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Market Risk and Return on Shareholder's Fund of Deposit Money Banks in Nigeria

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ABSTRACT

This study examined the effect of market risk on the return on shareholder's fund of deposit money banks in Nigeria over a 14-year period (2010-2023). The research employed econometric techniques such as the ordinary least square method, descriptive statistics, and post-estimation diagnostics to analyze the relationship between market risk and return on shareholder's fund of deposit money banks in Nigeria. Return on shareholder's fund (RSF) was used as the indicator for financial performance, while inflation rate, interest rate, and exchange rate were used as proxies for market risk. Findings indicated that the inflation rate had a negative but statistically insignificant effect on RSF (β = -0.615666, p = 0.5658). The interest rate had a positive but statistically insignificant effect on RSF (β = 0.446195, p = 0.2294), and the exchange rate had a positive but statistically insignificant impact on RSF (β = 1.301086, p = 0.0876). The coefficient of determination (R^2) indicates that about 38% of the variation in the return on shareholder's fund of Nigerian deposit money banks can be explained by the inflation rate, interest rate, and exchange rate. The remaining 62% of the variation is due to other factors not accounted for in the model. The Durbin-Watson statistic of 2.264529 points to no potential autocorrelation in the model, suggesting that a significant portion (62%) of the variables affecting return on shareholder's fund are missing from the analysis. The study concluded that market risks variables do not have a significantly effect on the return on shareholder's fund of Nigerian deposit money banks. Based on these findings, it is recommended that banks should adopt more proactive strategies in identifying and managing market risks to reduce exposure and improve overall financial performance (RSF) of deposit money banks in Nigerian.

1. INTRODUCTION

According to Ajaja &Adebayo (2025), deposit money banks play a crucial role in savings mobilization and financial resource allocation, making them significant players in economic growth and development. Their ability to mobilize financial resources and allocate them to productive investments directly impacts their performance. Regardless of the source of income or economic policies in a country, deposit money banks are driven to offer loans and advances to their customers while adhering to three key principles: profitability, liquidity, and solvency. However, sustainable economic growth that positively impacts citizens' well-being requires a sound and stable financial system Ayinuola&Gumel, (2023). Generally, the financial system is adjudged the life wire of every economy. For this reason, there is a need to maintain a healthy and stable financial system in order to ensure sustained growth and development in the economy. Banks, being the hallmark of the financial system, provide financial services, including issuing of money in various forms, receiving deposits of money, lending money, processing transactions and the creation of credit. All these activities of banks have intrinsic risks which cannot be avoided or eliminated so long as banks are operating Soyemi, Ogunleye&Ashogbon, (2014). This makes the banking sector a very risky industry and therefore calls on banks to devise means and strategies to manage these risks. Risk is inherent in every business organization and activity. The banking sector is thus exposed to

risks in the normal course of its business operations (Sufian& Chong, 2008; Olweny&Shipho, 2011). The risk in the banking sector is more threatening due to the nature of services rendered by this sector. These risks affect the performance as well as the survival of banks all over the world (Aboli, 2015).

Bank managers are usually at a dilemma on how to balance shareholders who are stringent on profitability which has to do with their dividends and depositors who are also stringent with liquidity which has to do with their demand deposits and term deposit as the case may be. This is why effective management of market risk is highly imperative in corporate financial management which deals directly with liquidity and profitability of deposit money banks (Godswil, O., Ikpefan, A., Romanus, O., &Emoarehi E. 2017). There are various factors that hinder financial managers from achieving their optimal level of performance (profitability and operational efficiency). These factors include: interest rate, inflation rate and exchange rate etc. The chief goal of any organisation is to get maximum profit, which the financial managers want to maximize. Another important objective is to maintain the liquidity of a bank. Snider (2019) observed that, a country's economy affects the performance of its organizations and by extension the most influential macro-economic variables are GDP, currency exchange rate, interest rates, inflation, bank lending rates and market risk. In Nigeria, like some other developing economies where consumer confidence index is low (Alajekwu, Okoro, Obialor&Ibenta, 2017), banking business is riskier than normal. Banks have to battle with credit defaults, liquidity problems, balancing bank policy guidelines, regulatory issues as well as keeping pace with capital adequacy. In addition to these risks inherent in the banking system, problems of uncertainty and volatility which are the main attributes of today's national economies constitute another form of risk facing the banking sector. As banks are the hub of these economies, their risk management practices are crucial issues that need attention and more serious investigation. This study, therefore, examined the effects of market risk on the return on shareholder's fund of selected deposit money banks in Nigeria from 2010 to 2023 based on the available secondary data on the variables of interest. The specific objectives are:

i. To assess the effect of inflation rate on the return on shareholder's fund of selected deposit money banks in Nigeria.
ii. To examine the influence of interest rate on the return on shareholder's fund of selected deposit money banks in Nigeria.
iii. To analyze the effect of exchange rate on the return on shareholder's fund of selected deposit money banks in Nigerian.

To achieve these objectives, the study tests the following hypotheses:

H_1: inflation rate has no significant effect on return on shareholder's fund of deposit money banks in Nigeria.

H_2: interest rate has no significant effect on return on shareholder's fund of deposit money banks in Nigeria.

H_3: exchange rate has no significant effect on return on shareholder's fund of deposit money banks in Nigeria.

LITERATURE AND EMPIRICAL REVIEW

As noted by (Muriithi, Muturi &Waweru, 2016; Wachiaya, 2011), market risk is regarded as the "risk of loss of shareholder's fund due to the bank's financial operation as a result of volatility in prices of equity, interest rates, commodity prices, exchange rates, and other variables" may affect banks' profitability and performance. Equally, market risk can also emanate from where banks accept financial instruments exposed to market price volatility as collateral for loans. These changes in market prices (interest rate, exchange rate, equity and commodity prices) cause uncertainties in the expected bank return Soyemi, *et al* (2014). Furthermore, market risk is the uncertainty relating to the earnings from the business portfolio of financial institutions (Saunders & Cornett, 2006). This research is grounded in Modern Portfolio Theory (MPT), which provides a framework for analyzing how market risks influence the financial performance of deposit money banks in Nigeria. Originally developed by Markowitz (1952), MPT emphasizes the balance between risk and return in investment decisions. The theory underscores the role of management in selecting assets that lie along the efficient frontier portfolios that offer the highest possible return for a given level of risk. MPT divides risk into two categories: systematic and unsystematic. Systematic risk refers to market-related risks that cannot be eliminated, while unsystematic risk, such as market risk, can be mitigated through diversification. A core principle of the theory is that a diversified investment portfolio yields better outcomes than one focused solely on high-return assets. While MPT does not eliminate the possibility of losses, it does advocate for diversification as a way to reduce both credit and market risks, thereby helping investors better manage uncertainty. The theory maintains that diversification helps distribute risk without diminishing expected returns, enabling investors to aim for optimal returns with reduced exposure. According to MPT, risk and return are inherently linked, meaning that higher returns typically require higher risk. However, by carefully selecting a mix of assets, investors can minimize risk without sacrificing return. Critics of MPT argue that technical analysis offers a more effective approach than the theory's buy-and-hold strategy for maximizing returns. Nevertheless, several studies (e.g., Bagh et al., 2017; Onyema & Odeiem-Ogulu, 2019) continue to affirm the theory's relevance in understanding and managing credit risk. Accordingly, this study posits that the financial performance of banks is closely tied to their ability to manage market risks effectively.

Research by Muriithi, *et al* (2016) explored the effect of market risk on the financial performance of deposit money banks in Kenya for a period of ten (10) years from 2005 to 2014. Market risk was measured by the degree of financial leverage, interest rate risk and foreign exchange exposure while the financial performance was measured by return on equity. Panel data techniques of random effects, fixed effects estimation and generalized method of moments (GMM) were used to purge time-invariant unobserved firm-

specific effects and to mitigate potential endogeneity problems. Results of the study showed that financial leverage, interest rate and foreign exchange exposure have a negative and significant relationship with bank profitability.

Malik, Khan, Khan and Khan (2014) conducted a research to investigate the effect of market interest rate on the bank's profitability in public and private sectors in Pakistan. The simple regression model developed for the study analysed the study for the private and public sector banks respectively using return on asset and return on equity as bank profitability and dependent variables, while bank lending was taken as a proxy for interest rate and the independent variable. The result revealed that interest rate has more effects (positive and significant) on both ROA and ROE in private banks as compared to the public sector banks.

Ekinci (2016) in his study examines the effects of credit and market risk (proxied with interest rate and foreign exchange rate risk) on the bank performance of the Turkish banking sector. The study employed generalized autoregressive conditional heteroscedasticity approach for the 2002-2015 periods by using weekly data. The results revealed that credit and market risk have significant positive effect on conditional bank stock return volatility.

MohdAb-Hamid *et al.* (2018) examined the market risk and effects of cost and profit efficiencies on market risk using all listed banks in Malaysia for the 2000–2015 period. The study used the Expected Shortfall and Stochastic Frontier Analysis, to estimate the cost and profit efficiencies and analyze the effects on market risk. It was found that as the bank market risk exposure decreases both cost and profit efficiencies exert significant influence on the market risk.

METHODOLOGY

This research work employed *ex-post facto* research design to examine the effect of market risk on return on shareholder's fund of deposit money banks in Nigeria. This research design was adopted because the data used were already in existence in the annual report and accounts of the sampled banks. The population for this study comprises fourteen (14) selected deposit money banks in Nigerian. The research data were obtained from the annual financial reports and Central Bank of Nigeria Statistical bulletin from 2010 to 2023.

The study employed Panel regression, descriptive statistics, granger casualty test, and post estimated test in analyzing the data. The descriptive statistics including the mean, standard deviation, minimum, maximum and skewness and kurtosis were used. Inferential statistics specifically, Panel regression analysis was employed to proffer answer to research questions as well as test the research hypotheses.

MODEL SPECIFICATION

The study adapted the model of Ekinci (2016) which modelled banks' performance as a function of credit risk, interest rate and foreign exchange rate. The interest rate and foreign exchange rate were used to proxy market risk.

Return = f (Credit risk, Interest Rate, Foreign Exchange Rate). 1

$$Return = \beta_0 + \beta_1 CR_{it} + \beta_2 INT_{it} + \beta_3 FX_{it} + \mu_{it} \quad .....2$$

However, the current study made an improvement on the model using return on shareholder's fund as dependent variable and market risk measured by inflation rate, interest rate, and exchange rate.

Therefore, the model functional form becomes:

RSF= f(IFR, INR, EXR,) 3

The above functional form is transformed to mathematical form as;

$$RSF = \beta_0 + \beta_1 IFR_{it} + \beta_2 INR_{it} + \beta_3 EXR_{it} + \mu_{it} \quad .....4$$

Where; β_0 = Constant term, $\beta 1 - \beta 3$ = Coefficients of independent variables, subscript "it" = cross sectional and time series indication, μ_{it} = error term, RSF = return on shareholder's fund, IFR = inflation rate, INR = interest rate, and EXR = exchange rate.

RESULTS AND DISCUSSIONS

The regression results on market risk and return on shareholders fund (RSF) (2010-2023)

Table 1. Summary of the regression results of RSF Model

Variables	Coefficient	Std error	t-stat	Prob
C	-3.230255	1.189135	-2.716474*	0.0217
IFR	-0.615666	1.036647	-0.593902*	0.5658
INR	0.446195	0.348566	1.280089*	0.2294
EXR	1.301086	0.687297	1.893047*	0.0876

***Researcher's computation*, 2025**

R^2 = 0.386264 R^2 (Adj) = 0.202143 DW = 2.264529

F-stat = 2.097881 * significant at 5% & 1% level Prob (F- Statistic) = 0.164165

Regression Coefficient

The results from the Least Squares Regression reveal that the inflation rate (IFR) has a negative but statistically insignificant relationship with the return on shareholder's fund (RSF) of Nigerian deposit money banks. With a coefficient of β = -0.615666 and a p-value of 0.5658, this suggests that a one-unit decrease in the IFR is associated with a decline of 0.615666 units in return on shareholder's (RSF), assuming other factors are held constant.

In contrast, the interest rate (INR) has a positive but statistically insignificant effect on the return on shareholder's (RSF) of Nigerian deposit money banks, with a coefficient of β = 0.446195 and a p-value of 0.2294. This indicates that a one-unit increase in the interest rate would lead to a 0.446195unit improvement in the return on shareholder's fund, assuming all other factors remain unchanged.

Likewise, the exchange rate (EXR) is positive related to the return on shareholder's fund, but this relationship is also statistically insignificant, with a coefficient of β = 1.301086 and a p-value of 0.0876. This suggests that a one-unit increase in the exchange rate would result in a 1.301086 unit increase in the return on shareholder's fund of Nigerian deposit money banks, assuming all other variables are constant.

The coefficient of determination (R^2) indicates that about 38% of the variation in the return on shareholder's fund of Nigerian deposit money banks can be explained by the inflation rate, interest rate, and exchange rate. The remaining 62% of the variation is due to other factors not accounted for in the model. The Durbin-Watson statistic of 2.264529 points to no potential autocorrelation in the model, suggesting that a significant portion (62%) of the variables affecting return on shareholder's fund are missing from the analysis.

Summary of Descriptive Statistics of the Study Variables

Table 2: Summary of the Descriptive Statistics

Variables	Mean	Median	Maximum	Minimum	Skewness	Kurtosis	Jarqu-Bera	Prob.
RSF	-0.38099	-0.41515	0.07842	-1.37354	-1.37045	5.52493	8.10126	0.01741
IFR	1.11581	1.10464	1.39199	0.90579	0.22445	2.41469	0.31739	0.85325
INR	0.88777	0.94300	1.21784	0.09093	-1.85972	6.66068	15.88704	0.00035
EXR	2.41344	2.44470	2.80529	2.17695	0.28312	1.96777	0.80857	0.66745

Table 2 provides the descriptive statistics for the variables examined: Return on Shareholders' Fund (RSF), inflation rate (IFR), interest rate (INR), and Exchange Rate (EXR).

For RSF, the average (mean) value is -0.38099, with a median of -0.41515. The highest observed value is 0.078425, while the lowest is -1.37354. The skewness is -1.37045, indicating a negatively skewed distribution. A kurtosis of 5.52493 implies a distribution that is higher than the normal curve (leptokurtic). The Jarque-Bera (JB) test statistic is 8.10126 with a corresponding p-value of 0.01741, suggesting that RSF follows a normal distribution with p-value less than 0.05%.

For inflation rate (IFR), the mean is 1.11581 and the median is slightly lower at 1.10464. The maximum and minimum values are 1.39199 and 0.90579, respectively. A skewness of 0.22445 indicating a positively skewed distribution, while the kurtosis value of 2.41469 implies a distribution that is flatter than the normal curve (platykurtic). However, the JB statistic of 0.31739 and its p-value of 0.85325 indicate that the distribution of IFR does not meet the criteria for normality.

With regard to interest rate (INR), the mean stands at 0.88777, and the median is 0.94300. The variable ranges between a minimum of 0.09093 and a maximum of 1.21784. The skewness of -1.85972 suggests a negative skewed distribution, while the kurtosis of 6.66068 implies a distribution that is higher than the normal curve (leptokurtic). The JB statistic is 15.88704 with a p-value of 0.00035, indicating that INR exhibit a normal distribution.

Finally, the exchange rate (EXR) shows a mean of 2.41344 and a median of 2.44470. Maximum and minimum values range between 2.80529 and 2.17695. The distribution is positively skewed, as indicated by a skewness of 0.28312, and platykurtic with a kurtosis of 1.96777. The JB statistic of 0.80857 and its p-value of 0.66745 suggest that EXR does not conform to a normal distribution.

Table3. Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.450883	Prob. F(2,8)	0.2900
Obs*R-squared	3.726434	Prob. Chi-Square(2)	0.1552

Source: ***Researcher's computation*****, 2025**

The Breusch-Godfrey Serial Correlation LM Test indicates that there is no autocorrelation. This is given by the F-statistic of 1.450883, and its corresponding P-value of 0.2900.

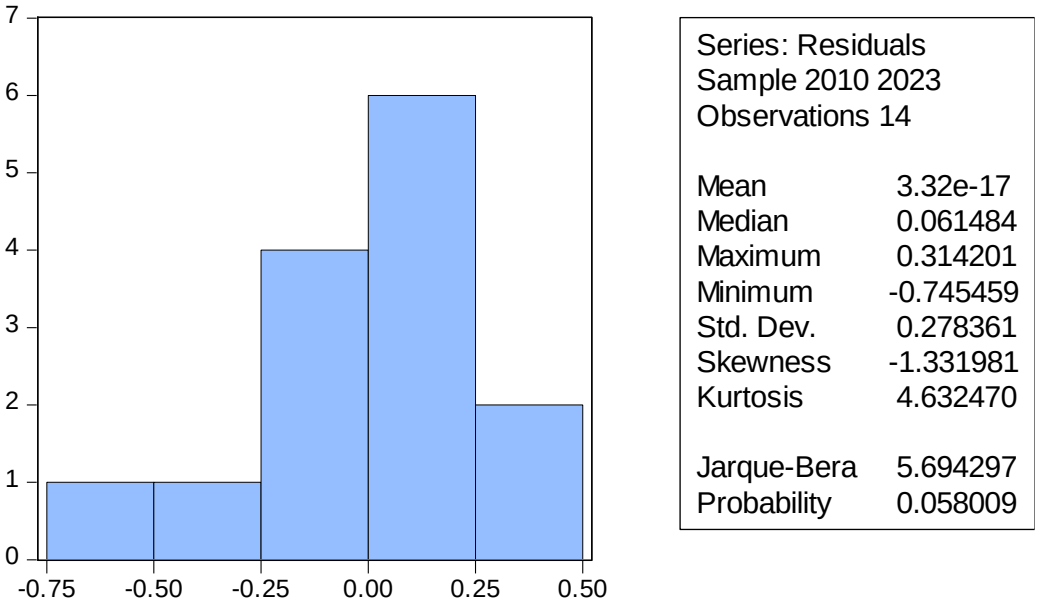
Table 4. Heteroskedasticity Test: Glejser

F-statistic	2.864866	Prob. F (3,10)	0.0903
Obs*R-squared	6.470931	Prob. Chi-Square (3)	0.0908
Scaled explained SS	5.121787	Prob. Chi-Square (3)	0.1631

Source: ***Researcher's computation*****, 2025**

The Glejser Test of Heteroskedasticity with F-statistics 2.864866 and its corresponding P-value of 0.0903 indicates that there is no problem with heteroskedasticity.

Table 5. Histogram- Normality Test



Source: ***Researcher's computation*****, 2025**

With the Jarque-Bera probability value obtained being 5.694297, the variables in the model are said to have passed the normality tests since it is within the 5% significance area. Based on this, the data used were adjusted as normality distributed.

Table 6. Autocorrelation Test

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
. | . |	. | . |	1	-0.044	-0.044	0.0332	0.855
. | . |	. | . |	2	-0.012	-0.014	0.0361	0.982
. | . |	. | . |	3	0.003	0.002	0.0363	0.998
. | . |	. | . |	4	-0.002	-0.002	0.0364	1.000
. | . |	. | . |	5	0.038	0.038	0.0719	1.000
. | . |	. | . |	6	-0.065	-0.061	0.1886	1.000
. *| . |	. *| . |	7	-0.087	-0.093	0.4332	1.000
. | . |	. | . |	8	-0.045	-0.055	0.5073	1.000
. | . |	. | . |	9	-0.052	-0.060	0.6303	1.000
. *| . |	. *| . |	10	-0.086	-0.096	1.0409	1.000
. *| . |	. *| . |	11	-0.134	-0.146	2.3753	0.997
. | . |	. | . |	12	-0.007	-0.029	2.3801	0.999

Source: ***Researcher's computation*****, 2025**

The autocorrelation test indicates that the model's residuals do not suffer from autocorrelation with the probability values of all the lags greater than 0.05

SUMMARY OF FINDINGS

Return on Shareholder's fund used as dependent variable is statistically significant with a p- value of (0.0217)

1. Inflation Rate has a negative coefficient value of (-0.615666) but statistically insignificant at p-value of (0.5658). The negative co-efficient of (IFR) signifying that return on shareholder's fund of Deposit Money Banks (DMBs) in Nigeria has been negatively influenced by Inflation rate.
2. Interest Rate has a positive coefficient value of (0.446195) but statistically insignificant at p-value of (0.2294). The positive co-efficient value of (INR) signifying that interest rate has a positive influence on the return on shareholder's fund of Deposit Money Banks (DMBs)
3. Exchange Rate has a positive coefficient value of (1.301086) but statistically insignificant at p-value of (0.0876). The positive coefficient value of (EXR) signifying that Return on shareholder's fund of Deposit Money Banks (DMBs) in Nigeria has positive influenced by Exchange Rate.

CONCLUSION

Based on the findings of this study, it can be concluded that insignificant relationship exists between return on shareholder's fund and Inflation Rate (IFR), Interest Rate (INR), and Exchange Rate (EXR) of Deposit Money Banks (DMBs) in Nigeria. Return on Shareholder's Fund (RSF) was adopted as proxy for the financial performance of Deposit Money Banks while Inflation Rate (IFR), Interest Rate (INR) and Exchange Rate were adopted as proxies for market risk. Specifically the study concluded that, inflation rate (IFR (β = -0.615666, p = 0.5658) is statistically insignificant with a negative influence on return on shareholder's fund of Deposit Money Banks (DMBs) in Nigeria. The study also concluded that, Interest Rate (INR (β = 0.446195, p = 0.2294) is not statistically significant but its current value positively affects the return on shareholder's fund of Deposit Money Banks (DMBs) in Nigeria. This study align with the study of Malik, Khan, Khan and Khan (2014) who found a positive relationship between interest rate and bank performance. More so, the study concluded that exchange rate (EXR (β = 1.301086, p = 0.0876) is statistically insignificant with positive effects on the return on shareholder's fund of Deposit Money Banks (DMBs) in Nigeria.

RECOMMENDATIONS

1. Inflation Rate (IFR):
   Given that the Inflation Rate has a negative coefficient (-0.615666) but is statistically insignificant (p-value = 0.5658) in influencing the Return on Shareholders' Funds (RSF) of Deposit Money Banks in Nigeria, it is recommended that banks collaborate with regulatory authorities to promote policies that ensure inflation stability. Even though the current findings do not show a direct impact, maintaining stable inflation supports sound financial planning and enhances investor confidence.
2. Interest Rate (INR):
   Since the Interest Rate shows a positive coefficient (0.446195) but remains statistically insignificant (p-value = 0.2294) in its effect on RSF, banks should avoid relying solely on interest rate fluctuations for strategic decision-making. The positive relationship observed is not statistically strong enough to serve as a dependable basis for policy or investment choices on its own.
3. Exchange Rate (EXR):
   With the Exchange Rate exhibiting a positive coefficient (1.301086) and being marginally insignificant (p-value = 0.0876), it is advisable that both regulators and banks remain cautious about relying on exchange rate-driven gains. Such profits can be highly volatile and may pose risks to financial stability if not properly managed.

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