RELATIONSHIP BETWEEN MORTGAGE INTEREST RATE AND FINANCIAL PERFORMANCE OF THE MORTGAGE FIRMS IN KENYA

BY

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DECLARATION

I, the undersigned, declare that this research project is my own work and has never been presented in any other university or college for a degree or any other award.

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This research project report has been submitted for examination with my approval as the university supervisor.

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DEDICATION

This work is dedicated to my dear husband Dan and my lovely daughters Tatyana and Zahra. Thank you for being there for me during the entire study period.

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LIST OF ABBREVIATIONS

CBK - Central Bank of Kenya

CBR- Commercial Bank Rate

EBIT - Earnings Before Interest Tax

IRS - Interest Rate Spread

KCB- Kenya Commercial Bank

NPL - Non Performing Loans

NSE – Nairobi Securities Exchange

ROA - Return on Asset

ROE - Return on Equity

SDE - Stochastic Differential Equation

T. Bill - Treasury Bill

ABSTRACT

Banks are the most important financial intermediaries as they play a crucial role in the operation of most economies. The efficiency of financial intermediation can also affect economic growth. Economies that have a profitable banking sector contribute to the stability of the financial system. Therefore, it is important to understand the determinants of banking sector profitability. The objective of this study is to establish the relationship between mortgage interest rates and financial performance of mortgage firms in Kenya. To predict financial performance selected indicators were used. The predictor variables included; interest rate, credit risk, assets size, liquidity and expenses management. Financial performance was measured using Return on Assets (ROA). The study used secondary data sources to collect data from CBK, NSE and individual commercial banks. The researcher adopted a survey research design. The population for the study comprised of the commercial banks in Kenya offering mortgage, licensed commercial banks in Kenya as of 31 December 2009; and the data for the period between 2009 and 2012. Quantitative data collected was analyzed by the use of descriptive statistics and presented through means, median and standard deviation. The inferential analysis which includes regression analysis and correlation was done to establish the relationship between mortgage interest rate and financial performance of the mortgage firms in Kenya. Multiple linear regression analysis was conducted at 95% confidence level. The study established that there was a strong positive relationship between bank size and profitability of commercial banks offering mortgage in Kenya. However liquidity, interest rates, expenses management and credit risk had no significant effect on return on assets (ROA). These results suggest that banks can improve their profitability through effective management of the determinants with no significant influence on ROA. This study suggests that asset size is the most desirable determinant of ROA of commercial banks offering mortgage. Further research on financial performance of banks offering mortgage should be done since this is a field that has not been fully ventured. The study also recommends policies that would encourage commercial banks to adopt mortgage financing to enhance their profitability.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Mortgage is the primary mechanism used in many countries to finance private ownership of residential and commercial property. Lenders provide funds and the property functions as collateral. The bank or mortgage firm loans a large amount of money (typically 80%) of the price of the property which is paid back with interest over a set period of time. The most basic arrangements would require a fixed monthly payment over a period of ten to thirty years depending on local conditions (Dolde, 2006).

The level of interest rates spread (IRS) affect's bank's investment portfolio, which is a key indicator of its performance, thus directly influencing the allocation of money and real capital to specific industries and firms (Zarruk, 1989). The level of interest rates in the equilibrium determines the supply and demand for loanable funds in the market. High interest rates on savings, households, who are savers, make available a large quantity of funds than at low interest rates. That is, the larger the amount of this payments the larger the deferral of household consumption and thus the greater the amount of funds available to borrowers. This prompts banks to reduce the interest rates charged on borrowers of funds in order to increase their demand thus leading to reduction in the interest rates spread (IRS).

Zarruk (1989) low interest rate on savings reduces the amount that is supplied than demanded. At this point banks will increase their interest rates leading to a reduction in quantity demand by borrowers hence attainment of an equilibrium and will constitute an increase in the interest rates spread (IRS), as customers will compete for the limited

supply of loanable funds. Individuals seeking to own homes and individual residential home developers are affected by the high interest mortgage rates. When the interest rates are lower borrowers are more likely to borrow as doing so costs them less. On the other hand when interest rates are high, credit becomes more expensive, making borrowers shy away. Banks use purchased property as collateral and reposes if the borrowers are unable to repay the loans taken. High mortgage interest rates charged by banks are to blame for low mortgage uptake.

Mortgage firms' profitability and efficiency are often considered as the main factors that determine interest rates. The continuous trend of expanding mortgage firm's activities in recent years, as well as the reallocation of low-interest-bearing assets into high-interest-bearing assets, has a direct positive impact on the improvement of mortgage firms' profitability and efficiency (Mutero, 2007).

The objective of the study was to assess the nature of the relationship between mortgage interest rates and financial performance of mortgage firms in Kenya.

1.1.1 Mortgage Interest Rates

Interest rate is the percentage charged or paid for the use of money. It is charged when the money is being borrowed, and paid when it is being loaned. The interest rate that the lender charges are a percentage of total amounts loaned. Similarly, the interest that a bank pays to hold depositor's money is a percentage of the amount deposited (Fisher, 1930). Banks charge a little higher interest rate than they pay depositors for that same money so that they can make profits for providing such services. Interest rates affect most of the industries with, the real estate and banking being the only directly impacted. When

interest rates increase, cost of borrowing increases reducing consumer demand for mortgage loans and other loan products, and hence affecting the financial performance of mortgage firms.

Interest rate is a critical factor that drives the mortgage market and access to more middle income housing. Commercial banks base the mortgage rates on the volatility of the CBR as their lending rate. CBR affect the mortgage financing since the mortgage rates are pegged towards CBR. The increase in CBR leads to a consistent increase in the mortgage rate which tends to slow down mortgage uptake. High mortgage rate leads to an increase in cost of borrowing, leading to defaults by borrowers and foreclosures. Conversely, high mortgage rates results to increase in profits by mortgage firms. The CBK sets its rate for overnight loans to commercial banks at 8.5%. The commercial banks ought to use the CBK interest rate to set their prime lending rates. This is not the case; the banks are still offering mortgages with interest rates as high as 28% (CBK, 2013).

It is widely believed that fluctuations of market interest rates exert significant influence on the activities of commercial banks. Mortgage-backed securities investors determine mortgage rates offered to consumers, the mortgage production line ends in the form of a mortgage-backed security purchased by an investor. The free market determines the market clearing prices investors will pay for mortgage-backed securities. These prices feedback through the mortgage industry to determine the interest rates offered to consumers (Fisher, 1930).

1.1.2 Financial Performance of Mortgage Firms

Performance entails measuring the results of a firm's policies and operations in monetary terms. Techniques applied include; ratio analysis, trend analysis and cross sectional analysis. Ratio analysis gives an objective picture of a company's financial performance because they eliminate the size effect (Chandra, 2005). Financial ratios can be grouped into five categories namely; profitability, liquidity, leverage, turnover and valuation ratios.

Firms financial performance has been studied and measured by different researchers (Berger and Humphrey, 1997; Samad and Hassan, 1989; Rushdi and Tennat, 2003) measured firm performance using ROA and ROE. ROA is a measure of profitability; it captures the operating performance of a company and is calculated by dividing EBIT/Average total Assets – in book value. ROE refers to the amount of net income returned as a percentage of shareholders equity. Return on equity measures a corporation's profitability by revealing how much profit a company generates with the money shareholders have invested. ROA was adopted in this study. ROA is a measure of profitability; it captures the operating performance of a company and is calculated by dividing EBIT/Average total Assets – in book value.

1.1.3 Mortgage Interest Rate and Financial Performance

A higher level of market interest rates improves mortgage firm's profitability. In addition, the effect of interest rate spread changes on banks' profitability is shown to be asymmetric with the effect originating from lending rates being greater than those of deposit rates. The stochastic behavior of market rates is also argued to be a significant

factor that determines the mode banks adopt in delivering their services (Degryse *et al*., 2009).

Banks can be either brokers or asset transformers subject to interest rate uncertainty. In a volatile interest rate environment, banks minimize their risk exposure by performing the role of brokers, merely matching the arrival of assets and liabilities. The impact of variations in market interest rates on banks' profitability is ambiguous; it largely depends on the degree of responses of asset and liability rates. In general, since both sides of banks' balance sheets are affected by market interest rates in a parallel fashion, the net impact on banks' profitability can be deduced by tracing the responses of both assets and liabilities as market interest rates change.

Wolfgang and Opfer (2003) observed that prevailing interest rates affect the financial performance of firms. They compared the financial performance of financial institutions and five other industries and found that financial institutions have greater sensitivity to changes in long term interest rates.

1.1.4 Mortgage Firms in Kenya

In Kenya there are two types of lenders, authorized by the Central Bank of Kenya. These are ordinary banks, which have the right to engage in mortgage business and mortgage companies. Mortgage market is dominated by five top lenders who own 80% of the total mortgage portfolio. The top two banks hold over 50% of the mortgage portfolio. Banking sector controls Ksh 2.02 million in asset and pre - tax profit of about 89.5 billion Kenya shillings as at December 2011. The largest lender in Kenya currently is Kenya Commercial Bank (KCB) following its acquisition of Savings & Loans and which

remains as a mortgage subsidiary of KCB. KCB bank group is East Africa's largest bank with total assets amounting to Ksh 349 billion with branches in Kenya, Rwanda, Burundi, Uganda, Tanzania and South Sudan. The other players in the market include; Standard Chartered Bank, Barclays Bank, Cooperative Bank, Commercial Bank of Africa. (Banking Supervision Annual Report, 2011).The other key player is the Housing Finance Corporation of Kenya the only mortgage company in Kenya. The Housing Finance Corporation of Kenya was incorporated in 1965 as per the Banking Act with an objective to promote home ownership. This was to be achieved by providing savings and mortgage facilities to the Kenyan public.

The high interest rates in the first half of 2012 impacted negatively on the mortgage market with NPLs increasing from Ksh. 3.6 billion in December 2011 to Ksh. 6.9 billion in December 2012. According to a Central Bank of Kenya survey for 2012 on commercial banks the interest rates charged on mortgages on average was 18 percent and ranged between 11.0 percent - 25.0 percent. Other information collected was that about 85.6% of mortgage loans were on variable facts include interest rates basis compared to 90% in 2011.

In 2013, the number of institutions offering mortgages to customers was 36 with about 70% of lending to mortgage market being done by only 5 institutions. CBK estimates that in 2013, interest rates charged on mortgages on average was 16.37% percent and ranged between 8.5 percent - 22.0 percent. About 97.4% of mortgage loans were on variable interest rates basis. The average mortgage loan size increased from Ksh. 6.4 million in 2012 to Ksh. 6.9 million in 2013 and there were 19,879 mortgage loans in the market in December 2013 (CBK, 2013).

Based on a ranking of mortgage market constraints, lack of access to long-term funds and high interest rates are the major impediments to the growth of banks mortgage portfolios. However, the 2011 survey identified high interest rates as the major obstacle with lack of access to long term funds being rated as the second obstacle. According to the CBK the average interest rate was 18% in 2012 for mortgages; however the range was very wide i.e. 11% - 25% (CBK, 2012). This is a very high variability among the mortgage lenders and indicates some financial institutions are gaining very high profits from this industry. This further explains the un-affordability of mortgages that causes the slow growth of the market in Kenya (CBK bank supervision annual report, 2013)

1.2 Research Problem

Interest rates spread is the centerpiece of commercial banks' core business of financial intermediation. Interest rates constitute the key price in the financial sector, the main transmission mechanism of monetary policy, the main vehicle for matching supply and demand and normally, the key determinant of profitability. Their level reflects banks' perception of risk (country and creditor), market liquidity conditions, the cost of doing business and the level of competition in the financial sector (Folawewo and Tennant, 2008).

Folawewo and Tennant (2008) observed that high interest spreads resulted from factors such as high operating costs, financial taxation, and lack of competition and high inflation rates. All these factors encourage banks to increase interest rates charged on their services to enable them maintain their level of performance in the market.

Higher interest rates have a negative effect on the banking sector. They have resulted to wide interest spreads in Kenyan banking system. The recent increase in base lending rates to 20-25 percent in November 2011have resulted to increase in interest rate spread. Increase in lending base rate always result to banks earning supernormal profits because customer deposits constitute about 75 percent of banks lent funds. High interest rates are a macroeconomic problem that has an effect on the banking sector. Economic observers in Kenya have noted that high interest rates are regressive to economic development. The CBK has attempted to correct the situation but the policy definition and design has not yet been appropriately been designed (Musa, 2011).

There is need to determine the appropriate interest rates in order to stimulate economic development in the county. There is extensive literature on mortgages in Kenya. Bett (1992) did a study on financial performance of the banking sector. Ongweso (2006) did a study on relationship between interest rates and non-performing loans in Kenya commercial banks in Kenya. Wahome (2010) did a study on factors influencing mortgage financing in Kenya. Research has also been done to indicate that high interest rates have led to fall in the business profits, fall in investment leading to lower economic growth.

No known study that has dealt on the relationship between mortgage interest rates and financial performance of mortgage firms in Kenya. Therefore this study was to fill the knowledge gap that currently exists, what is the relationship between mortgage interest rate and financial performance of mortgage firms in Kenya?

1.3 Research Objective

The research objective of the study was to determine the relationship between mortgage interest rate and financial performance of mortgage firms.

1.4 Value of the Study

This study, by establishing the relationship between mortgage interest rate and the financial performance of mortgage firms, is of use to the management of mortgage institutions, and the regulatory authority such as the Central Bank of Kenya. The study acts as an eye opener on whether the interest rates charged influences bank performance or not. The relevant bodies can make appropriate policies regarding their mortgage interest rate that balance the risk and revenue so as to enhance performance during economic booms and bust.

This study benefits the academicians in Kenya by narrowing the knowledge gap on mortgage interest and financial performance. The study forms a good base upon which further research can be based since it helps in forming empirical study and act as a source of secondary material.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The determinant of bank profitability is defined as a function of internal and external determinants. Internal determinants are related to bank management and termed micro or bank specific determinants of profitability. The bank specific ratios represent liquidity asset quality, credit risk and asset size. The external determinants are economic in nature and affect the operation and financial performance of banks. The economic factors include market interest rates, inflation and political and affect bank profitability (Bourke, 1989).

2.2 Theoretical Literature Review

This chapter explores the various mortgage and interest theories. The chapter will also look at the empirical studies of similar studies that have been carried out by various researchers elsewhere that are similar to this particular study.

2.2.1 Loanable Funds Theory

According to the loanable funds theory of interest the rate of interest is calculated on the basis of demand and supply of loanable funds present in the capital market. The concept was formulated by Knut Wicksell the well-known Swedish economist.

In economics, the loanable funds market is a hypothetical market that brings savers and borrowers together, also bringing together the money available in commercial banks and lending institutions available for firms and households to finance expenditures, either investments or consumption. Savers supply the loanable funds; for instance, buying

bonds will transfer their money to the institution issuing the bond, which can be a firm or government. In return, borrowers demand loanable funds; when an institution sells a bond, it is demanding loanable funds. Another term for financial assets is "loanable funds", funds that are available for borrowing, which consist of household savings and sometimes bank loans. Loanable funds are often used to invest in new capital goods, therefore, the demand and supply of capital is usually discussed in terms of the demand and supply of loanable funds (McConnell and Blue, 2005).

The interest rate is the cost of borrowing or demanding loanable funds and is the amount of money paid for the use of a dollar for a year. The interest rate can also describe the rate of return from supplying or lending loanable funds. The loanable funds form part of the bank deposits, the main source of banks funding and are lowest cost of funds. The more deposits are transformed into loans, the higher the interest margin and profits and the increase in asset size.

2.2.2 Lien and Title Theory of Mortgages

According to (Werner and Kratovil, 1981) there are two methods used in purchasing real property known as the Title and Lien Theory.

In lien theory the mortgagee holds the deed to the property during the mortgage term. The mortgagee has an obligation to make all payments to the mortgagor and the mortgage becomes a lien on the property, but the title remains with the buyer. This is equivalent to future interest in the property which allows the mortgagee to use the process of foreclosure. The lenders lien is removed once the payments have been completed. In case

of default by the mortgagee the mortgage will go through formal foreclosure proceedings in order to gain legal title to secure repayment of the loan.

In title theory the mortgage transfers legal title of the property to the mortgagor who retains it until the mortgage has been foreclosed. The mortgagor is said to hold the title for security reasons only. The mortgagee is entitled to legal title when the debt is fully repaid; the mortgagor retains ownership of the mortgaged property while borrower retains possession. The mortgagor has legal title to the mortgaged property; in case the mortgagee defaults they have the right to immediate possession of the property.

There is usually very little difference between a lien and title theory. The principle difference in the title theory is that the mortgagee is given the right to possession before the foreclosure is complete.

When the rate on a mortgage contract increases significantly, this is normally favourable to the lender in the absence of correlated increases in rates on liabilities. Conversely the lender faces the risk that interest rate increase could be unaffordable to the borrower, forcing the borrower to default, in which case it could be necessary to foreclose on the property (with substantial costs of foreclosure). The lender faces the risk that the value of the property underlying the mortgage could drop in value to below the outstanding balance on the mortgage; if this event induces the borrower to default due to moral hazard, the lender must not only incur the costs of implementing a foreclosure but also must sell the property at a price that fails to recoup the lender's investment. This has a negative effect on the banks liquidity and profitability.

2.3 Determinants of Financial Performance of Mortgage Firms

2.3.1 Political Instability and Social Unrest

Banks operations are scaled down whenever a country is faced with political instability and social unrest, as economic activities are at their minimal levels at such times, (Aguko, 2012). Prevailing disturbances reduces the number of individuals seeking for loans and those saving at that particular period hence reduction in bank's profitability. Also investors shy away from channeling their funds into the economy thus bank's profit level decreases and without profits, any firm cannot attract outside capital (Gitman and Joelink, 2002).

This is because profits play a key role in persuading depositors to supply their funds on advantageous terms and it is the basic aim of a bank's management to achieve profit, as this is the essential requirement for conducting any business. By reducing the probability of financial trouble, impressive profits figures also help reassure a bank's other stakeholders, viz: investors, borrowers, managers, employees, external product and service suppliers, and regulators.

2.3.2 Inflation

Inflation is a sustained increase in the price level of goods and services in an economy over a period of time. Inflation is associated with both higher costs and higher income thus leading to variations in interest margins. The extent to which inflation affects bank profitability depends on whether future movements in inflation are fully anticipated, which, in turn, depends on the ability of firms to accurately forecast future movements in the relevant control variables. An inflation rate that is fully anticipated raises profits as

banks can correctly adjust interest rates in order to increase revenues. On the other hand an unexpected inflationary change could raise costs due to imperfect interest rate adjustment. This implies that higher inflation may lead to lower net profitability. This is because it recovers borrowers' capability to meet requirement by eroding the real value of the debt burden (Demirguc-Kunt and Huizinga, 1999).

2.3.3 Exchange Rate

In an environment where the exchange rate is volatile and the interest rates are sticky downward, expectations of exchange rate depreciation will result in higher lending rates. This is evidenced by the recent depreciation of the Kenya shilling, to as low as Kshs.107, against the US dollar, on which CBK and commercial banks reciprocated by increasing their lending rates. Therefore, an anticipated inflation leads to increased interest rate spread (Aguko, 2012).

Additionally, exchange rate plays an important role in a country's level of trading with other economies around the world. Constant appreciation of the foreign currencies against a given country's currency has direct impact on business performance. An increase in price of goods and services as a result of unfavorable exchange rate will in turn increase inflation hence affecting interest rates, loan rate and the composition of debt in the financial structure and possibly declining banks profitability (Abiti and Adzraku, 2012).

2.3.4 Credit Risk

Mortgage lending institutions carefully assess credit risk, which is the possibility that borrowers will fail to meet their obligations as scheduled. The risk is that of the lender

and includes lost principal and interest and increased collection costs. The inability of the lender to perfectly ascertain the creditworthiness of the borrower and her project and monitor the implementation gives rise to adverse selection and moral hazard, effectively adding another risk premium to lending interest rates (Willem, 1995).

2.3.5 Asset Size

In most asset finance literature, total assets of the banks are used as a proxy for bank size. Bank size is represented by natural logarithm of total assets. Banks with bigger asset size are associated with lower interest rate spreads because of large economies of scale and ability to invest in technology that would enhance efficiency. Conversely banks with small asset size are associated with higher interest rate spreads because of lack of efficiency resulting to high operational costs. The effect of bank size on profitability is generally expected to be positive (Bourke, 1989).

2.3.6 Liquidity

The ratio of liquid assets to total assets is used as a measure of liquidity. The degree to which banks are exposed to liquidity risk varies across banks. A bank with a higher liquidity faces lower liquidity risk hence is likely to be associated with lower spreads due to a lower liquidity premium charged on loans. Banks with higher risk tend to borrow emergency funds at high costs and thus charge liquidity premium leads to high interest spreads. Insufficient liquidity is one of the major reasons of bank failures. However holding liquid assets has an opportunity cost of higher returns. (Bourke, 1989) finds a positive significant link between liquidity and profitability. However, in times of instability banks chose to increase their cash holding to mitigate risk.

2.4 Empirical Literature Review

Randall (1998) Observed that operating costs constitutes a large portion of the high interest rates spread (IRS). He found this by analyzing the consolidated income statements and balance sheets of commercial banks in Caribbean island countries for the period 1974 to 1988. He acknowledges that this framework provided only a descriptive analysis of the determinants of the spread without any behavioral content. For a behavioral content, one has to go beyond the accounting framework by building in the role of competitiveness and observing how the spread will respond to changes in this determinant. To consider this, various behavioral assumptions are made. These are; banks seek to maximize profits, all deposits net of required reserves, are placed in the domestic loan market; and individual deposits their surplus funds (the supply of loanable funds) giving consideration to alternative market interest rates and level of income.

McShane and Sharpe (1985), postulates a theoretical model of determining bank interest margins based on hedging behavior of interest margin determination- the dealer model of bank interest margin determination- and applies this model to Australian banks. A time series analysis was done from the year 1962-1981. Their model assumes the following about banks in undertaking intermediation between depositors and borrowers: maximization of expected utility and risk aversion in loan and deposit markets. Loan deposit interest margins are defined in the study as fees for financial intermediation given the randomness of loan request and receipt of deposits, and the uncertainty in short term interest rates. The study notes the narrowness of this definition of interest rate margin and embeds their model in a more general model of profit maximization.

Wolfgang and Opfer (2003), sought to analyze the importance of various macroeconomic factors in explaining the return structure for six German industry indices for the period 1974 to 2000. The objective was to find out whether financial institution reveals a different behavior relative to other industries indices. A comparison of the results revealed greater sensitivity of the financial institution to changes in long term interest rates.

Saunders and Schumacher (2000), in a study in six European countries and using data from 614 banks for the period 1988 to 1995 found out that the regulatory requirements and interest rate volatility had significant effects on bank interest rate margin across these countries.

Gerlach and Peng (2003) carried out an assessment to determine the long and short term relationship between interest rates and mortgage credit of the Hong Kong housing market. The property prices in Hong Kong underwent extraordinarily large swings, with at least three episodes of price increases of over 20% (measured over four quarters) and two episodes of sharp declines by as much as 50% in the 1990's. They observed that the increase in interest in interest rates was positive and significantly related to growth in long term mortgage loans.

Bett (1992), while looking at financial performance of the banking sector in Kenya established a multivariate analysis model for predicting financial failure in the Kenyan banking system by discriminating against various performance ratios. He found out that loan portfolio deteriorate as banks keep on lending to their major big borrowers because they fear that if they fail, the bank will equally follow suit. He found that failed banks were lending at high interest rates to mainly high risk operators who were unable to pay.

In a study to investigate the factors inf1uencing mortgage uptake Kenya, the study was guided by several specific objectives but in relation to this current study the objective to examine the extent to which interest rate inf1uence mortgage financing in Kenya is more specific to the research now. A descriptive survey was employed in this study. This study targeted 238 staffs in selected department in Housing finance Corporation, Kenya. Stratified random sampling method was conducted to capture the various levels of staffs and management. The study concluded that interest rate setting on mortgage debt; government instruments and fiscal measures are the major policies that govern mortgage financing (Aguko, 2012).

Olweny (2011) sought to establish the link between the level of interest and the volatility of interest rates in Kenya using the Treasury bill rates from August 1991 to December 2007. The main variable for the study was the short term interest rate series. In Kenya, this is the Central Bank three month Treasury bill rate. The interest rate volatility was studied using the general specification for the stochastic behavior of interest rates which is tested in a Stochastic Differential Equation (SDE) for the instantaneous risk free rate of interest. The study applied the monthly averages of the 91-day T-BILL rate for the period between August 1991 and December 2007 which were obtained from the Central Bank of Kenya. The results of the study were consistent with the hypothesis that the volatility is positively correlated with the level of the short term interest rate as documented by previous empirical studies. The key findings revealed that there exists a link between the level of short-term interest rates and volatility of interest rates in Kenya.

Wahome (2010), in her study of factors influencing mortgage financing in Kenya in 2010 through regression found out that mortgage firms in Kenya are emphasizing on

mortgage financing to improve firm performance. The study concludes that the mortgage financing is influenced by market and financial factors which include increase investment and improve profitability of the bank, improvement of risk management, attraction of more customers, promotion of innovations, market penetration, diversification of investment and encountering competitions in the market lowering of interest on treasury bond. The study established that there is a positive relationship between mortgage firms and performance with factors influencing mortgage financing which are encountering competition in the marketing in the marketing, creating of wealth, improving saving, high interest rates from mortgage diversification of investment, increase investment.

Mwega (2009) in the period between 1993 and 2002 found out that Kenya went through a credit crisis. This is because lending institutions preferred less risky investments specifically government securities locking out other players such as the small and medium enterprises. This affects the growth of mortgage markets due to lack of adequate financing.

2.5 Summary of Literature Review

Interest rates have been observed to have diverse impact on the financial performance of a firm. The unanticipated changes in interest are viewed as risks to financial performance of mortgage firms which need to be managed well. Global studies have explored the relationship between interest rates and financial performance extensively and they are based on different contextual conditions hence the diversity of findings. Locally empirical study in the relationship between interest rates and financial performance is not covered widely specifically relating to the types of interest rates: fixed and variable, hence there is a large gap to be covered in terms of knowledge and empirical studies.

Mortgage firms' profitability and efficiency are often considered as the main factors that determine interest rates. The continuous trend of expanding mortgage firm's activities in recent years, as well as the reallocation of low-interest-bearing assets into high-interest-bearing assets, has a direct positive impact on the improvement of mortgage firms' profitability and efficiency (Mutero, 2007).

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter provides a detailed assessment of the various methods that were employed during this study. They include careful description of the approach and design to be used to conduct the research, methods for data collection and data analysis.

3.2 Research Design

The research utilized descriptive survey research. According to (Mugenda and Mugenda, 2003) a descriptive research is a macro-economic variable of collecting data in order to answer questions regarding the current status of the subjects in the study. (Mugenda and Mugenda, 2003), also defines a survey as an attempt to collect data from members of the population with respect to one or more variables. Descriptive survey was thus appropriate for the study as it allowed the researcher to ascertain the relationship between mortgage interest rates and financial performance of mortgage firms in Kenya.

3.3 Population

The population of interest for this study comprised 30 commercial banks registered to carry out mortgage lending business in Kenya under the banking act (cap 488) section (4) and (5) that were in operation as at 2009 according to Central Bank of Kenya (2009): Annual Bank Supervision Report. A census survey allowed data to be collected as quantities as well as allow for statistical analysis.

3.4 Data Type and Data Collection

Secondary data was used for this study. Data was obtained from the Central Bank of Kenya, Nairobi Securities Exchange (NSE) and the individual banks. The data covered the period between January 2009 and December 2012.

3.5 Data Analysis Techniques and Presentation

Quantitative data collected was analyzed by the use of descriptive statistics and presented through means, median and standard deviation. The study used multiple linear regression model. The linear regression model was used to establish the relationship between mortgage interest rates and financial performance of mortgage firms. Firms financial performance has been studied and measured by different researchers (Charumathi, 2012; Daniel and Tilahun, 2013; Hifza, 2011) analyzed firms performance using multiple linear regression.

3.6 Analytical Model

The study used the following multiple linear regression model;

$$Y_t = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + e$$

Where,

Yt represents firms financial performance variable which is ROA, measured by Net income / Total Assets

A represents constant or intercept

X_1 represents Interest rates, measured by Interest Income/Loans

X_2 represents Credit risk, measured by Loan loss provisions/Loans

X_3 represents Size measured by natural logarithm of total assets

X_4 represents Liquidity measured by Liquid assets/Total assets

X_5 represents Expenses management measured by Operating expenses/Total Assets

ℓ represents error term and contains the variability of the dependent variable not explained by the independent variable

The regression coefficient shows the rate of change of dependent variable as a function of changes in the independent variable.

3.7 Test of Significance

The t-test analysis was used to establish whether there was a relationship between mortgage interest rate and financial performance of mortgage firms. The term ℓ is known as the "error" and contains the variability of the dependent variable not explained by the independent variable.

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

The data represented shows findings from 20 banks registered to carry out mortgage lending business. This chapter describes and compares the trend in asset base, interest rates, credit risk, company size, liquidity and expenses management from the 20 banks between 2009 and 2012. It also determines extent to which the listed factors influence return on asset.

4.2 Descriptive Statistics

The table below represents descriptive statistics of the selected 20 mortgage banks with reference to the banks average ROA, interest rates, credit risk, size, liquidity and expenses management for the four year period (2009-2012). Other statistics considered in describing the mortgage banks performance include median, maximum, minimum and standard deviation around the average.

Equity bank had the highest average ROA at 3.6 (SD=3.545) with Barclays bank following at 3.58 (SD=3.525). Ecobank had the lowest ROA at -1.1114 (SD=2.154).

Average annual interest rates varied among the years with 2012 recording the highest average annual interest rate at 0.1287 (SD=0.067242) compared to 2011 that had the least at 10.83 (SD=0.049811) as shown on table 4.1 below. Commercial Bank of Africa had the highest average interest rates at 0.2217 while CFC stanbic had the lowest average interest rates at 0.0208. National bank had the highest mortgage interest rates in 2009 and 2010 while Commercial Bank of Africa (CBA) had the highest interest rates in 2011

and 2012. 2011 witnessed the highest range between the bank with the highest interest rate and the one with the lowest interest rate.

Average credit risk reduced between 2009 and 2011 but increased in 2012 to be the highest reported among the four years. 2012 also reported the highest variation in credit risk between banks while 2010 witnessed the highest reported credit risk from an individual mortgage lending bank with 2011 reporting the lowest at 0. Victoria commercial bank had the highest credit risk at 0.0954 while commercial bank of Africa had the lowest average credit risk at 0.0025.

Average company size for the four years among the mortgage lending banks was between 10 and 11. The mortgage lending bank with the greatest size stood at 12.625 and this was reported in 2012 while the least reported during the same period had 8.138 in 2009. KCB was the largest 1n 2012 at an average size of 12.625 while Oriental commercial bank was the smallest in 2011 with a size of 8.138.

Mortgage lending banks were most liquid in 2009 and 2010. Between 2010 and 2011 average liquidity greatly reduced from 5284.2 to 103.4 as compared to either 2009 to 2010 or 2011 to 2012. 2009 had the highest variability in company liquidity with the most liquid bank recording 125518.793 and the least recording 0.1. Family bank was the most liquid bank at while Barclays bank was the least liquid.

The highest average expense management was recorded in 2009 at 6796.3 (SD= 30187.7) while 2011 had the least at 38.1 (SD=27.8). Moreover family bank also had the highest rank on expenses management while equity bank had the least.

Table 4.1: Descriptive statistics

Year	Stats	ROA	Interest rate	Credit risk	Size	Liquidity	Expenses management
2009	mean	0.024	0.1144	0.0254	10.4032	6380.0805	6796.2921
2009	median	0.0313	0.107	0.0092	10.7232	118.8125	45.6028
2009	std dev	0.0288	0.0574	0.0418	1.1949	28042.4396	30187.6806
2009	max	0.0566	0.2533	0.1491	12.1009	125518.7928	135049.4615
2009	min	-0.0713	0	0	8.1377	0	-2.8758
2010	mean	0.036	0.1179	0.0105	10.7579	5284.1955	714.2722
2010	median	0.0401	0.1096	0.009	10.9786	115.2505	29.1793
2010	std dev	0.0182	0.0571	0.0178	1.0742	22544.2098	2967.7276
2010	max	0.0695	0.2168	0.0585	12.315	98379.4514	12968.913
2010	min	0.0049	0	-0.0235	8.4246	0	0
2011	mean	3.6304	0.1087	0.01	10.8542	103.4146	38.0832
2011	median	3.6299	0.1004	0.007	11.1716	115.9217	33.4222
2011	std dev	1.8248	0.0485	0.0098	1.1257	58.5894	27.7924
2011	max	7.18	0.2024	0.0393	12.5514	190.5677	111.7723
2011	min	0.4462	0	0	8.5232	0.073	0.0669
2012	mean	3.3235	0.1287	0.027	10.9965	103.1695	43.3723
2012	median	3.5328	0.1219	0.0084	11.1148	112.2102	32.4044
2012	std dev	2.7093	0.0672	0.0631	1.1259	57.1592	29.2993
2012	max	7.4411	0.2707	0.283	12.6252	192.9485	103.3544
2012	min	-4.8276	0.0032	-0.0011	8.7355	0.0891	0.0665

4.3 Correlation Analysis

From the correlation matrix liquidity and expenses management have a negative correlation to ROA while interest rates, size and credit risk have a positive correlation. Size had the highest correlation index to ROA as compared to the other variables under study.

Table 4.2: Correlation Matrix

	ROA	Interest rate	Credit risk	Size	Liquidity	Expenses management
ROA	1					
Interest rate	0.168138	1				
Credit risk	0.033955	0.068503	1			
Size	0.359614	0.146163	-0.30745	1		
Liquidity	-0.11979	0.207471	0.015663	-0.15297	1	
Expenses management	-0.09209	0.149924	-0.02037	-0.13225	0.839724	1

4.4 Regression Analysis and Hypotheses Testing

In order to ascertain if any of the study independent variables affect the return on assets (ROA) it was necessary to carry out an ANOVA test. Table 4.3 below show results of the ANOVA test between ROA (dependent) and the five independent factors under study, that is interest rates, credit risk, company size, liquidity and expense management.

Table 4.3: ANOVA Summary Table

Regression Statistics				
Multiple R	R Squared	Adjusted R Square	Standard Error	Observations
0.463098	0.2144597	0.1575365	2.17650366	75

ANOVA

	Df	SS	MS	F	Significance F
Regression	5	89.23704	17.84741	3.767527	0.004486
Residual	69	326.8646	4.737168		
Total	74	416.1016			

From the results the realized F statistic value is *3.767527* with a p value of *0.004486*. Given that the p value = *0.004486*< 0.05 considering 95% confidence interval then F is significant. We can thus state that at least one of the independent variables (regression coefficients β) does influence the ROA outcome within the considered model.

Moreover R Squared = 0.214459717 indicating that at least 21% of the variation in ROA around its mean can be explained by the independent variables (interest rates, credit risk, company size, liquidity and expense management) at a selected point.

Table 4.4: Regression Coefficients

	β	Standard Error	t Stat	P-value
Intercept	-8.395	2.638	-3.183	0.002
Interest rate	6.673	4.754	1.404	0.165
Credit risk	9.177	6.851	1.34	0.185
Size	0.86	0.245	3.506	0.001
Liquidity	0	0	-0.751	0.455
Expenses management	0	0	0.336	0.738

From the ANOVA table we found that there is at least one of the regression coefficients that does influence the outcome of the ROA or in other words is greater than zero. Using this data and the p-values from the regression coefficient β table above we can determine which of the regressors actually do influence ROA at 95% confidence limit.

Using a t-test to assess if each of the independent variables is significant we find that: company liquidity, interest rates and credit risk are not significant at 95% confidence limit in determining ROA.

Based on the regression coefficient table, the following is the regression model for estimating ROA for listed companies based on the linear regression model below.

$$Y_t = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + e$$

Substituting β_1, β_2, β_3, β_4, β_5 with the values from the regression coefficient table, our model for predicting ROA (Y_t) becomes:

$$Y_t = -8.395 + 6.673\mathbf{X_1} + 9.177\mathbf{X_2} + 0.86\mathbf{X_3} - 0\mathbf{X_4} + 0\mathbf{X_5}$$

According to the regression equation established, increase in credit risk has a higher impact on return on assets of 9.177% compared to increase in interest rates and company size of 6.6736% and 0.86% respectively. Additionally, increase or decreases in liquidity and expenses management have no effect on the return on assets.

4.5 Discussion of Research Findings

This section examines the effects of bank specific factors on the financial performance of commercial banks offering mortgage in Kenya. The bank specific factors include; bank size, interest rates, credit risk, liquidity and expenses management. The financial performance of the commercial banks is presented by ROA. Regression and correlation analysis was used to analyze the research findings.

The study found that liquidity and expenses management had a negative correlation to ROA while interest rates, size and credit risk had a positive correlation. However asset size had the highest correlation index to ROA as compared to the other variables under study. According to the t-test company liquidity, interest rates, expenses management and credit risk are not significant at 95% confidence limit in determining ROA. Bank size represented by total assets is the only variable which is significant at 95 % confidence limit in determining financial performance of banks.

Bank size represented by natural logarithm of assets is indicated to have a significant influence to bank efficiency. The positive and significant effect on profitability as indicated by asset size implies economies of scale achieved by large banks; however a negative relation implies diseconomies of scale. The impact of the size of a bank is significant at 95% confidence level according to the regression analysis.

The study demonstrations that credit risk had a positive relationship to ROA. However the credit risk is not a significant variable in determining ROA. According to the regression analysis credit risk has a higher impact on return on assets of 9.177%. Increased exposure to credit risk is normally associated with decreased profitability which explains the negative relationship between credit risk and ROA.

The study also established that interest rates had a positive correlation to profitability. However the interest rate is not significant at 95% confidence limit in determining ROA. The findings of the study have an implication on the government in setting interest rates to appropriately influence the level of borrowing and lending desired for economic development. Commercial banks therefore should come up with opportunities to take advantage of lending and borrowing interest rates in order to improve their profitability.

Expenses management had a negative effect on profitability. Increase or decrease in expenses management had no effect on return on assets according to the regression analysis. The negative sign indicates lack of competence in expenses management, operating expenses if properly managed can positively influence profitability. When administrative costs are managed properly, an increase in expenses will increase the interest margin of a bank and raise income. The negative coefficients could also indicate a bank's inability to pass its expenses to customers because of competition.

Liquidity evaluated as liquid assets over total assets had a significant negative impact on profitability. Increase or decrease in liquidity management had no effect on ROA. A high ratio means the existence of liquid assets and a low ratio indicates the probability of failure of a bank. However high liquidity could also mean weak financial activity and thus related to a high probability of failure. Insufficient liquidity is one of the major reasons of banks failure. Effective liquidity management is important as this ensures that, even under adverse conditions, a bank can access funds necessary to fulfil customer needs, maturing liabilities and capital requirements for operational purposes.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of findings, conclusions and recommendations derived from the findings of the study. The chapter also presents the limitations that were encountered in the study with suggestions for further recommendations.

5.2 Summary of Findings

The aim of the study was to examine the relationship between mortgage interest rate and financial performance of mortgage firms in Kenya. To achieve the objective of the study a sample of 20 banks out of 30 banks was selected. Secondary data for the sampled commercial banks was collected. The data was obtained from CBK, NSE and individual commercial banks. The data was then analyzed using descriptive and quantitative techniques.

From the correlation matrix liquidity and expenses management had a negative correlation to ROA while interest rates, size and credit risk manifested a positive correlation. Size had the highest correlation index to ROA as compared to the other variables under study. The t-test conducted found that interest rates and credit risk are not significant at 95% confidence limit in determining ROA. However the company size is considered significant in determining ROA. Liquidity and expenses management had a zero measure for their respective regression coefficients.

The results imply that the effect of bank size on profitability is an important determinant of profitability. The positive effect implies a bank is enjoying economies of scale that is

normally achieved by large banks. Interest rate and credit risk have a positive correlation; however they are not significant determinants of profitability. Increased credit risk exposure is associated with decreased profitability. Commercial banks should take advantage of the desirable borrowing and lending as determined by the Government in order to improve profitability. Liquidity and expenses management have a negative correlation and are not significant determinants of ROA. The bank management expenses is negatively linked to ROA, this is a clear indication that costs decisions of bank management are instrumental in influencing bank performance. A low level of liquidity is a major cause of bank failures. Effective liquidity management is important in determining the profitability of a bank

5.3 Conclusion

The study established the relationship between bank performance and five selected internal factors which were extracted from the banks financial statements. The study established that there was a positive and significant relationship between asset size and profitability of commercial banks offering mortgage in Kenya, as it was found that a unit increase in asset size positively influence the profitability of commercial banks, thus the study concludes that asset size positively influences the financial performance of commercial banks. This is a clear indication that larger banks achieved a higher ROA. Also, the positive and significant coefficients of asset size variable provide evidence for economies of scale theory.

The study found that liquidity, interest rates, expenses management and credit risk had no significant effect on return on assets (ROA) for mortgage lending banks. Liquid assets are often associated with low rates of return. Hence high liquidity is associated with lower

profitability. Expenses management is negatively linked to profitability implying lack of efficiency in expenses management. Efficient cost management is a prerequisite for improved profitability Increased exposure to credit risk is normally associated with decreased bank profitability. Banks should improve profitability by improving screening and monitoring of credit risk. Additionally CBK also set specific standards for the level of loan loss provisions to be adopted by the country banking system

Overall, the approach used in this study may well have considerable potential as a tool for exploring bank profitability determinants with a purpose of suggesting optimal policies to bank management. Additionally the results provide evidence that profitability of commercial banks is shaped by bank specific factors.

5.4 Recommendations

From the findings the study concludes that there is need for commercial banks in Kenya to increase their asset base as it was revealed that the bank size which is measured by natural logarithm of total assets has a positive impact on the banks profitability. Insufficient liquidity is one of the major reasons of bank failure. In order to hedge against liquidity deficits banks often hold liquid assets which is easily converted to cash However holding assets has an opportunity cost of higher returns. Bourke (1989) finds a positive significant link between bank liquidity and profitability.

There is need for commercial banks in Kenya to encourage the culture of savings among customers as this will increase their liquidity to offer mortgage loans which will in turn positively influence their profitability. Operating expenses had a negative impact on

profits. The negative sign indicates lack of competence in expenses management in a bank. Operating expenses if properly managed can positively influence profitability.

Credit risk is modeled by the ratio of provisions for loans loss over total loans. This ratio measures the ability of bank managers to screen the credit risk and therefore if properly managed will lead to increase in profitability.

5.5 Limitations of the Study

The study was conducted using secondary data whose reliability cannot be verified by the researcher. The financial statements are usually misstated by management in order to suit their needs. The standards, policies, estimates and assumptions subjected to financial information varies among the firms impairing comparability. Bank profitability is expected to be sensitive to macroeconomic variables; the research did not take into account the macroeconomic factors such as inflation, GDP and political instability.

The research study did not exhaustively focus on all bank specific independent variables such as capital adequacy, asset quality and deposits which are also important in determining financial performance. The researcher obtained data on 20 banks though the target population was 30. This is because data on some of the commercial banks was not easily accessible.

The study excludes customer satisfaction survey which could measure efficiency and long term profitability from the view point of customers. The study cannot be conclusive on the financial performance of the commercial banks since the financial performance analysis was based on historical financial data which has some element of inflation. The

scope does not include branch performance analysis and is limited to a 4 year period from 2009 to 2012.

5.6 Suggestions for Further Research

A similar research should be carried out with an extended time period as this could add value to the academic literature since this is a field that has not been fully ventured. A similar research can be carried out where the banks are categorized as large, medium and small not like in the study research where the banks were considered to be of the same size.

Banks profitability is expected to be sensitive to macroeconomic variables. Further research using macroeconomic factors like annual inflation rate, annual real gross domestic product growth rate(GDP) and political instability should be used to establish if there is a positive influence on financial performance of banks offering mortgage. A similar study should be carried out using non-financial indicators such as loan coverage, product and service quality and management quality.

The research was limited to commercial banks offering mortgage, there is need to widen future research in this area to include all licensed commercial banks in Kenya. Further research should be done using other bank specific independent variables such as capital adequacy, asset quality and deposits which are also important in determining financial performance of commercial banks.

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APPENDICES

Appendix I: List of Commercial Banks in Kenya

	Mortgage Bank		Mortgage Bank
1	Kenya Commercial Bank Ltd	16	Eco-bank Ltd
2	Housing Finance Company Ltd	17	Gulf African Bank Ltd
3	CFC Stanbic Ltd	18	NIC Bank Ltd
4	Standard Chartered Bank Ltd	19	Bank of Baroda Ltd
5	Co-operative Bank of Kenya Ltd	20	Diamond Trust Bank of Kenya Ltd
6	Barclays Bank Ltd	21	Prime Bank Ltd
7	National Bank of Kenya Ltd	22	Fidelity Bank Ltd
8	Consolidated Bank Ltd	23	Jamii Bora Bank Ltd
9	Equity Bank Ltd	24	Trans- National Bank Ltd
10	Development Bank Ltd	25	Family Bank Ltd
11	Commercial Bank of Africa Ltd	26	Bank of India
12	I&M Bank Ltd	27	Victoria Commercial Bank Ltd
13	Chase Bank	28	Oriental Commercial Bank Ltd
14	African Banking Corporation Ltd	29	Dubai Bank Ltd
15	Bank of Africa Ltd	30	Habib Bank Ltd

(Source CBK Website)

Appendix II: List of commercial banks where asset and asset related data was collected

	Mortgage lending Bank		Mortgage lending Bank
1	Bank of Africa Ltd	11	Gulf African Bank Ltd
2	Barclays Bank of Kenya Ltd	12	Housing Finance Company of Kenya Ltd
3	CFC-Stanbic Bank Ltd	13	I&M Bank Ltd
4	Commercial Bank of Africa Ltd	14	Kenya Commercial Bank Ltd
5	Consolidated Bank of Kenya Ltd	15	National Bank of Kenya Ltd
6	Cooperative Bank of Kenya Ltd	16	NIC Bank Ltd
7	Diamond Trust Bank Ltd	17	Oriental Commercial Bank Ltd
8	Ecobank Bank Ltd	18	Prime Bank Ltd
9	Equity Bank Ltd	19	Standard Chartered Bank Ltd
10	Family Bank Ltd	20	Victoria Commercial Bank Ltd

Appendix III: Commercial Banks Financial Performance by Year

Bank	Stat	ROA	Interest rate	Credit risk	Size	Liquidity	Expenses management
Bank of Africa Ltd	Average	0.691	0.104	0.0077	10.3238	161.4572	66.0889
	Median	0.6586	0.1025	0.0078	10.3784	159.9189	62.0159
	Std. deviation	0.676	0.0101	0.0018	0.4006	34.1778	10.0147
	Maximum	1.4317	0.1189	0.0101	10.7987	210.7405	82.7777
	Minimum	0.0153	0.0921	0.005	9.7397	115.2505	57.5461
Barclays Bank of Kenya Ltd	Average	3.5823	0.1692	0.007	12.0645	0.0907	0.0803
	Median	3.5482	0.1695	0.0064	12.0508	0.0948	0.0811
	Std. deviation	3.525	0.0084	0.0045	0.0387	0.0113	0.0019
	Maximum	7.18	0.1799	0.0138	12.1287	0.1005	0.0818
	Minimum	0.053	0.1579	0.0014	12.0276	0.073	0.077
CFCStanbic Bank Ltd	Average	1.4498	0.0208	0.005	11.6824	11.5653	39.287
	Median	1.1264	0	0.0059	11.6914	2.5497	33.6098
	Std. deviation	1.5051	0.0361	0.003	0.1472	16.9172	39.5661
	Maximum	3.5328	0.0834	0.0081	11.85	40.823	89.5189
	Minimum	0.0135	0	0	11.4968	0.3387	0.4093
Commercial Bank of Africa Ltd	Average	1.9089	0.2217	0.0025	11.2228	34.1141	22.9201
	Median	1.813	0.2096	0.0016	11.1951	30.8731	22.3255
	Std. deviation	1.878	0.0292	0.0027	0.2133	34.4206	22.9356
	Maximum	3.9799	0.2707	0.0066	11.5175	74.71	47.0296
	Minimum	0.03	0.1969	0	10.9837	0	0
Consolidated Bank of Kenya Ltd	Average	0.6568	0.1863	0.0555	9.4058	90.7123	88.8024
	Median	0.5012	0.1685	0.0489	9.447	84.7679	87.8178
	Std. deviation	0.6748	0.0445	0.0196	0.3371	12.5017	11.6582
	Maximum	1.6095	0.2617	0.0864	9.7982	112.2102	104.7496
	Minimum	0.0154	0.1467	0.038	8.9313	81.1032	74.8244

Bank	Stat	ROA	Interest rate	Credit risk	Size	Liquidity	Expenses management
Cooperative Bank of Kenya Ltd	Average	2.135	0.1061	0.0085	11.9563	133.5797	30.7571
	Median	1.8562	0.1114	0.0088	11.9875	131.5697	27.2215
	Std. deviation	2.1376	0.0107	0.0013	0.2021	14.4932	24.4641
	Maximum	4.7951	0.1138	0.0101	12.2044	155.6812	68.5253
	Minimum	0.0326	0.0878	0.0065	11.646	115.498	0.0599
Diamond Trust Bank Ltd	Average	2.3047	0.1149	0.0123	11.1153	165.2367	46.9634
	Median	2.1216	0.1165	0.0123	11.118	176.2798	46.4021
	Std. deviation	2.2783	0.0136	0.0026	0.2624	85.3844	13.5478
	Maximum	4.9412	0.1323	0.0151	11.4565	251.7983	62.6451
	Minimum	0.0344	0.0943	0.0096	10.7687	56.5887	32.4044
Ecobank Bank Ltd	Average	-1.1114	0.049	0.0276	10.1165	148.295	34.7174
	Median	-0.0322	0.0607	0.0081	10.2055	145.599	24.0542
	Std. deviation	2.1546	0.027	0.0536	0.2556	34.7043	28.3129
	Maximum	0.4462	0.0712	0.1176	10.3663	190.5677	82.4715
	Minimum	-4.8276	0.0032	-0.0235	9.6887	111.4142	8.2896
Equity Bank Ltd	Average	3.6022	0.1542	0.0289	11.9169	0.1152	0.0706
	Median	3.4555	0.1489	0.0288	11.9441	0.1049	0.0683
	Std. deviation	3.5455	0.016	0.0063	0.2958	0.0288	0.0052
	Maximum	7.4411	0.1806	0.0365	12.2822	0.1635	0.0795
	Minimum	0.0566	0.1383	0.0215	11.4971	0.0877	0.0665
Family Bank Ltd	Average	1.1951	0.1779	0.026	9.986	56033.293	37058.3753
	Median	1.0174	0.1842	0.0284	10.0394	49270.211	6540.3426
	Std. deviation	1.1968	0.0204	0.0118	0.3072	56733.137	56818.3074
	Maximum	2.7207	0.199	0.0381	10.3413	125518.79	135049.462
	Minimum	0.0248	0.1442	0.0093	9.5239	73.9572	103.3544
Gulf African	Average	0.9862	0.1036	0.0046	9.2764	165.2347	40.8155

Bank	Stat	ROA	Interest rate	Credit risk	Size	Liquidity	Expenses management
Bank Ltd	Median	0.604	0.1004	0.0042	9.3175	148.2658	29.8989
	Std. deviation	1.1361	0.0139	0.0014	0.2278	57.0544	22.6325
	Maximum	2.7577	0.1247	0.0068	9.515	255.6168	79.6674
	Minimum	-0.021	0.0888	0.0033	8.9554	108.7902	23.7968
Housing Finance Comapny of Kenya Ltd	Average	1.3268	0.0623	0.0104	10.2856	190.1824	32.6039
	Median	1.118	0.0616	0.0098	10.3294	176.3599	30.7145
	Std. deviation	1.341	0.0039	0.0037	0.2683	58.437	5.2506
	Maximum	3.0527	0.068	0.0156	10.6136	282.5698	41.2491
	Minimum	0.0183	0.0578	0.0065	9.87	125.4399	27.7374
I&M Bank Ltd	Average	1.9611	0.0815	0.0054	10.999	68.7011	27.2512
	Median	0.048	0.0863	0.0044	11.0438	63.2533	26.1088
	Std. deviation	2.7117	0.008	0.0027	0.2257	16.4397	1.9897
	Maximum	5.796	0.088	0.009	11.2503	90.9989	30.0495
	Minimum	0.0394	0.0701	0.0027	10.7029	51.8512	25.5954
Kenya Commercial Bank Ltd	Average	2.5633	0.1236	0.0049	12.3981	134.5703	65.1909
	Median	2.5183	0.1224	0.0042	12.4332	147.249	64.137
	Std. deviation	2.5206	0.017	0.0026	0.2063	35.5207	3.6653
	Maximum	5.181	0.1486	0.0086	12.6252	166.837	70.9692
	Minimum	0.0357	0.1008	0.0024	12.1009	76.946	61.5202
National Bank of Kenya Ltd	Average	1.3383	0.2031	0.0196	11.0299	132.681	71.549
	Median	0.8764	0.1953	0.021	11.0587	126.8543	67.5715
	Std. deviation	1.4512	0.0326	0.006	0.1078	25.0769	8.0581
	Maximum	3.5591	0.2533	0.0256	11.137	172.8197	85.4335
	Minimum	0.0413	0.1684	0.0109	10.8653	104.1958	65.6196
NIC Bank Ltd	Average	2.2201	0.0769	0.0077	11.0978	72.545	40.4081
	Median	2.14	0.0751	0.0063	11.0586	72.9023	40.8761

Bank	Stat	ROA	Interest rate	Credit risk	Size	Liquidity	Expenses management
	Std. deviation	2.1847	0.0038	0.004	0.2998	11.2124	8.5272
	Maximum	4.5672	0.0834	0.0143	11.5305	85.7809	49.9565
	Minimum	0.033	0.0741	0.004	10.7435	58.5944	29.9238
Oriental Commercial Bank Ltd	Average	1.4279	0.0666	0.0359	8.4553	154.3196	13.9649
	Median	0.9364	0.0654	0.0076	8.4739	152.3882	19.4445
	Std. deviation	1.5706	0.0064	0.0666	0.215	19.433	9.7261
	Maximum	3.829	0.0757	0.1491	8.7355	180.0121	19.8466
	Minimum	0.0097	0.0598	-0.0204	8.1377	132.4901	-2.8758
Prime Bank Ltd	Average	1.4474	0.08	0.0091	10.4071	136.9145	31.9463
	Median	1.3475	0.0801	0.0098	10.4278	126.1469	31.7025
	Std. deviation	1.4309	0.0067	0.0019	0.2104	22.5607	1.5205
	Maximum	3.0715	0.0883	0.0107	10.6797	175.4297	34.2974
	Minimum	0.0233	0.0714	0.006	10.093	119.9345	30.0829
Standard Chartered Bank Ltd	Average	2.7563	0.1221	0.0061	11.9491	65.489	42.1783
	Median	2.5397	0.1257	0.0059	11.9392	65.6846	42.0871
	Std. deviation	2.7198	0.0122	0.0015	0.1664	6.1423	1.4575
	Maximum	5.8923	0.1345	0.0084	12.1833	73.1204	44.1317
	Minimum	0.0537	0.1025	0.0043	11.7345	57.4666	40.4071
Victoria Commercial Bank Ltd	Average	3.037	0.1115	0.0954	8.9089	167.3838	31.3732
	Median	4.3125	0.1146	0.0032	8.9418	176.3734	30.9162
	Std. deviation	2.1254	0.0122	0.1327	0.2864	15.8947	0.9159
	Maximum	4.7564	0.1247	0.283	9.2421	180.7314	32.6513
	Minimum	0.0422	0.0954	0	8.5429	145.0466	30.5521