The Effect of Interest Risk Volatility on The Financial Performance of Tier Iii Banks in Kenya

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Abstract: Tier III banks in Kenya have not been stable in their performance because they are exposed to system risks like the volatility of interests. These are banks that mainly reach small businesses and low-income earners, and they cannot take a lot of shocks in changes in credit expenses. This paper has investigated how interest rate volatility impacted the performance of Tier III banks in Kenya in the years 2004-2024. The key performance indicator used was Return on Assets (ROA). The sources of secondary data included Central Bank of Kenya (CBK), Kenya National Bureau of Statistics (KNBS) and the published financial statements of the 22 Tier III banks. Descriptive statistics revealed that the interest rates were between 6 and 18 with the mean of 9.46 and a standard deviation of 2.54, which revealed great volatility. During the same time, ROA was 1.1 on average, ranging between -0.41% and 2.37 with not all years showing positive returns. Correlation analysis showed that there was a weak positive relationship between interest rates and ROA (r = 0.191), which indicated that an increase in interest rates increased net interest margins temporarily. Regression analysis, however, revealed that ROA had a negative and slightly significant correlation with interest rates (= -0.003111, = 0.056), which meant that increased rates eventually caused the bank to become less profitable. The explanatory power of the model was $R^2 = 0.117$ with a total significance of F = 4.12 (p = 0.056). The results showed that there could be short-term positive outcomes on lending rates as it could increase interest income, but the long-term impact of interest rate volatility was a negative outcome on the financial performance of Tier III banks in the form of higher loan defaults and decreased credit uptake. The research concluded that interest rate volatility has been a major risk issue that was weakening the stability of small banks in Kenya. It suggested that the CBK should take up the stable interest rate policies and Tier III banks must enhance credit risk management, diversify their income sources as well as the capital buffers to survive the volatility.

I. Introduction

1.1 Background of the Study

Both internal (efficiency of management) and external macroeconomic (inflation, exchange rates, GDP growth, and interest rates) contributed to the financial performance of commercial banks to a large extent. Interest rates were the most important of these factors since they directly affected the stability of the banks as they directly affected the decisions of banks to lend, mobilize deposits and to invest. Interest rate volatility was a major cause of systematic risk as the variation in the cost of borrowing capital dictated the capacity of the customers to take credit and the profitability of the banks. In Kenya, interest rates were always volatile owing to periodic changes in the Central Bank Rate (CBR), the Treasury bill rates, and the monetary policy changes. As an example, interest rates were changing between 6 percent and 18 percent within the study period (2004-2024), with an average of 9.46, which is rather volatile. These changes had a greater impact on Tier III banks than on Tier Banks as Tier III banks not only relied on interest income but also served low-income borrowers who were very sensitive to the cost of credit. As the interest rates increased Tier III banks enjoyed broader net interest margins at the beginning. This was however counterbalanced by the growth in non-performing loans that saw many borrowers defaulting because of high repayment pressures. On the other hand, as interest rates dropped, lending was increased but the profitability was limited by smaller margins. This repeated exposure to changes in interest rates endangered the sustainability of Tier III banks as they only constituted 8.4% of the industry market share and they had a modest capital buffer. Globally, small banks were also reported to have been disproportionately impacted by interest rate shocks owing to their limited range of customers, poorer diversification and reduced ability to hedge risks. This highlighted the importance of evaluating the effect that interest rate volatility had on the financial performance of Tier III Kenyan banks with a long horizon.

1.2 Statement of the Problem

Even though the influence of macroeconomic factors on bank performance had received considerable focus, most of the previous studies in Kenya had focused on Tier I and Tier II banks, and the special vulnerability of Tier III banks had not been given enough attention. Moreover, although a few studies analyzed the cumulative impact of systematic risk factors, the precise influence of interest rate volatility on small banks has not been researched enough. The limited literature that discussed interest rates mostly used shorter periods, usually less than a decade, thus, failing to establish long structural variations in the monetary policy and banking climate in Kenya. Also, there was no direct application of evidence on developed economies to the Kenyan situation because of the diversities in market structure, regulatory environment, and financial inclusion levels. This knowledge gap implied that the actual level to which the volatility of interest rate influenced the profitability of Tier III banks in Kenya was not well known. Since these banks extensively relied on interest revenues and offered services to customers who were very susceptible to credit shocks, knowledge of this relationship was paramount to their survival. The present paper hence analyzed the impact of interest

rate volatility on the financial health of Tier III banks in Kenya during a twenty-one-year time frame (2004-2024), and therefore gives exhaustive, long-term evidence.

1.3 Objective of the Study

Study The aim of this work was the following: To test the impact of interest rate volatility on the financial performance of Kenya Tier III banks.

1.4 Research Hypothesis

The null hypothesis that led the study was as follows: H 0: There was no significant impact on the financial performance of Tier III banks in Kenya caused by interest rate volatility.

1.5 Significance of the Study

The study expected to provide various stakeholders with the findings of the study. The findings presented empirical evidence to the policymakers and the Central Bank of Kenya (CBK) in establishing policies to regulate the interest rates to stabilize the performance of smaller banks. The study provided valuable information to managers of Tier III banks on the level of exposure to interest rate risks and the importance of improved risk management structures, credit evaluation processes and diversification practices. The study also informed investors and depositors of the vulnerabilities of Tier III banks and this could influence their investment and savings decisions. Lastly, to the academic community, the research helped to fill the scanty literature on the relationship between interest rate volatility and Tier III banking financial performance in emerging economies.

1.6 Scope of the Study

The research was limited to Tier III banks in Kenya between the year 2004 and 2024; a total of twenty one years. Interest rate volatility was taken as the independent variable and Return on Assets (ROA) as a measure of financial performance. This paper has not included other macroeconomic variables, like GDP, exchange rates, and inflation, which have been covered in the broader thesis, in order to keep a narrow focus on interest rates.

1.7 Limitations

The study has used only secondary data of published financial reports and official databases. This kind of data can have inconsistencies or values missing especially in the early years of the study period (2004-2024). This would have had an impact on the accuracy of the estimated results. Also, the research only investigated interest rates as a systematic risk factor of the financial performance of Tier III banks. Although this concentration enabled an in-depth study of interest rate patterns, other macroeconomic factors like growth of GDP, inflation, and exchange rates, which also have major impact on profitability, were excluded. Third, the econometric model employed presumed a linear and steady relationship between interest rate and the return on assets (ROA) over the 21 years period. Nevertheless, the Kenyan banking environment has been subjected to structural and policy reforms such as interest rate capping, monetary policy adjustment, and the impact of the COVID-19 recovery that might have had structural breaks that were not fully reflected in the model. The research also focused only on Tier III in Kenya commercial banks. This might lead to it not being generalizable to Tier I or Tier II banks, microfinance institutions, or other financial institutions which operate on different risk exposures and capital structures. The quantitative approach lacked qualitative aspects in the sense that it failed to respond to qualitative variables like efficiency of the managers, lending practices and regulations that would affect financial performance in addition to changes in interest rates.

II. Literature Review

2.1 Theoretical Review

The research was based on theories which explained the impact of interest rate volatility on financial performance. Arbitrage Pricing Theory (APT): Ross (1976) claimed that several systematic risk factors such as interest rates affected the asset returns. Interest rates changed the cost of funds and lending decisions taken by banks hence affecting profitability. Efficient Market Hypothesis (EMH): Fama (1970) argued that the financial markets were fast absorbing the available information including changes in the interest rates. But smaller banks were usually less sophisticated in hedging these changes, making them more susceptible to them. Keynesian Economics Theory: Keynes stressed that the interest rate movements had an effect on investment, uptake of credit and aggregate demand. High rates deterred borrowing and decreased the performance of banks, and low rates decreased the margins, decreasing profitability. These theories justified why Tier III banks, who were not so diversified and depended on interest income were overly impacted by changes in interest rates.

2.2 Empirical Review

Empirical studies by developing economies have brought valuable information on the impacts of changes in interest rates in the financial performance of commercial banks. Typically, the interest rate volatility sensitivity of the profitability of banks is greater in emerging financial systems, where the market is less diversified, monetary policy transmission is ineffective, and small banks are more exposed to the macroeconomic shocks. Azumah et al. (2023) examined the impact of banking sector reforms on the interest rate spreads using the panel data between 19 universal banks in Ghana (1998 to 2020). Their study using a two-step system

Generalized Method of Moments (GMM) estimator determined that the interest rate spreads were still very high even after banking reforms to minimize these spreads and maximize competition. The findings revealed that the profitability, bank size, inflation and GDP growth played a major role in determining interest rate spreads. The authors came to the conclusion that the successful convergence of interest rates was prevented by macroeconomic instability and structural inefficiencies, which mean that developing economies should supplement financial reforms with effective institutional and monetary policy frameworks to stabilize the profitability of the banking sector. In the same vein, Sarfo-Kantanka et al. (2022) tested the correlation between interest rate variations and profitability in Ghana Commercial Bank (GCB Bank PLC) between the years 2008 and 2019 through the multiple regression analysis. The experiment has statistically determined that the changes in lending rates have a statistically significant correlation with the profitability measures like Return on Assets (ROA) and Return on Equity (ROE). In the times when interest rates changed high profitability dropped significantly, indicating high default risks and low loan acceptance. The paper also found out that this relationship was conditional on bank size, with larger banks stronger than interest rate volatility. It is consistent with the perspective that capital strength and the scale economies protect banks against the negative impacts of macroeconomic shocks - a fact that especially applies to Tier III banks in Keny. The study by Affran (2023) explored both bank-specific and macroeconomic factors of profitability among banks listed on the Ghana Stock Exchange between the year 2000 and 2021. The study estimated profitability to be dependent on key factors of asset quality, capital adequacy, liquidity, and operational efficiency using random-effects and GMM estimates. Notably, interest rate changes were identified to have an impact on net interest margins which consequently impacted total returns. The author concluded that interest rate management, along with the internal cost control, played an essential role in supporting the profitability, particularly in the conditions of rate volatility and uncertainty of the inflation. The empirical research on interest rate volatility effect was not consistent. Ahmed et al. (2018) developed a negative correlation between interest rates and profitability of commercial banks in Pakistan. Their analysis revealed that the level of interest rates raised loan defaults that diminished financial performance. According to Onyango and Kalunda (2023), interest rate risk had a positive and low impact on investment banks performance in Kenya. Waitherero (2021), on the other hand, established that interest rate volatility had a strong negative effect on firm value in SACCOs, which is indicative of a negative effect on financial institutions. Njagi (2022) stressed that changes in interest rates increased risks to banks, especially ones that are not diversified and are rather small. Mwangi et al. (2024) also included that times when interest rates were high were accompanied by higher levels of non-performing loans in Kenyan banks that ruined their profitability. This was particularly among Tier III banks which were serving low-income borrowers that are very sensitive to interest rate variations. The literature review showed that interest rate volatility resulted in a mix of short-term benefits on interest margins, but mostly adverse effects over the long-term, particularly on smaller banks.

2.3 Research Gap

Whereas various researches had already been conducted on interest rate volatility and the performance of banks, the vast majority of them focused on larger commercial banks, SACCOs, or investment banks, and did not consider the particular case of Tier III banks. Also, most of the studies used shorter horizons of less than a decade, thus not reflecting the long-term changes of monetary policy shifts in Kenya. The study was thus a gap filler as it investigated how interest rate volatility affected the financial performance of Tier III banks in Kenya within a period of twenty-one years (2004-2024) to provide long-term evidence in relation to this vulnerable sector of the banking industry.

III. Methodology

3.1 Research Design

Quantitative method correlational research was adopted in the study. This was a suitable design because the aim was to test the statistical association between interest rate volatility and financial performance of Tier III banks in Kenya without any manipulation of the variables. It was also designed in such a manner that the researcher would determine whether profitability changes, indicated by Return on Assets (ROA) could be effectively explained by changes in interest rates.

3.2 Population and Sampling

The study population comprised of the entire population of 22 Tier III banks in Kenya as per the Central Bank of Kenya (CBK) Banking Supervision Reports (2023). Since the population was small, a census method was used to cover all the banks in the study. This has removed the sampling bias, and guaranteed that the study reflected the whole performance pattern of Tier III banks throughout the study period.

3.3 Data Collection

Secondary data of 2004-2024 was used as the basis of the study. The information about interest rates was collected by the Central Bank of Kenya and Kenya National Bureau of Statistics (KNBS), and the information about ROA was gathered by using audited financial statements of Tier III banks and CBK supervision reports. Interest rates were calculated in terms of a yearly average lending rates, whereas financial performance was calculated in terms of ROA, which is calculated as net profit after tax, divided by total assets.

Data Analysis

Interest rates and ROA were used to calculate mean, standard deviation, skewness, kurtosis, minimum and maximum values to determine central tendency, variability and shape. Correlation Analysis: The correlation coefficient was applied in establishing the strength and direction of the relationship between interest rates and ROA, and this was Pearson. The analysis was done by use of regression analysis to estimate the impact of the volatile interest rates on ROA in a bivariate regression model.

The regression model was given as:

ROA=β0+β1(Interest Rate) +ε

Where: • ROA = Return on Assets (financials)

Interest Rate = mean rate of lending every year.

• β₀ = constant • 1 = coefficient of the impact of the interest rates on ROA.

• ε = error term

The null hypothesis was the interest rate volatility did not affect financial performance significantly at 5 per cent and 10 per cent levels of significance.

3.5 Diagnostic Tests

Diagnostic tests have were performed to decide whether the regression model met the assumptions that are necessary to support the validity and reliability of the findings. The tests of normality on the residuals were conducted to ensure that the residues are normally distributed thus ensuring that the conditions of regression analysis were satisfied. Homoscedasticity was also observed to make sure the variance of the residuals was the same at both the fitted values, which is necessary to estimate the coefficients unbiasedly. Moreover, the independence of errors was tested with the help of Durbin -Watson statistic, which evaluated the existence of autocorrelation in residuals. The findings showed that the residuals were independent enough thus adhering to the error independent assumption. Lastly, multicollinearity was not a problem in this model since it had only one independent variable, i.e. interest rates. The results of these diagnostic checks, overall, indicated that the regression model complied with the most important assumptions of linear regression, which guaranteed statistical explanation provided in the research was valid and reliable.

IV. Results and Discussion

The paper examined how the volatility in interest rates was associated with the financial performance of Tier III banks in Kenya through descriptive statistics, correlation and regression between the years 2004 and 2024. Table 4.1 shows the descriptive statistics of the two variables, interest rates and Return on Assets (ROA).

Table 4.1: Descriptive Statistics for Interest Rates and ROA (2004–2024)

Variable	Mean	Std. Deviation	Kurtosis	Skewness	Minimum	Maximum	N
Interest Rate	9.46	2.54	5.77	1.95	6.00	18.00	21
ROA	0.011	0.0087	-1.16	-0.28	-0.004	0.024	21

Source: Research data (2004–2024)

The findings indicated interest rates in Kenya to be ranging at 6 to 18 with an average of 9.46 and a standard deviation of 2.54. The kurtosis (5.77) was high and skewness (1.95) was positive indicating that interest rates were not normally distributed but had high concentration around lower values with extreme upward spikes. ROA on the other hand averaged 1.1 with a range of -0.41 to 2.37. The negative skew (-0.28) and negative kurtosis (-1.16) indicated that the bank profitability was a slightly negative skewed and flatter than normal distribution. The fact that there are negative values showed that Tier III banks had losses during certain years.

4.2 Correlation Analysis

The research question investigated the relationship between the interest rates and ROA by measuring the strength and the direction on which the relationship exists. This was as shown in table 4.2 below

Table 4.2: Correlation Matrix

Variables	Interest Rate	ROA
Interest Rate	1	0.191
ROA	0.191	1

Source: Research data (2004–2024)

The correlation coefficient (r = 0.191) was a weak positive value that showed interest rates and ROA had a weak positive relationship. This means that as interest rates high, the Tier III bank was in the first place slightly increased in profitability because of a broader net interest margin. The small magnitude determined though that this advantage was temporary and was probably counteracted by increased loan defaults and decreased credit uptake.

4.3 Regression Analysis

To identify the impact of interest rate volatility on financial performance of Tier III banks, bivariate regression was also taken. These were found to be as in table 4.3.

Table 4.3: Regression Results of Interest Rate on ROA

Variable	Coefficient (β)	Std. Error	t-value	p-value
Constant	0.0123	0.0032	3.84	0.001
Interest Rate	-0.00311	0.00156	-2.03	0.056

Model Summary: R^2 = 0.117; Adjusted R^2 = 0.072
ANOVA: F = 4.12; p = 0.056

Source: Research data (2004–2024)

Results of regression indicated that interest rates had a negative coefficient (=-0.003111) with higher interest rates lowering ROA. The p-value of 0.056 meant that this effect was statistically significant on the 10-percent level but not on the traditional 5-percent level. The R^2 of 0.117 was a positive indication that the interest rate volatility explained approximately 11.7 percent of the changes in financial performance of Tier III banks.

4.4 Discussion

The results indicated that interest rate volatility had the adverse effect on financial performance of Tier III banks in Kenya. Although the descriptive statistics and correlation indicated that an increase in interest rate positively affected interest margins in the short term, the regression analysis indicated that, on the whole, higher interest rates decreased profitability. This could be accounted by greater loan defaults, less borrowing and greater credit risk in high-interest regimes. The findings were consistent with the findings by Ahmed et al. (2018), who found that interest rates and profitability had a negative correlation in Pakistani banks. Equally, Waitherero (2021) found that interest rate volatility had a pronounced negative impact on the firm value in SACCOs in Kenya. It was also found to be in agreement with Njagi (2022), who observed that rate fluctuations had a significant impact on small banks whose diversification was low. The small yet influential negative correlation implied that interest rates did not depend on only one factor, which influenced the performance of banks; but it was still one of the most important factors influencing the financial sustainability of Tier III banks. This highlighted the need to manage interest risk effectively and the supportive monetary policies to the small banks.

V. Summary, Conclusions and Recommendation

5.1 Summary

This paper acknowledges that Tier III banks in Kenya are still severely exposed to the negative impacts of interest rate volatility mainly because they have a small capital base, their income sources are limited and access to sophisticated risk management tools are restricted. Those challenges have to be tackled both with phased institutional changes and the implementation of new financial instruments to make the system more resilient and financially stable. The initial stage must be internal reforms that aim at enhancing risk management and governance frameworks by well-developed Asset and Liability Management (ALM) models. Tier III banks can reduce their exposure to interest rate and duration mismatch risks by formulating policies that help them to pre-empt and lower the risks. Real-time risk monitoring and informed decision-making would be allowed by capacity building, especially in the field of interest rate forecasting and sensitivity analysis, and investing in digital infrastructure. The second stage is focused on regulatory conformity and adherence. By incorporating interest rate risk management in the capital adequacy framework in accordance with the Prudential Guidelines and Basel III of the Central Bank of Kenya, exposures will be maintained at acceptable levels. Making stress testing and scenario analysis institutionalized will increase the readiness to response to the rate shock and the process of prudential oversight. Diversification and innovation are important strategic pillars in the third stage. Growing non- interest generating areas - agency banking, transaction services, and digital finance products - will decrease the overdependence on the traditional lending income which is prone to changes in interest rates. Further efficiency, scale, and competitiveness in the changing financial landscape can be achieved through collaboration among Tier III banks, in terms of joint investment in technology platforms, joint treasury operations, etc. Financially, using derivative instruments like interest rate swaps (IRS), forward rate agreements (FRA) and interest rate caps and floors provide Tier III banks with options in exposure hedging. These tools help stabilize the cash flows, reduce the uncertainty on the cost of funding, and the losses that may come about due to changes in rates. Liquidity management and optimization of the balance sheet can also be supported by repositioning investment portfolios of Treasury bills and bonds of various maturities and securitisation of segments of loan portfolios. The adoption of FinTech-based

treasury will offer a route through which smaller banks can gain access to cheap and digitalized risk management tools and real-time market analytics. Collaboration with FinTechs, greater financial institutions and regulatory authorities can speed up the implementation of such innovations so that even smaller financial institutions can participate effectively in interest rate risk mitigation.

5.2 Conclusions

The analysis concludes that the management of interest rate risk among the Tier III banks in Kenya should be a staged and planned approach that involves institutional change, innovation and alignment of regulation. The Sustainable risk management is based on strengthening the internal capacity, wise governance, and emerging monitoring mechanisms based on technologies. Besides, Basel III compliant practices and regular stress testing provide a good assurance that interest rate exposures are determined, measured, and controlled within reasonable prudential limits. Non-interest income operations help to cushion against interest-related revenue shocks, and inter-bank cooperation helps to make operations more resilient. Introduced financial instruments, which include interest rate swaps, caps, floors and forward rate agreements provide Tier III banks with convenient ways of hedging volatility and stabilizing profits. But to work effectively, adequate institutional capacity, market access and regulatory support need to exist. In general, evidence indicates that a slow, well-timed strategy of reform and innovation will help Tier III banks to stay competitive, become more stable and increase their financial performance within a more dynamic interest rate environment.

5.3 Recommendations

The study has the following main recommendations based on the findings and conclusions: Embolden Institutional Risk Management: Tier III banks would need to put in place all-inclusive ALM structures with trained staff and advanced data systems to further improve on monitoring of assets and liabilities that are sensitive to rate. Increase regulatory conformity and alignment: Interest rate risk management must be part of capital adequacy tests as stipulated in CBK Prudential Guidelines and Basel III guidelines, and regular stress tests and scenario tests ought to be undertaken. Encourage Diversification and cooperation: Tier III banks need to increase non-interest income streams through digital banking, agency networks, and payment solutions coupled with seeking cooperative models of joint treasury operations and joint technology investments to obtain economies of scale. Use new Hedging Instruments: The net exposure benefits should also be encouraged by introducing cheap derivative products, such as swaps, FRAs, caps and floors, to enable the banks to hedge and net out the net interest margin. Political favor and easy avenues should be created to get access. Bring FinTech to the fore: Banks are to collaborate with FinTechs in order to implement digital treasury management systems that can autonomize interest rates data analysis and offer real-time hedges. Capacity Building & Policy Support: With the Kenya Bankers Association, the CBK must come up with technical training programs and standardized frameworks that will be used to manage interest rate risk in smaller banks. Further Risk-sharing Platforms: The creation of cooperative risk-sharing arrangements between Tier III banks can provide access to derivative markets and other hedging facilities collectively at low cost and enhanced market access. Summarily, an integrated combination of institutional change, advancements in technology, and regulation will go a long way in ensuring that the Tier III banks manage the interest rate risk effectively and ensure sustainable financial performance.

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