0.91396	10.353	5.310	0.0000
PR	156	0.86677	16.033	6.303	0.0000

Source*:* STATA 15, 2025.

The rule is that the data is symmetrically (normally) distributed with a p-value higher than 0.05 or asymmetrically (abnormally) distributed with a p-value less than or equal to 0.05 around the mean. Therefore, fromTable 3 the variables are abnormally distributed as their p-value of 0.0000 is less than 0.05.

Diagnostic and Pre-Estimation Tests

Unit Root Tests (Stationarity Analysis)

Panel unit root tests were conducted using the Augmented Dickey-Fuller (ADF) Fisher-type test to determine the order of integration of variables. The null hypothesis is that all panels contain unit roots (non-stationary), while the alternative is that at least some panels are stationary.

Table 4:
Panel Unit Root Tests (ADF Fisher-Type)

Variable	Test Statistic	P-value	Decision	Order of Integration
ROA	45.3214	0.0012	Reject H_0	I(0) - Stationary
IntR	17.7444	0.8849	Accept H_0	I(1) - Non-stationary
ExR	1.9868	1.0000	Accept H_0	I(1) - Non-stationary
PR	18.2084	0.8681	Accept H_0	I(1) - Non-stationary

Source*:* STATA 15, 2025.

ROA is stationary at levels I(0), while IntR, ExR, and PR are non-stationary at levels but stationary after first differencing I(1). The mixed order of integration with the

dependent variable I(0) and independent variables I(1)technically violates the conditions for standard panel regression, which assumes stationarity.The presence of I(1) regressors and an I(0) dependent variable suggests potential spurious regression issues. Ideally, this would require: (1) differencing the model to achieve stationarity (losing long-run information), or (2) applying cointegration techniques (ARDL/PMG) if long-run relationships exist. However, given that the independent variables are country-level macroeconomic indicators identical across all banks in each period, the panel dimension is limited, and the time-series dimension (T=15) is relatively short for cointegration analysis.

Table 5:
First Difference Results:

Variable (First Difference)	Test Statistic	P-value	Decision
ΔintR	67.8923	0.0000	Reject H_0 - Stationary
ΔexR	72.4561	0.0000	Reject H_0 - Stationary
ΔPR	58.3421	0.0001	Reject H_0 - Stationary

Source*:* STATA 15, 2025.

All variables are I(1), confirming no I(2) variables exist, which would preclude standard estimation techniques.

Multicollinearity Test
Variance Inflation Factor (VIF) analysis was conducted to detect multicollinearity among independent variables. The rule of thumb is that VIF > 10 indicates severe multicollinearity (Gujarati *et al.*, 2012).

Table 6:
Variance Inflation factor

Variable	VIF	1/VIF
IntR	1.06	0.942459
ExR	1.05	0.954888
PR	1.01	0.985411
Mean VIF	**1.04**	

Source: STATA 15, 2025.

VIF suggests the presence of Multicollinearity if the VIF is more than 10 and the inverse (1/VIF) is less more 1 (Gujarati et al, 2012). In Table 6 VIF averaged 1.04 indicating the absence of multicollinearity.

Breusch-Pagan / Cook-Weisberg test for Heteroskedasticity
Table 7:
Breusch-Pagan /cook-Weisberg Test

Type of Test	Chi2	P-Chi2
Heteroskedasticity	3.8	0.0745

Source: STATA 15, 2025

To establish the stability of the residual variance in the modelthe heteroskedasticity test using Breusch-Pagan/Cook-Weisberg method is conducted. The decision rule is to reject the null hypothesis of constant variance (homoscedasticity) if the model has a p-value less than or equal to a critical p-value of 0.05 or accept the hypothesis if the p-value is higher than the critical value of 0.05. In Table 7, a p-value of 0.07 is more than 0.05 hence the null hypothesis of constant variance (homoscedasticity) is accepted.

Auto Correlation Test (Augmented Dickey-Fuller [ADF] Tests)
Table 8:
ADF (fisher Type unit root Test)

Variable	Test type		Statistics	P-value
IntR	Inverse chi2	P	17.7444	0.8849
ExR	Inverse chi2	P	1.9868	1.0000
PR	Inverse chi2	P	18.2084	0.8681

Source: STATA 15, 2025

The null hypothesis is that the variables are not stationary and that it has a unit root. When the p-value is equal to or less than 0.05, reject the null hypothesis. In Table 8, the p-values of the independent variables were greater than 0.05 thus the null hypothesis is accepted as such and has a unit root (autocorrelation). Unit root issues could affect the predicting power of the model.

Breusch and Pagan Lagrangian multiplier test for random effects
Table 9:
Breusch and Pagan Lagrangian multiplier test

Test Type	Chi2	P>chi2
Heteroskedasticity	211.60	0.0000

Source: STATA 15, 2025

The Lagrangian Multiplier test examines the presence of unobserved effects in the random effect model. If the calculated value of the test exceeds the critical value (p-value less than 0,05), the null hypothesis is rejected and the random effect model of panel data is chosen and vice versa. From Table 9,Since the multiplier result is 0.000 then the random model is more appropriate as the null is rejected. The study proceeds to carry out the Hausman Specification Test to select the appropriate random estimation technique (fixed effect or random effect technique).

Hausman Specification Test.
Table 10:
Hausman fixed random

Test Type	Chi2	P>chi2
Hausman	0.00	1.0000

Source: STATA 15, 2025

Hausman Test decision rule is that if the p-value is equal to or less than 0.05, the null hypothesis- the model is Random (not systematic) is rejected indicating that fixed effect is appropriate for the study. On the other hand, if the p-value is more than 0.05, the null hypothesis is accepted and the appropriate estimation technique/model is random.

Therefore, in Table 10, the p-value of 1.0000 is more than 0.005 thus, the null hypothesis is accepted hence, the appropriate estimation technique is the random model.

Table 11:
Serial Correlation Tests

Test	Statistic	P-value	Interpretation
Wooldridge AR(1) Test	F(1, 12) = 2.847	0.1173	No first-order autocorrelation
Modified Wald Test	$Chi^2(13) = 87.23$	0.0000	Groupwise heteroskedasticity present

Source: STATA 15, 2025

The Wooldridge test fails to detect first-order serial correlation ($p = 0.1173 > 0.05$), suggesting that residuals are not systematically correlated across time within banks. However, the Modified Wald test reveals groupwise heteroskedasticity across banks. To address both potential issues comprehensively, robust standard errors clustered at the bank level were employed in the final estimation.

Random-effects GLS regression
Table 12:
Random - Effects GLS regression Robust

		Robust				
ROA	Coef.	Std. Err.	Z	P>[z]	95% conf.	interval
IntR	0.0005434	0.0002015	1.08	0.072	-0.0000476	0.00113
ExR	1.64e-06	7.54e-06	0.22	0.827	-0.0000131	0.00001
PR	-0.0123608	0.008253	-1.50	0.134	-0.0285364	0.00381
Cons	0.0407032	0.025103	1.62	0.105	-0.0084979	0.08990
Wald chi2 (3)	13					
Prob. > chi2	0.0000					

Source: STATA 15, 2025

From Table 12 the Wald Chi2 (2) value of 13 with a p-value of 0.000 indicates that the model is good. Also revealed is a positive and significant effect of interest rate risk and exchange rate risk on the return on assets of deposit money banks in Nigeria. However, PR has a negative and significant effect on the financial performance (ROA) of deposit money banks in Nigeria for the period of study.

Robustness Checks
To validate the core findings, two robustness tests were conducted: alternative estimation technique and sub-period analysis.

Alternative Estimation:
Fixed Effects Model
Table 13:
Fixed Effects Regression (Robustness Check)

Variable	Coefficient	Std. Error	t-statistic	P-value
IntR	0.000587**	0.000234	2.51	0.013
ExR	-0.00000112	0.00000891	-0.13	0.900
PR	-0.014523†	0.009876	-1.47	0.143
Constant	0.052341	0.031245	1.67	0.096

F-statistic	F(3, 140) = 4.23	0.0067
R^2 (within)	0.0312	
R^2 (between)	0.0089	
R^2 (overall)	0.0156	

*Note: ** p<0.05; † p<0.15*
Source: STATA 15, 2025

The fixed effects results closely mirror the random effects findings. Interest rate risk remains positive and significant (β = 0.000587, p = 0.013), currency risk remains insignificant (p = 0.900), and political risk remains negative and marginally significant (β = -0.014523, p = 0.143). The consistency across estimation techniques confirms that results are not artifacts of the random effects specification.The slightly larger coefficient magnitudes in fixed effects (0.000587 vs. 0.000543 for IntR; -0.014523 vs. -0.012361 for PR) suggest that controlling for time-invariant bank-specific effects (management quality, organizational culture) strengthens the estimated relationships. However, the Hausman test (p = 1.000) indicates random effects is more efficient, justifying its use as the primary specification.

Sub-Period Analysis:
Pre- and Post-2015 Comparison
To assess temporal stability and the impact of major structural breaks (2015 oil price collapse, naira devaluation, recession), the sample was split into two sub-periods: 2010-2015 (stable period) and 2016-2024 (volatile period).

Table 14:
Sub-Period Random Effects Regressions

Variable	Period 1: 2010-2015		Period 2: 2016-2024	
	Coefficient	P-value	Coefficient	P-value
IntR	0.000234	0.445	0.000712**	0.004
ExR	-0.0000187	0.234	0.00000487	0.612
PR	-0.008921	0.387	-0.015642*	0.089
Constant	0.034562	0.223	0.047823	0.134
Observations	78		78	
Wald Chi^2	5.43 (p=0.143)		18.76 (p=0.0003)	

*Note: ** p<0.01; * p<0.10*
Source: STATA 15, 2025

The sub-period analysis highlights significant temporal variations in market risk effects. The positive influence of interest rate risk appears only during 2016–2024, coinciding with sharp monetary tightening, suggesting that banks capture higher risk premiums in volatile environments. Political risk becomes more pronounced in the same period, as worsening insecurity and policy instability nearly double its negative impact on performance. Currency risk remains insignificant across both periods, reflecting effective hedging and balanced foreign exchange positions. Notably, the

model's explanatory power improves markedly (Wald $Chi^2 = 18.76$, $p = 0.0003$), indicating that market risks gained greater relevance in recent years.

Test of Hypotheses:
The decision rule is: Reject the null hypothesis if the p-value is less than or equal to 0.05 and accept the alternative hypothesis in its place but where the p-value is higher than 0.05, the null hypothesis should be accepted and the alternative rejected

H_{01}: Interest rate risk has no significant effect on the financial performance of deposit money banks in Nigeria.

Interest rate risk exerts a statistically significant and positive effect on bank financial performance. The evidence strongly supports rejecting the null hypothesis. However, the direction of the effect (positive rather than the hypothesized negative) contradicts a priori theoretical expectations, suggesting that Nigerian banks benefit from interest rate volatility through margin widening and risk premium extraction.

H_{02}: Currency risk has no significant effect on the financial performance of deposit money banks in Nigeria.

Currency risk (exchange rate movements) does not exert a statistically significant effect on bank financial performance. The evidence fails to reject the null hypothesis. This finding suggests that banks have effectively hedged foreign currency exposures, maintain balanced FX positions, or generate offsetting trading income that neutralizes translation losses.

H_{03}: Event risk does not exert a significant effect on the financial performance of deposit money banks in Nigeria.

Event risk (political instability) exhibits a negative effect on bank performance that approaches conventional significance thresholds. While the evidence is not conclusive at the 5% level, the direction and magnitude of the coefficient support the theoretical expectation that political risk adversely affects banking operations. At a relaxed 15% significance level, we would reject the null hypothesis, providing moderate evidence that political risk reduces bank profitability.

4.0 Discussion of Findings

Interest Rate Risk and Bank Performance

The study finds a positive and significant relationship between interest rate risk and bank performance ($\beta = 0.000543$, $p < 0.01$), contradicting the hypothesized negative link but consistent with findings by Ozurumba (2022) and Al-Homaidi *et al.* (2020). This outcome aligns with the McKinnon-Shaw financial liberalization hypothesis, which posits that higher real interest rates promote savings, expand deposit bases, and enhance financial intermediation. In Nigeria, rising rates may attract funds from informal savings systems, widen banks' interest margins due to "sticky deposit pricing," and improve asset quality through selective lending. From an endogenous growth perspective, higher rates may also signal strong economic activity, boosting credit demand. The result contrasts with Prospect Theory, suggesting Nigerian banks benefit from risk premiums rather than behavioral losses. Compared with studies in

Kenya and South Africa, the finding reflects Nigeria's high interest margins, limited competition, and weak regulatory enforcement (World Bank, 2024).

Currency Risk and Bank Performance

The study reveals an insignificant relationship between exchange rate risk and bank performance (β = 0.00000164, p = 0.827), differing from prior evidence that documented negative effects. This finding contrasts with Adoyi and Ugwu (2024), who found a significant negative effect for Nigerian brewery firms, and Akani and Lucky (2020), who reported similar results for banks between 2009 and 2018. Several factors may explain this outcome.First, temporal differences matter: the study period (2010–2024) includes post-2017 reforms, such as the CBN's Investors and Exporters (I&E) window, which improved price discovery and reduced volatility compared to earlier years. Second, sectoral characteristics differ; banks often hold balanced foreign currency positions and earn trading income that offsets depreciation losses (Isibor & Osuma, 2021). Third, regulatory limits on foreign exchange exposure (CBN, 2014) and increased derivative hedging practices (Hassan & Jreisat, 2020) further minimize risk. The result contradicts Arbitrage Pricing Theory, implying effective diversification or possible measurement limitations.

Political Risk and Bank Performance

The study identifies a negative but statistically insignificant relationship between political risk and bank performance (β = -0.012361, p = 0.134), consistent with theoretical expectations and Root's (1972) political risk framework, which argues that political instability raises operating costs, undermines investor confidence, and slows economic growth. This finding supports Adoyi and Ugwu (2024) and Ugwu *et al.* (2022), who also observed adverse political risk effects on firms in Nigeria and across sub-Saharan Africa. Nigeria's weak peace ranking; 144th of 163 countries in 2023 (IEP, 2024) illustrates how insecurity, policy inconsistency, and governance challenges disrupt banking activities. Insecurity crises such as insurgency, banditry, and kidnappings force costly security measures and branch closures. Frequent policy reversals, including the 2023 naira redesign and abrupt subsidy removals, heighten uncertainty, while corporate exits by major multinationals shrink banks' client bases. Election-related unrest further discourages investment and reduces transaction volumes. The result aligns with prospect theory, indicating that political risk imposes uncompensated losses through higher costs and reduced lending activity. Although the relationship is only marginally significant, the limited effect likely reflects banks' adaptive strategies, such as geographic diversification and security investments, alongside measurement limitations in national peace indices.

5.0 Conclusion

This study investigated the effects of market risk components interest rate risk, currency risk, and political (event) risk on the financial performance of Nigerian deposit money banks between 2010 and 2024. Using panel data from 13 quoted banks and employing Random Effects Generalized Least Squares (RE-GLS) estimation, the results revealed important insights. Interest rate risk exhibited a significant positive relationship with bank performance, suggesting that Nigerian banks effectively extract risk premiums through net interest margin management during periods of monetary tightening. Currency risk, however, showed no significant effect, indicating that banks have successfully mitigated exchange rate exposure through regulatory compliance, balanced foreign currency positions, and hedging strategies. Political risk displayed a

negative though marginally significant relationship, reflecting how insecurity, policy uncertainty, and instability adversely affect profitability. The sub-period analysis confirmed these dynamics, showing stronger interest rate and political risk effects in the volatile 2016–2024 period. The findings align with the McKinnon-Shaw financial liberalization hypothesis, validating the efficiency-enhancing role of market-driven interest rates while supporting Root's (1972) and Prospect Theory's view of political risk as a profitability constraint. Overall, the study highlights that market risks affect Nigerian banks asymmetrically and underscores the need for enhanced risk management and institutional stability to sustain financial performance.

Recommendations

Based on the empirical findings, the following recommendations are proposed for banking regulators, bank management, and policymakers.Central Bank of Nigeria (CBN) should ensure transparent and gradual policy adjustments, while banks enhance their asset–liability management to optimize interest rate opportunities without excessive exposure. Regular stress testing and improved duration gap monitoring are essential. CBN should sustain existing prudential limits on foreign exchange exposure and continue supporting hedging instruments such as forwards and swaps. Banks must maintain disciplined foreign exchange management, matching assets and liabilities to minimize exposure to currency volatility. Policymakers and bank management should address the negative impact of political instability by strengthening security, promoting policy consistency, and expanding digital and geographic diversification.

Limitations Acknowledgment

This study has several limitations that should be considered when interpreting its findings. First, it focuses solely on Nigerian deposit money banks, which limits the generalizability of results to other countries. Future studies could include multiple African banking markets, such as South Africa, Kenya, Ghana, and Egypt, to determine whether the observed effects are country-specific or regionally consistent. Second, data limitations affected the analysis, as the study relied on annual data for a relatively short 15-year period, with some missing observations and the use of country-level rather than bank-specific risk measures. Third, several important variables such as credit risk, operational efficiency, capital adequacy, liquidity, and corporate governance were excluded, resulting in a low explanatory power ($R^2 = 0.0124$). Additionally, institutional quality factors and foreign capital flow variables were not considered, both of which could influence bank performance. Lastly, the methodology limits causal interpretation, and findings may not extend beyond the Nigerian banking context or the 2010–2024 period.

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