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The Effect of Lending Interest Rates on the Financial Performance of Commercial Banks in Kenya

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Abstract:

The paramount significance of a robust banking sector in driving economic growth, executing effective monetary policies, and upholding macroeconomic stability cannot be overstated. This study was centered on discerning the influence of lending interest rates on the financial performance of Kenya's commercial banks from 2015 to 2022. Employing a moderated multiple regression methodology, secondary balanced panel data encompassing 27 mortgage-offering commercial banks and 189 data points were scrutinized. The results of the regression analysis divulged that the autonomous variables explicated a substantial 86.69% ($R^2=0.8669$, $p=0.0020$) variance in the financial performance of these Kenyan commercial banks. Notably, the coefficient of lending rate manifested as -0.158824 , underlining a statistically significant ($p=0.0020$) association. Consequently, the null hypothesis was invalidated. The research concludes that lending interest rates exert a substantial and adverse impact on the financial performance of commercial banks. It suggests that these banks should react by raising their mortgage lending rates in tandem with increased mortgage provisions, ultimately bolstering profitability and overall financial performance. Escalating lending rates drive the expansion of long-term mortgage loans, thereby augmenting the financial performance of commercial banks.

Keywords: Financial performance, lending rates, commercial banks, return on assets

1. Introduction

Financial performance serves as a gauge for assessing the outcomes of a company's strategies and activities in monetary expressions. These outcomes materialize through metrics such as return on investment, return on assets, and value-added. Moreover, it aids in appraising a bank's adeptness in resource utilization to generate profits. Noteworthy instances of financial performance encompass operating income, earnings before interest and taxes, and net asset value. It is essential to underline that singularly relying on a sole measure of financial performance is not advisable (Koivu, 2012). A well-developed, efficient banking sector is an important prerequisite for saving and investment decisions needed for rapid economic growth. A well-functioning banking sector provides a system by which a country's most profitable and efficient projects are systematically and continuously funded (Almazari, 2011).

Interest rate, as defined by D Alberto (2015), represents the percentage cost or compensation for capital utilization. This fee applies during borrowing and lending transactions, with the lender's interest rate being a proportion of the lent sum. In parallel, the interest disbursed by a bank to retain depositors' funds is a proportion of the deposited amount, as outlined by William and Fisher (2014). Banks charge a little higher interest rate than they pay depositors for that same money so that they can make profits from providing such services. Interest rates affect most of the industries, real estate and banking being the only directly impacted. When interest rates increase, the cost of borrowing increases, thus, reducing consumer demand for mortgage loans and other loan products, and affecting the financial performance of mortgage firms.

In their study, Georgievskia, Kabashi, Trajkovska, Mitreska & Vaskov (2011) investigated lending rates and interest rate spreads in Greece from 2001 to 2009. They employed panel estimation techniques and found that lending rates were primarily affected by bank size and share, with some influence from deposit rates and non-performing loans. Brock and Franken (2003) studied interest rate spread in Chile. The study showed that the influence of industry concentration, business cycle variables, and monetary policy variables on interest rate spreads differed markedly depending on whether the spreads were computed from balance sheet data or from disaggregated loan and deposit data. Gambacorta (2004) studied factors explaining cross-sectional differences in bank interest rates of Italian banks by considering both micro and macroeconomic factors. The variables considered included:

- Loan and deposit demand
- Operating cost, credit risk and interest rate volatility

- Impact of monetary policy through changes in policy rates and reserve requirements and
- The structure of the industry

The findings indicated that liquid and well-capitalized banks display relatively subdued responses in their short-term lending interest rates to monetary policy shocks.

Ngari (2013) investigated the link between interest rate spreads and the financial performance of Kenyan commercial banks, revealing a positive linear correlation between interest rate spreads and ROA. Similarly, Kipngetich (2011) examined the relationship between interest rates and the financial performance of Kenyan commercial banks, highlighting interest rates as a crucial determinant for achieving elevated financial performance. Different factors influence the behaviour of interest rates, thereby contributing to how they influence the banks' performance. Therefore, commercial banks should come up with opportunities to take advantage of interest rates to improve their financial performance.

Georgievska, Kabashi, and Vaskov's (2011) study revealed lending rates' mixed influence, primarily from bank size and share and, to a lesser degree, from deposit rates and non-performing loans. Notably, the study did not employ profitability indicators for assessing commercial banks' financial performance.

Afzal & Raja (2018) investigated how interest rates affected the financial performance of Pakistani banks. They utilized seven years of annual data (2007-2014) from 20 prominent banks in Pakistan, selected based on market share and return. The findings revealed that deposits held with other banks and interest rates exerted negative impacts on profitability, while advances, loans, and investments exhibited a positive influence on bank profitability. Studies on the interest rate spread with respect to African countries included those by Folawewol and Tennant (2008), Beck and Hesse (2006), Aboagye *et al.*, (2008), and (Ikhiede, 2009). Using a dynamic panel data model, Folawewol and Tennant (2008) studied the determinants of interest rate spread in 33 Sub-Saharan African (SSA) countries focusing on macroeconomic variables. Their results showed that interest rate spread was influenced by the extent of the crowding out effect of government borrowing, public sector deficits, discount rate, inflation, level of money supply, reserve requirement, level of economic development and population size. A more recent study on determinants of bank interest margins in SSA is by (Ahokpossi, 2013) using a sample of 456 banks in 41 SSA countries. The findings demonstrated that factors specific to banks, like credit risk, liquidity risk, and bank equity, significantly influence interest margins. However, these spreads do not exhibit sensitivity to economic growth.

Nonetheless, the reviewed literature scarcely addresses the impact of lending interest rates on commercial banks' financial performance. The existing literature highlights inconclusive findings and conclusions concerning the relationship between lending interest rates and financial performance.

1.1. Statement of the Problem

The performance of Commercial banks has demonstrated inconsistent trends from 2011 to 2020, varying between high profits and, at times, reporting losses. Banks rely heavily on lending to support their performance through interest income while controlling for default rates and managing default risk. The movement of lending interest rates as a price of selling the loans for the period under review has revealed fluctuations based on credit demand and other actors in the money market. Hence, the objective of this study was to investigate the potential impact of lending interest rates on the financial performance of commercial banks in Kenya.

2. Literature Review

2.1. Theoretical Literature Review

2.1.1. Loanable Funds Theory

The originator of this theory is Swedish economist Knut Wicksell (1996). The loanable funds' theory of interest posits that interest rates are determined by the interplay of loanable funds' demand and supply within the capital market.

In economics, the loanable funds market serves as a theoretical platform uniting savers and borrowers, thereby amalgamating the financial resources accessible in commercial banks and lending institutions for both households and firms to allocate towards expenditures, encompassing investments and consumption (Woodford, 2003). Savers act as the source of loanable funds, illustrated when they acquire bonds, transferring their funds to the bond-issuing entity, whether a firm or government. Conversely, borrowers emerge as the demand side of loanable funds; selling a bond implies the quest for loanable funds. The term 'loanable funds' is interchangeable with financial assets, encompassing household savings and, at times, bank loans. Typically deployed for investing in fresh capital assets, loanable funds invariably underpin discussions concerning capital's demand and supply (McConnell & Brue, 2005).

The theory posits that the interest rate reflects the expense of borrowing or seeking loanable funds and signifies the payment for utilizing a dollar over a year. It also characterizes the rate of yield derived from providing or lending loanable funds. The loanable funds form part of the bank deposits, the main source of bank funding and are the lowest cost of funds. The more deposits are transformed into loans, the higher the interest margin and profits and the effects on the financial performance of commercial banks.

2.1.2. Efficiency Theory

The theory postulates that the performance of any bank is defined by the efficiency of the bank. Banks that are efficient tend to incur low costs, which would result in high return on assets (ROA) and return on equity (ROE) hence better performance. The efficiency of a bank can also be attributed to better management and investment technologies

that have lower costs. With this theory, banks can attain favourable production levels through economies of scale. The size factor is also considered as large banks are in a better position to hire highly qualified management and investing production techniques that result in lower operational costs hence leading to high returns as compared to smaller banks. Therefore, this theory provides an understanding of how bank performance is affected by other factors, such as interest rates and lending size.

2.2. Empirical Studies

Hammed et al. (2018) conducted an assessment to gauge how fluctuations in interest rates influence banks' profitability. Their investigation spanned seven years, encompassing annual data from 2007 to 2014, involving 20 banks operating in Pakistan. These banks were selected based on their notable market share and return. The research employed Correlation and Regression analyses to scrutinize the effects of interest rate adjustments, deposits with other banks, advances and loans, and investment on key profitability indicators, namely return on assets (ROA), return on equity (ROE), and earnings per share (EPS). The outcomes unveiled that deposits held with other banks and interest rates had adverse effects on bank profitability, while advances, loans, and investments exerted a positive influence. In a similar vein, Khan and Sattar (2014) explored the repercussions of interest rate alterations on the profitability of commercial banks in Pakistan, concentrating on four major banks' financial statements from 2008 to 2012. The study demonstrated that interest rate variations prompted shifts in savings and investments, enhancing banks' lending efficiency. Interest rate served as the independent variable, while bank profitability was the dependent variable. Pearson correlation analysis was employed to examine the impact of interest rate changes on commercial banks' profitability. The results underscored a robust and affirmative correlation between interest rates and banks' profitability. This signifies that alterations in interest rates trigger corresponding changes in banks' profitability—increases/decreases in the former leading to corresponding rises/falls in the latter.

Gull & Zaman (2013) conducted an assessment to examine how interest rate fluctuations impact the financial outcomes of Pakistan's banking sector. They selected a sample of 20 banks listed on the Karachi Stock Exchange KSE-100, based on their high returns and market share, covering the period 2007-2012. The study employed return on assets, return on equity, and earnings per share as dependent variables, with interest rate, loans or advances, investment, and deposits with other banks as independent variables. Descriptive, correlation, and regression analyses were used for statistical evaluation. The findings revealed an R-square value of 0.43 for the ROA model, indicating that 43% of the variability in ROA was explained by independent variables. Similarly, the R-square value for ROE was 0.30, elucidating that 30% of the variance in ROE was attributed to independent variables. The R-square value for EPS was 0.717, indicating that 71% of the fluctuations in EPS could be elucidated by independent variables. Based on the analysis outcomes, the study concluded that interest rates and other variables exhibited significant influence over the financial performance of commercial banks operating in Pakistan.

Chirwa *et al.* (2014) used panel data techniques to investigate the causes of interest rate spreads in the commercial banking system of Malawi over the liberalized period of the 1990s. Their results showed that high-interest rate spreads were attributable to monopoly power, high reserve requirements, high central bank discount rate and high inflation. Utilizing bank-level data spanning 80 industrial and developing nations during 1988-1995, Demircuc-Kunt et al. (2010) demonstrated that disparities in interest margins encompass a range of influencers, including bank attributes, macroeconomic circumstances, explicit and implicit bank levies, and the broader financial framework. Aburime (2008) used a sample of 154 banks with 1255 individual observations on unbalanced panel data from 1980-2006 to investigate the macroeconomic determinants of bank profitability in Nigeria. The findings indicated a positive correlation between banks' return on assets and factors such as real interest rate, inflation, monetary policy, and foreign exchange regime.

Ogunbiyi, S. S., & Ihejirika (2014) conducted a comprehensive investigation into the influence of interest rates on the profitability of deposit money banks in Nigeria. The study encompassed thirteen years of nationwide data and employed multivariate regression analysis. Return on assets (ROA), return on equity (ROE), and net interest margin (NIM) were adopted as dependent variables for assessing bank performance. The independent variables consisted of real interest rate, T-bill rate, minimum discount rate, interbank rate, savings deposit rate, and inflation. The outcomes of the estimation demonstrated significant and negative impacts of real interest rate and savings deposit rate on the profitability of Nigerian deposit money banks, as inferred through ROA and ROE. Conversely, the relationship between interest rate variables and net interest margin was found to be less substantial. The study emphasized that the profitability of banking institutions hinges on the dynamic shifts in interest rates. In a related study by Alhassan M. et al. (2018) focusing on the influence of interest rate spread on the profitability of commercial banks in Ghana, the measurement of interest rate spread incorporated net interest income (IntSp) and net interest margin (NIM), while bank profitability was gauged through Return on Assets (ROA) and Return on Equity (ROE). The research was conducted on a sample of 24 banks over a ten-year period employing panel data analysis. The results illuminated a positive and statistically significant correlation between interest rate spread and bank profitability within the Ghanaian context. This result confirms the reason for the high-interest rate in African countries despite all liberalization reforms in the sector to increase competition and efficiency to reduce interest rates on borrowing in the continent.

In the context of Kenya, the research highlighted the negative and noteworthy impact of the inflation rate on bank profitability. A study by Lardic & Mignon (2013) delved into the connection between interest rates and inflation rates in G-7 nations, utilizing the Engel-Granger co-integration method. Their findings established a long-term correlation between interest rates and inflation rates. Examining the effect of interest rates on commercial banks' performance in Kenya, Kipnetich (2011) utilized published income statements of commercial banks spanning 2006 to 2010 to model the link between interest rates and financial performance. In the short term, the study concluded that interest rates did not

significantly influence the profitability of commercial banks. The study recommended adopting diversification strategies to augment the performance of commercial banks. In a parallel effort, Okech (2013) undertook a study addressing the impact of lending rates on the performance of commercial banks in Kenya. Focusing on management efficiency and operating cost efficiency concerning lending interest rates, the study revealed a modest positive association between lending rates and commercial bank performance. Considering that interest rates accounted for merely 14.4% of the revenue in commercial banks, the research suggested diversifying income sources to enhance overall performance.

Duncan Thini Kavwele et al. (2018) investigated the impact of interest rate capping on the financial performance of Kenyan commercial banks. This policy was enacted on September 14, 2016 (CBK, 2018), prompted by public concerns over exorbitant credit costs hindering access for a substantial population segment. The law's implementation aimed to mitigate credit costs and enhance credit accessibility. In order to shed light on the matter, the bank examined the literature concerning the implications of interest rate controls. Drawing from international experiences, it was observed that interest rate caps had, in most instances, yielded unfavorable consequences. These encompassed diminished intermediation, reduced transparency, weakened bank competition, and amplified risks to financial stability. Employing bank-level data spanning the periods preceding and succeeding the implementation of the interest rate capping law, in conjunction with select macroeconomic indicators, the Central Bank of Kenya (CBK) conducted an analysis that unearthed a range of negative effects stemming from interest rate caps. Foremost, it was established that the capping of interest rates encroached upon the central bank's autonomy and complicated the execution of monetary policy. The interest rate capping regime demonstrated a propensity to yield counterproductive outcomes in terms of monetary policy. Additionally, signs of reduced financial intermediation by commercial banks became evident through a substantial increase in the average loan size attributable to declining loan accounts, primarily originating from larger banks. This trend indicated a certain reluctance to engage with smaller borrowers. Furthermore, there was a noticeable shift in lending patterns towards the government and larger corporate entities. Despite an initial surge in credit demand upon the imposition of lending rate caps, credit extended to the private sector continued to decline. Concurrently, while some banks began to adjust their revenue structure away from interest income, certain institutions exploited existing approval thresholds to raise loan fees, aiming to offset the loss in interest earnings. In the face of these developments, the banking sector exhibited resilience, yet smaller banks encountered significant declines in profitability over recent months, potentially jeopardizing their viability. The rationing of credit to Micro, Small and Medium Enterprises (MSMEs) by commercial banks was projected to dampen 2017's growth by 0.4 percentage points. Paradoxically, banks initiated adjustments to their business models aimed at heightening efficiency. The Central Bank acknowledged that the observed outcomes, manifesting over the past year, provide only a partial picture, as a more comprehensive understanding is anticipated to materialize over the medium to long term.

Nonetheless, the mentioned studies yielded varied outcomes. Okech (2013) examined lending interest rates in relation to management and operating efficiency. Conversely, Khan and Sattar (2014) and Gull and Zaman (2013) conducted research on profitability changes and interest rate fluctuations, respectively, but in developed countries rather than Kenya. Consequently, a noticeable knowledge gap persists, given the limited discourse on interest rates and financial performance within the context of Kenya.

3. Methodology and Results

Utilizing a correlation research design, this study elucidated the interrelationships among variables. Conducted in Kenya, it encompassed the entire commercial banks providing mortgage financing—32 out of the 39 established banks in Kenya, as per the Central Bank of Kenya's 2021 report. Employing a census technique, the study comprehensively surveyed all 32 commercial banks to meticulously gather relevant data. The panel data set covering a period of 7 years from 2015 to 2021, giving 189 data points, was collected. This period is considered a time of significant developments in the country's banking sector (CBK, 2016a). At the same time, the capping of the interest rates had been affected, and the country's GDP had insignificant growth. Data were analysed using inferential statistical techniques. Diagnostic tests were carried out to ensure that the data conformed to the basic assumptions of the classical linear regression model.

3.1. Results on the Unit Root Tests

Table 1 shows the results of the unit root tests conducted on the variables using Levin, Lin, Chu (LLC) common root test. From the results, all the study variables were found to be stationary at levels.

Results of the Study Variables		
Study Variable	Statistic	Prob.
Financial Performance (ROAs)	9.38165	0.0000*
Lending Interest Rate (LNRT)	27.0000	0.0000*

Table 1: Summary of the Levin, Lin, Chu (LLC) Common Root Test

* Represent Significance at the 0.05 Level

Source: Field Data, 2023

The detailed E-views results are shown below:

3.1.1. Unit Root Test on Financial Performance-ROAs

Null Hypothesis: Unit root (common unit root process) Series: ROAs Date: 04/29/23 Time: 16:59 Sample: 2015 2021 Exogenous variables: Individual effects Automatic selection of maximum lags Automatic lag length selection based on SIC: 0 Newey-West automatic bandwidth selection and Bartlett kernel Total (balanced) observations: 162 Cross-sections included: 27							
Method				Statistic		Prob.**	
Levin, Lin & Chu t*				-9.38165		0.0000	
** Probabilities are computed assuming asymptotic normality							
Intermediate results on ROAs							
Cross	2nd Stage	Variance	HAC of		Max	Band-	
Section	Coefficient	of Reg	Dep.	Lag	Lag	width	Obs
ABSA	-0.66598	2.E-05	6.E-05	0	0	0.0	6
ABC	-0.47065	5.E-07	4.E-06	0	0	1.0	6
BOA	-1.14692	0.0006	0.0003	0	0	5.0	6
BOB	-0.62523	3.E-05	3.E-05	0	0	3.0	6
BOI	-1.23877	1.E-05	2.E-05	0	0	3.0	6
CON	-0.90012	7.E-05	0.0002	0	0	0.0	6
COOP	-1.00151	3.E-05	1.E-05	0	0	5.0	6
DBK	-1.18818	0.0006	0.0003	0	0	5.0	6
DTB	-0.23975	5.E-05	1.E-05	0	0	5.0	6
ECO	-0.86790	0.0006	0.0003	0	0	5.0	6
EQT	-0.72191	0.0002	5.E-05	0	0	5.0	6
FBK	-0.87229	0.0002	0.0003	0	0	3.0	6
FCB	-1.19727	0.0002	9.E-05	0	0	1.0	6
GBL	-0.47000	3.E-05	5.E-06	0	0	5.0	6
GAB	-0.63764	3.E-05	0.0001	0	0	1.0	6
HFC	-0.33468	7.E-05	3.E-05	0	0	3.0	6
I&M	-0.55970	3.E-05	9.E-06	0	0	5.0	6
KCB	-1.00382	6.E-05	2.E-05	0	0	5.0	6
KBL	-1.11209	0.0022	0.0025	0	0	2.0	6
MIB	-0.67529	0.0001	0.0001	0	0	2.0	6
NBK	-0.97474	3.E-05	2.E-05	0	0	5.0	6
PBK	-1.19911	5.E-06	5.E-06	0	0	5.0	6
PBL	-0.46057	2.E-05	3.E-05	0	0	0.0	6
SMB	-0.94573	0.0076	0.0026	0	0	5.0	6
SPIRE	-0.24835	0.0068	0.0024	0	0	5.0	6
SBL	-1.07399	2.E-05	1.E-05	0	0	5.0	6
SCB	-1.19727	8.E-05	2.E-05	0	0	5.0	6
	Coefficient	t-Stat	SE Reg	mu*	sig*		Obs
Pooled	-0.63640	-12.400	1.093	-0.554	0.919		162

Table 2

3.1.2. Unit Root Test on Lending Interest Rate-LNRT

Null Hypothesis: Unit root (common unit root process)							
Series: LNRT							
Date: 04/29/23 Time: 17:04							
Sample: 2015 2021							
Exogenous variables: Individual effects							
Automatic selection of maximum lags							
Automatic lag length selection based on SIC: 0							
Newey-West automatic bandwidth selection and Bartlett kernel							
Total (balanced) observations: 162							
Cross-sections included: 27							
Method				Statistic		Prob.**	
Levin, Lin & Chu t*				-27.0000		0.0000	
** Probabilities are computed assuming asymptotic normality							
Intermediate results on LNRT							
Cross	2 nd Stage	Variance	HAC of		Max	Band-	
Section	Coefficient	of Reg	Dep.	Lag	Lag	width	Obs
ABSA	-1.24762	5.E-06	2.E-06	0	0	5.0	6
ABC	-1.14264	3.E-05	4.E-05	0	0	2.0	6
BOA	-1.13247	8.E-06	0.0001	0	0	0.0	6
BOB	-0.82572	2.E-05	3.E-05	0	0	0.0	6
BOI	-0.89839	6.E-06	3.E-05	0	0	0.0	6
CON	-1.10216	4.E-05	8.E-05	0	0	5.0	6
COOP	-0.51663	1.E-06	7.E-06	0	0	2.0	6
DBK	-0.95573	1.E-05	2.E-05	0	0	3.0	6
DTB	-0.90343	0.0001	5.E-05	0	0	5.0	6
ECO	-0.72375	0.0002	0.0003	0	0	1.0	6
EQT	-0.92265	8.E-06	1.E-05	0	0	2.0	6
FBK	-0.63884	9.E-06	7.E-05	0	0	2.0	6
FCB	-0.50941	0.0002	0.0002	0	0	0.0	6
GBL	-0.93833	1.E-05	9.E-05	0	0	1.0	6
GAB	-0.89329	9.E-07	6.E-05	0	0	1.0	6
HFC	-0.99531	4.E-06	3.E-05	0	0	1.0	6
I&M	-1.17845	3.E-06	9.E-05	0	0	1.0	6
KCB	-0.48999	6.E-06	2.E-06	0	0	5.0	6
KBL	-0.69978	0.0002	6.E-05	0	0	5.0	6
MIB	-0.59093	8.E-05	0.0003	0	0	0.0	6
NBK	-0.50813	2.E-05	1.E-05	0	0	5.0	6
PBK	-0.37255	1.E-05	4.E-06	0	0	5.0	6
PBL	-1.19855	1.E-06	1.E-05	0	0	2.0	6
SMB	-1.21575	2.E-06	3.E-05	0	0	2.0	6
SPIRE	-0.88661	0.0001	0.0002	0	0	2.0	6
SBL	-0.88017	9.E-06	2.E-05	0	0	0.0	6
SCB	-1.06293	9.E-06	6.E-06	0	0	5.0	6
	Coefficient	t-Stat	SE Reg	mu*	sig*		Obs
Pooled	-0.91053	-28.853	1.191	-0.554	0.919		162

Table 3

3.2. Result of Model Specification Test

The Hausman Test was used to select the best model, that is, either the fixed effect (F.E) model or the random effect (R.E) model, to analyse the panel data under the null hypothesis, that the R.E model is preferred to the F.E model. Based on the test results presented in table 2 (see the regression results on the R.E model), the null hypothesis was rejected, and hence, the F.E model was used.

Test Cross-Section Random Effects			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	49.539951	6	0.0000*

Table 4: Summary Results of Hausman Test

* Represent Significance at the 0.05 Level.

Source: Field Data, 2023

3.3. Results on the Test of Normality of the Residual

Figure 1 shows that the residuals from the regression were normally distributed with the reported probability that the Jarque-Bera statistic exceeds in absolute terms the observed value being 0.240731, higher than the 0.05 level of significance.

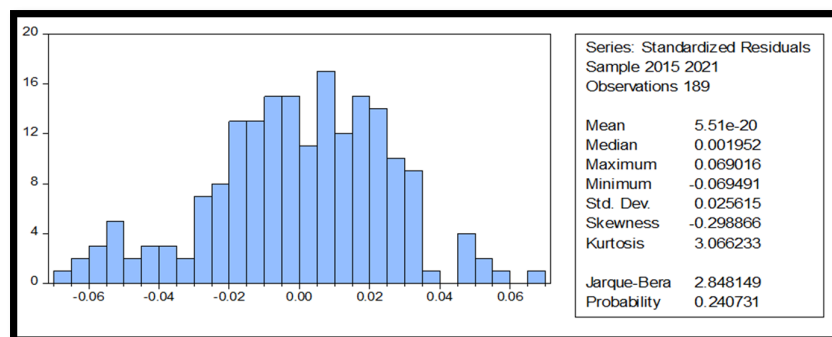


Figure 1: Results on the Test of Normality of the Residual

Source: Field Data, 2023

3.4. Results of Multicollinearity Test

The variance inflation factor (VIF) method was used in examining the inter-correlations among the explanatory variables. As indicated in table 4, the centred VIF value is 7.938898, which is lower than 10. Accordingly, Gujarati (1995) asserts that multicollinearity will only be a problem if and only if one of the VIF values is greater than 10, which was not the case with the presented results.

	Coefficient	Uncentered	Centered
Variable	Variance	VIF	VIF
C	1.56E-06	2.214812	NA
LNRT	0.006436	8.176531	7.938898

Table 5: Variance Inflation Factors

Key: LNRT=Lending Interest Rate

Source: Field Data, 2023

3.5. Model Specification

The researcher used the multiple regression analysis both in the basic and the interactive regression models as follows:

3.5.1. Basic Model

$$ROA_{it} = \alpha_0 + \beta_1 CAR_{it} + \beta_2 CAR_{it} * CAR_{it} + \beta_3 MF_{it} + \beta_4 MF_{it} * MF_{it} + \beta_5 LNRT_{it} + \mu_{it}$$

Where:

ROA_{it} = Return of asset of bank i at time t ,

CAR_{it} = Capital Adequacy Ratio of bank i at time t ,

MF_{it} = Mortgage financing of bank i at time t ,

α_0 = Intercept,

$LNRT_{it}$ = Lending Interest rate of bank i at time t , and

μ_{it} = Error term where i is cross-sectional and t is time identifier.

- NB: One model that encapsulates the two independent variables that is mortgage financing and lending rates, was used in the study, which is in line with panel regression.

3.5.2. Interactive Model

$$ROA_{it} = \alpha_0 + \beta_1 CAR_{it} + \beta_2 CAR_{it} * CAR_{it} + \beta_3 MF_{it} + \beta_4 MF_{it} * MF_{it} + \beta_5 LNRT_{it} + \beta_6 MF_{it} * LNRT_{it} + \mu_{it}$$

Where:

ROA_{it} = Return of asset of bank i at time t ,

CAR_{it} = Capital Adequacy Ratio of bank i at time t ,

MF_{it} = Mortgage financing of bank i at time t ,

α_0 = Intercept,

$LNRT_{it}$ = Lending Interest rate of bank i at time t ,

$MF * LNRT_{it}$ = interaction term representing the moderator effect of bank i at time t and

μ_{it} = Error term where i is cross-sectional and t is time identifier.

4. Result and Discussion

4.1. Descriptive Analysis

Table 7 presents the descriptive statistics relating to the study variables. The table presents the financial performance of Kenyan commercial banks, assessed through Return on Assets (ROAs). The mean ROAs stood at 0.009987 with a standard deviation of 0.046222. Conversely, the lending interest rate (LNRT) exhibited a mean of 4.27E-16 and a standard deviation of 0.011805. These include trend analysis on financial performance, mortgage financing and lending interest rate as follows:

4.1.1. Trend Analysis on Financial Performance of the Sampled Banks

In figure 2 below, the depicted trend illustrates that the mean ROAs of the surveyed Kenyan commercial banks declined from 2015 to 2016, remained constant in 2016, exhibited gradual growth between 2017 and 2018, and then decreased, reaching their nadir in 2020. The minimum returns experienced in 2020 might be attributed much to the negative effects of the COVID-19 pandemic that led to slow growth in lending.

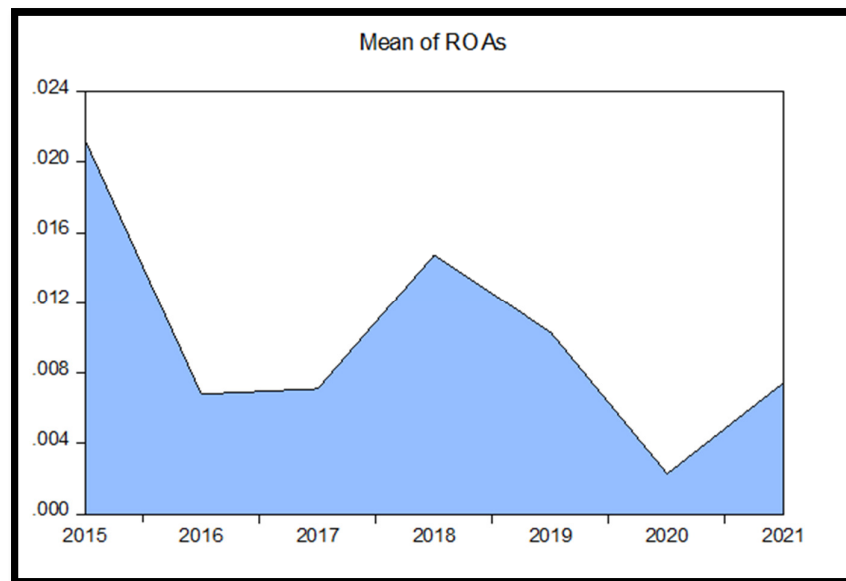


Figure 2: Trend of Financial Performance- ROAs
Source: Field Data, 2023

4.1.2. Trend Analysis on Lending Interest Rate of the Sampled Banks

Figure 3 shows a downward trend of the average lending interest rate from 2015 to 2020 and stagnating towards 2021. This trend might be attributed largely to the enactment of the interest rate capping law in September 2016, which led to the setting of the maximum limit in interest rates that can be charged by commercial banks on their lending activities, including mortgage lending. The rise seen in 2021 is due to the Central Bank of Kenya (CBK) allowing commercial banks to adopt a risk-based approach in pricing their loans.

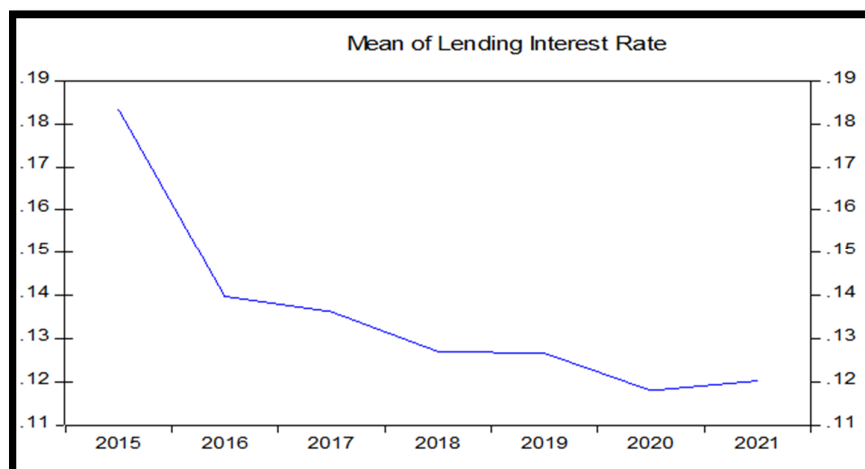


Figure 3: Trend of Lending Interest Rate
Source: Field Data, 2023

4.2. Inferential Statistics

Moderated multiple regression was used to test the hypotheses. However, this was done after performing several diagnostic tests, as discussed below. This was to ensure the non-violation of the classical linear regression model (CLRM) and also to establish how well the data fit in the regression model used in testing the hypotheses.

4.2.1. Results of Correlation Analysis

Table 6 indicates the correlation matrix. In the table, the financial performance, measured in terms of ROAs, displayed a significant negative correlation with lending interest rates among surveyed Kenyan commercial banks ($r = -0.080742$, $p < 0.05$).

Correlation				
Probability	ROAs	MF	LNRT	CAR
ROAS	1.000000			

LNRT	0.298489	1.000000		
	(0.0000) *	-----		

Table 6: Correlation Matrix

Key: ROAs =Financial Performance of Commercial Banks, Mf=Mortgage Financing,

Note: P-Values in Parentheses; * Represent Significance at the 0.05 Level

Source: Field Data, 2023

4.2.2. Regression Results

The results are from the interaction model of moderated multiple regression runs to test the research hypotheses. The presented outcomes encompass concise statistics from the multivariate regression model and regression findings concerning the impact of mortgage financing and lending interest rates on the financial performance of Kenyan commercial banks. Additionally, the moderating role of lending interest rates on the link between mortgage financing and financial performance is examined. Elaborated E-views results follow the summary:

4.2.2.1. Summary Statistics of the Regression Model

Table 7 provides a synopsis of the interaction regression model's statistics. The R-Squared value, at 0.866892, signifies that the combined impact of independent variables accounts for approximately 86.69% of variations in Kenyan commercial banks' financial performance. Furthermore, the Adjusted R-Squared, recorded as 0.839587, underscores the robust explanatory nature of the independent variables in delineating the financial performance of commercial banks in Kenya. Furthermore, the probability of F-statistic (0.000000) was below the 0.05 significance, leading to the rejection of the null hypothesis. This hypothesis tested the significance of the overall model ($R\text{-Squared} \neq 0$). Moreover, the Durbin-Watson statistic registered around 1.6, indicating the absence of serial correlation issues in the regression analysis.

4.2.2.2. Regression Results on the Effect of Lending Interest Rates on the Financial Performance of Commercial Banks in Kenya

In table 7 below, the lending interest rate (LNRT) coefficient is -0.158824, accompanied by a p-value of 0.0020. This implies that, while holding other variables constant, a single-unit increase in banks' lending interest rates corresponds to a decline of -0.158824 in the financial performance of Kenyan commercial banks. Importantly, this effect carries significance, given the p-value's value below 0.05. Consequently, the null hypothesis, suggesting no substantial impact of banks' lending interest rates on the financial performance of Kenyan commercial banks, is refuted in favor of the alternative hypothesis.

Lending Interest Rate Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNRT	-0.158824	0.050408	-3.150767	0.0020*

Table 7: Regression Results on the Effect of Lending Interest Rates on the Financial Performance of Commercial Banks in Kenya

* Represent Significance at the 0.05 Level

4.2.2.2.1. Fixed Effect Regression-Interaction Model

Dependent Variable: ROAs				
Method: Panel EGLS (Cross-section weights)				
Date: 05/01/23 Time: 15:26				
Sample: 2015 2021				
Periods included: 7				
Cross-sections included: 27				
Total panel (balanced) observations: 189				
Linear estimation after one-step weighting matrix				
White cross-section standard errors & covariance (d.f. corrected)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.002127	0.004800	-0.443142	0.6583
CAR	0.073991	0.028182	2.625464	0.0095
CAR*CAR	-0.008675	0.003295	-2.632408	0.0093
MF	0.004434	0.001222	3.629713	0.0004
MF*MF	0.000703	0.000780	0.901059	0.3689
LNRT	-0.158824	0.050408	-3.150767	0.0020
MF*LNRT	-0.057650	0.020935	-2.753725	0.0066
	Effects Specification			
Cross-section fixed (dummy variables)				
	Weighted Statistics			
R-squared	0.866892	Mean dependent var		0.059682
Adjusted R-squared	0.839587	S.D. dependent var		0.076165
S.E. of regression	0.028120	Sum squared resid		0.123355
F-statistic	31.74929	Durbin-Watson stat		1.592612
Prob(F-statistic)	0.000000			
	Unweighted Statistics			
R-squared	0.645216	Mean dependent var		0.009987
Sum squared resid	0.142501	Durbin-Watson stat		1.613486

Table 8: Regression Results on the Effect of Lending Interest Rates on the Financial Performance of Commercial Banks in Kenya

5. Conclusion and Recommendation

The findings demonstrate a significant and negative influence of lending interest rates on the financial performance of commercial banks in Kenya.

Based on the study results, it was determined that lending interest rates significantly and adversely impact the financial performance of commercial banks in Kenya.

Consistent with these findings, the Central Bank of Kenya (CBK) should promote the implementation of risk-based pricing among mortgage financing institutions to prevent excessive mortgage product pricing, given the adverse consequences of elevated lending rates on financial performance and mortgage financing.

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