

**THE EFFECT OF INTEREST RATES ON LENDING IN MORTGAGE  
FINANCIAL INSTITUTIONS IN KENYA**

**BY  
NJUGUNA KEZIAH WACHERA**

**A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILMENT OF THE  
REQUIREMENTS FOR THE AWARD OF MASTERS IN BUSINESS  
ADMINISTRATION, UNIVERSITY OF NAIROBI**

**OCTOBER 2013**

## DECLARATION

I declare that this research project proposal is my original work and has not been submitted for a degree in any other university.

Signed: .....

Date: .....

Njuguna Keziah Wachera

D61/68502/2011

This research project has been submitted for examination with the approval of my University Supervisor.

Signed: .....

Date: .....

Supervisor: Mr. Mirie Mwangi

## **ACKNOWLEDGEMENT**

First and foremost, I would like to thank the Almighty God for giving me the strength, and sufficient grace that enabled me to finish this course. I would also like to thank my supervisor Mr. Mirie Mwangi, for his immeasurable support and professional guidance throughout the course of this study despite his busy schedule.

I thank my family husband Maurice & daughter Lisette for their love, encouragement and understanding despite being too busy for them in pursuit of this course. I also appreciate my parents Mr & Mrs Njuguna for their encouragement, advice and installing in me a sense of discipline and love for education.

I am grateful to the University Of Nairobi, my fellow classmates and lecturers whose valuable input and positive constructive criticism was instrumental in shaping this research project.

## **DEDICATION**

I dedicate this research project to my lovely daughter, Lisette, and my husband, Maurice, for their love, support and encouragement. I owe my success to their support.

## ABSTRACT

There is a need for financial stability. Housing finance necessarily involves long term loans, and making long term loans in a sound way for both lending institution and borrower is far from easy when interest rates and inflation are high and volatile. Mortgage is a long-term commitment that ties a prospective homeowner down to mortgage repayment for at least 20 years or transfer of a legal or equitable interest in a specific immovable property for the payment of debt. Mortgage loans are secured by the real property and provide a schedule of payment of interest and repayment of the principal to a bank. The objective of the study was to determine the effect of interest rates on lending by mortgage financial institutions in Kenya. The study was driven by the need to understand how changes in interest rates are likely to affect the amount of mortgage lending advanced by mortgage financial institutions to their customers. The study adopted a time series secondary data and according to CBK, there are there are 43 licensed commercial banks and 1 mortgage finance company in Kenya as at 31<sup>st</sup> December 2012 the study used a sample population of 30 financial institutions comprising of 29 commercial banks and one housing finance. The study used secondary data sources to collect data from CBK, World Bank, Hass Consult and The Mortgage Company website. The data collected was analyzed using excel linear regression analysis conducted at 95% confidence level. Regression analysis results indicate an inverse relationship between the level of interest rates and the mortgage granted by mortgage financial institutions. This relationship is weak as exemplified by the low levels of coefficient of determination and correlation coefficients. Therefore this means that there are other factors that affect lending by mortgage financial institutions in Kenya other than mortgage interest rates. The study recommends that the government should focus its attention on the other most important variables which determine lending by mortgage financial institutions and influence these variables. Thus the government should leave the determination of interest rates to the market forces of supply and demand but strengthen the monetary policies to ensure that the rate of inflation which is a major component of interest rate is controlled and managed below the two digit figure to avoid inflationary pressure pushing interest rates upwards.

# TABLE OF CONTENTS

DECLARATION .....	ii
ACKNOWLEDGEMENT .....	iii
DEDICATION .....	iv
ABSTRACT .....	v
LIST OF TABLES .....	ix
LIST OF FIGURE.....	x
ABBREVIATIONS .....	xi
<b>CHAPTER ONE: INTRODUCTION</b> .....	<b>1</b>
1.1 Background of Study .....	1
1.1.1 Interest Rates.....	3
1.1.2 Lending .....	6
1.1.3 Relationship Between Interest Rates and Lending .....	8
1.1.4 Mortgage Market in Kenya.....	9
1.2 Research Problem .....	12
1.3 Objective of Study .....	13
1.4 Value of Study .....	14
<b>CHAPTER TWO: LITERATURE REVIEW</b> .....	<b>15</b>
2.1 Introduction.....	15
2.2 Theoretical Framework.....	15
2.2.1 Traditional Theory .....	15
2.2.2 Classical Theory.....	16
2.2.3 Neo-Classical or Loanable Funds Theory.....	17

2.2.4 Keynesian Liquidity Preference Theory .....	18
2.2.5 Title Theory and Lien Theory.....	19
2.3 Concepts of the Study .....	20
2.4 Empirical Evidence.....	21
2.5 Summary of Literature Review.....	25
<b>CHAPTER THREE: RESEARCH METHODOLOGY .....</b>	<b>26</b>
3.1 Introduction.....	26
3.2 Research Design.....	26
3.3 Population .....	26
3.4 Sample.....	27
3.5 Data Collection .....	27
3.6 Data Analysis .....	27
<b>CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSIONS .....</b>	<b>29</b>
4.1 Introduction.....	29
4.2 Descriptive Statistics.....	29
4.3 Diagnostic Tests for the Estimation Model .....	31
4.4 Model Estimation Results and Discussion.....	31
4.4.1 Multiple R.....	32
4.4.2 Adjusted R-Square .....	32
4.4.3 T Stat.....	32
4.5 Summary of Findings and Interpretations.....	34

<b>CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS ..</b>	<b>36</b>
5.1 Summary .....	36
5.2 Conclusion .....	36
5.3 Study Recommendation .....	37
5.4 Limitations of the Study.....	38
5.5 Suggestions for Further Research .....	39
REFERENCES .....	40
Appendix I: Financial Institutions in Kenya based on Bank Segment .....	45
Appendix II: Sample of Mortgage Financial Institutions in Kenya.....	46
Appendix III: Summary of mortgage rates and amounts lent out by Mortgage Financial Institutions in Kenya. ....	48
Appendix IV: Regression analysis summary output.....	50



## LIST OF TABLES

Table 1: Variable definitions and measurements.....	29
Table 2: Summary of statistics of the study variables .....	30
Table 3: Summary of model .....	31
Table 4: Summary of regression statistics .....	31
Table 5: Summary of t-stat statistics.....	32

## LIST OF FIGURE

Graph 1: Line of best fit.....	33
--------------------------------	----

## **ABBREVIATIONS**

ARM	–	Adjustable Rate Mortgage
CBK	–	Central Bank of Kenya
CBR	–	Central Bank Rate
CDC	–	Commonwealth Development Corporation
DL	–	Demand of Loanable Funds
EBIT	–	Earnings Before Interest and Tax
FRM	–	Fixed Rate Mortgage
GDP	–	Gross Domestic Product
GOK	–	Government of Kenya
MCMC	–	Markov Chain Monte Carlo
NSE	–	Nairobi Securities Exchange
SL	–	Supply of Loanable Funds
USA	–	United States of America
VRM	–	Variable Rate Mortgage

# CHAPTER ONE: INTRODUCTION

## 1.1 Background of Study

Financial institutions play the important role in the economy of offering credit, which include mortgages. A mortgage is a loan secured by real estate property. Mortgages enable households and firms to acquire real property without paying the entire value of purchase upfront. Mortgage loans are characterized by size of loans, period of maturity, interest rates charged as well as the method of paying (Milani, 2010). Interest charged on mortgage loans can either be floating/ variable/ adjustable or fixed. Interest rates are basically determined by the money supply, the rate of inflation, the time period of credit, and the central bank's monetary policy (International Monetary Fund, 2012). These factors influence the variability of interest rates. Generally, interest rates can be discounted for inflation or given as they are observed. They can either be seen as either short or long term.

Mortgages represent long term loans and are thus more affected by factors such as prices in the bond market, the costs of longer-term deposits, and generally the competition for funds in the financial markets (International Monetary Fund, 2012). The mortgage market is a phrase that describes a vast array of institutions and individuals who are involved with mortgage finance in one way or another. This market is broken down into two separate yet connected entities: the primary mortgage market and the secondary mortgage market. The primary mortgage market is a market where new mortgages are originated. The secondary mortgage market is a market where existing mortgages are bought and sold (McDonald and Thornton, 2008).

The mortgage market can be sub-divided into any number of market segments. Fratantoni (2005) distinguishes among prime, non-prime, government and Alt-A originations in the 2004 Single-Family Mortgage Activity Survey. Non-prime borrowers have less than prime credit histories. The Alt-A market is defined by the use of reduced documentation standards or other credit variances. Prime, non-prime and Alt-A loans can be either conforming, i.e., with a loan balance below the conforming limit.

In the past 20 years, the market for housing finance in industrial countries has changed and developed greatly. Most economies are witnessing how governments are gradually reducing their regulatory roles in what has been a highly regulated market. Yet, due to diverse historical backgrounds, mortgage markets and their interconnection with national economies remain very different and must be analyzed within this regional context (Bachofner and Lutzkendorf, 2005).

According to Fabozzi and Modigliani (1992) credit rationing occurs when the effective demand for financing is higher than supply. For mortgages, rationing is usually expressed in terms of limits in the size of the mortgage. Leece (2004) identifies three causes: disequilibrium rationing (e.g. due to constant mortgage rates or other governmental regulations); a dynamic rationing (because of a mortgage market that only slowly adjusts to new interest rates); and equilibrium rationing (e.g. because of a separating equilibrium).

According to Cook, Smith, and Searle (2009) mortgages are portrayed as vital financial instruments that are not just brought into and absorbed by the domestic economy, but rather shape domestic finance, actively and insistently shaping the way home economics

work. Their findings suggest that mortgages are made the way they are by the institutions of the mortgage market, but they are also shaped by the practical acts and normative expectations of quite ordinary mortgage holders, as they interact with the demands of home culture and the vagaries of financial markets. This engagement does not automatically decrease against escalating debts, and such acts add up – they may be small, but they can make a world of difference to the options people now have to roll home equity into their thinking on savings, spend and debt.

### **1.1.1 Interest Rates**

According to Tregarthen and Rittenberg (2000) the interest rate is determined in a market in the same way the price of potatoes is determined in a market by forces of demand and supply. The market in which borrowers (demanders of funds) and lenders (suppliers of funds) meet is the loanable funds market. Interest rates that firms face depend on a variety of factors, such as riskiness of the loan, the duration of the loan, and the costs of administering the loan. The lower the interest rates the higher the demand for loanable funds and lower the supply for loanable funds and vice versa.

The note rate on a mortgage loan, the interest rate the borrower agrees to pay, can be fixed or change over the life of the loan. For a fixed-rate mortgage (FRM), the interest rate is set at the closing of the loan and remains unchanged over the life of the loan. For an adjustable-rate mortgage (ARM), as the name implies, the note rate changes over the life of the loan. The note is based on both the movement of an underlying rate called the index or reference rate, and a spread over the index called the margin (Fabozzi and Modigliani, 2009).

Rates on ARMs are lower than on otherwise equivalent FRMs. The reason is that the borrower is bearing some of the market risk. Market risk arises because of the inverse (or negative) relationship between interest rates and bond prices. Specifically, if the market interest rate rises, the value of the bond (mortgage) falls and vice versa. The problem is that interest rates are extremely difficult to predict. If the markets were populated by investors who are indifferent to whether they sustain a capital loss or a capital gain (i.e., indifferent to risk), the fact that bond prices and interest rates are inversely related would not be an issue. Interest rates would be invariant to the maturity of the asset (McDonald and Thornton, 2008). Because the term structure of interest rates is normally upward sloping, both the initial payments and the expected stream of future payments are normally lower for an ARM than for a FRM (Campbell, 2012).

However, financial markets are populated by risk-averse lenders (i.e., those more concerned with suffering a capital loss than getting a capital gain). Consequently, there is a risk premium on bonds (including mortgages) that increases as the term of the loan increases. The risk premium is tiny essentially zero—for loans of only a few months. The risk premium for 30-year loans can be fairly large, depending on market circumstances because the interest rates on ARMs adjust over the term of the loan, ARMs have less market risk than the corresponding FRMs with the same maturity. Consequently, with an ARM, some of the market risk associated with mortgage lending is assumed by the borrower. As noted earlier, like anything else, risk is priced. Hence, ARMs have an initial rate that is lower than the rate on another wise equivalent-maturity fixed rate loan (McDonald and Thornton, 2008). Stiglitz (2010) found that there's a matched percentage changes in the long term interest rates and mortgage financing. McDonald and Thornton

(2009) additionally found that, consistent with this study finding that interest rates fluctuations showed significant fluctuations in the subprime mortgage market in the European Union Countries.

According to Semmelrock (2009) the recent popularity of no-interest and below-market ARM's with low initial rates has allowed many first time and other marginally qualified purchasers to get mortgages where they would not have qualified under historically more stringent underwriting standards. These below-market rates that are hyped up to be attractive allow a borrower to pay a set low interest payment for the first couple of years, then the rate rises after that to whatever the going rate is. So when interest goes up in the economy, suddenly individuals paying a 3% interest payment on their mortgage are suddenly stuck paying a 6%-8% payment and they find themselves unable to make the new increased payment, resulting in defaults, and ultimately, foreclosures and bankruptcies. The question here is who would let themselves enter into these kinds of agreements? The answer is the lending institutions are in large part responsible this subprime crisis by relaxing their underwriting standards.

According to Muth (1962) differences in the net yield of mortgages of different maturities arise from the fact that in the real world there is not a single pure rate of interest but rather a structure of pure rates for loans of different length. As several writers have argued, differences between "short" and "long" pure rates of interest result from the expectation that future short rates will differ from current short rates. On a straight mortgage loan payable in ten years the net yield sacrificed by the lender is the yield on government bonds with ten years to maturity. When ten-year bond yields are low relative



to those on twenty-year bonds, the net yield and contract rate on ten-year mortgages would be low relative to those on twenty-year mortgages, and vice versa.

### **1.1.2 Lending**

According to Pandey (2010) mortgage is the transfer of a legal or equitable interest in a specific immovable property for the payment of a debt. The possession of the property may remain with the borrower, with the lender getting the full legal title. The transferor of interest (borrower) is called the mortgagor, the transferee (bank) is called the mortgagee, and the instrument of transfer is called the mortgage deed.

The banking system and the financial system more generally, is a key pillar in any economy, bearing in mind its basic function, which is to reallocate funds from agents with a surplus to those with a deficit. By solving the problem of asymmetric information among agents and by diversifying risks, banks manage to decrease the costs of the exchange of financial funds and enable their efficient allocation within the economy. Therefore, the financial system is one of the most important sources of financing economic decisions related to consumption and investment, and hence of the financing capital accumulation and technological innovations, aimed at medium-term productivity growth and more dynamic and sustainable rates of economic growth. Consequently, the price of financing through bank loans (i.e. lending rates) and the efficiency of the banking system (as measured by interest rate spreads) are essential for the possibility of allocation additional financial potential in the economy, and thus for the acceleration or sustainability of economic growth (Georgievska,2011).

According to Semmelrock (2009) when it is harder to get a mortgage, it is mainly because of adverse selection. Not knowing enough about the other party in the financial markets today leads to asymmetric information and is a major cause for concern. But how is it possible to avoid adverse selection and at the same time avoid individuals who are likely to default? Lending institutions protect their investment when they lend money, in order to preserve their assets and make money for their owners. One of the most important ways for lenders to protect their investment is by requiring collateral. Usually in real estate, the property being financed is designated as security for the loan. The collateral usually takes place in the form of a lien against the property being purchased, which is in effect until the loan is fully paid. A lien basically attaches the property to the loan, so that if a default occurs, the lender has the full right to obtain and/or sell the property to satisfy the note. Another popular way for lenders to protect their investment is through requiring down payments. A portion of the purchase price is immediately put down so that the risk of default is much lower. Down payments also reduce moral hazard on top of reducing the total amount of interest that will amortize over time.

There are two risks associated with lending. The first, called default risk is the possibility that the borrower fails to repay the loan. The second, called market risk, arises when interest rates change overtime. If market interest rates rise after the lender has offered a mortgage contract, not only will the lender earn less interest than he would have had he waited and lent at the higher interest rate, but the market value of the Investment will decline. Of course, the reverse is also true: If market interest rates fall, the lender will earn more interest than if he waited and the Market value of his investment will increase. The risk is due to the fact that it is very difficult to predict whether interest rates will rise

or fall. The lender also risks losing the higher interest He would earn if the individual decides to refinance the loan at a lower rate (McDonald and Thornton, 2008).

### **1.1.3 Relationship Between Interest Rates and Lending**

In microeconomics, according to Kidwell, Blackwell, Whidbee and Peterson, (2008) in equilibrium, the supply of loanable funds equals the demand for loanable funds ( $SL = DL$ ). The equilibrium interest rate is only a temporary equilibrium point. Any force that provides a shift in positions of the supply of or demand for loanable funds produces a change in the equilibrium rate of interest. Specifically, an increase in the level of interest rates may be accompanied by either an increase in the demand for or a decrease in the supply of loanable funds. Similarly, a decline in the level of interest rates can be caused by either an increase in the supply of or a reduction in the demand for loanable funds.

When either the demand for loans falls or supply increases, lenders may reduce rates charged but also allow borrowers more generous terms in the form of lower down-payments or longer maturities. Likewise, according to this argument, the demand function for mortgage loans depends on the minimum down-payments and maximum maturities permitted by lenders, in addition to the contract rate of interest (Muth, 1962).

There has been a steady increase in the supply of and demand for home mortgage finance as well as a number of new, often large suppliers. The changes in the mortgage market resulted in lower interest rates, higher possible loan to value ratios, higher possible loan to income ratio, and longer repayment periods. In particular the higher loan to value ratios are important as it means that the level of down payments required to buy a house is lower and that has a potentially strong effect on the young who are the most likely to

need a mortgage when buying a home, but it has also shifted the burden of home ownership from large down payment to greater mortgage repayments (Del Boca and Lusardi, 2003).

According to Muth (1962) since the mortgage market is but a part of the market for all borrowed funds, the supply of mortgage loans depends on both the total supply of loanable funds and the demand for other classes of funds. The really interesting questions about the supply of mortgage loans relate to their relative supply in the aggregate and the relative supply of different classes of mortgage loans. By the "relative supply of mortgage loans" means the ratio of the quantity of mortgage lending to the quantity of all other lending as a function of the returns on mortgage loans relative to the returns on other loans. What matters to the lender, of course, in choosing among alternative kinds of loans is not the gross, but the net, yield he expects to receive. The latter is simply the gross yield less the administrative costs of making and servicing the loan and of a risk premium to cover expected losses. The purchase of government bonds involves little or no administrative cost and risk, so their yield provides a close approximation to the pure, or costless, default-free rate of interest and is a convenient standard with which to compare the yields on mortgage loans.

#### **1.1.4 Mortgage Market in Kenya**

The development of mortgage insurance in Kenya dates back to 1965 when the premier HFCK was incorporated. Their main objective was carrying out the Government policy of promoting thrift and home ownership. This was to be achieved by providing savings and mortgage facilities to the Kenyan public. Initially the Commonwealth Development Corporation (CDC) held 60% of equity while the Kenyan government controlled 40%. In

1992 Housing Finance offered its shares to the public and became a quoted company at the NSE with CDC and GOK retaining a shareholding of 30.4% each and Kenyan investors taking up the balance of 39.2% ([www.housing.co.ke](http://www.housing.co.ke))

Later, the Company issued a prospectus dated 26th February 1999 in which 30million government shares were offered to the public. After the sale, the general public and institutional investors increased their shareholding to 62.3%, CDC remained at a steady 30.4% of equity, while the Kenyan government reduced its shareholding to 7.3% of equity. The CDC Group has gradually been reducing its shareholding with the eventual sale of all its shares to Equity Bank Ltd and British American Investments Company Limited (BAICL) on the 11th July 2007. The shareholding stood at 7.32% Government, 20.0% Equity Bank Ltd, 4.9% BAICL, 7.87% NSSF and 59.91% to the public. ([www.housing.co.ke](http://www.housing.co.ke))

Currently Housing Finance controls 29% of the total mortgages in the Kenyan mortgage market. The change in legislation of the Banking Act in 2002 removed the 5 year term loan restriction, implied that banks could now venture in mortgage loans that have longer repayment terms. In addition the drastic drop in returns offered by Treasury bills resulted in commercial banks seeking alternative lending avenues. This saw the entry of other players in the market such as Standard Chartered Bank, Barclays Bank of Kenya, Cooperative Bank, Commercial Bank of Africa. (Banking Supervision Annual Report 2011).

In Kenya interest rates are mainly driven by inflation which affects the value of money; demand and supply of money through sale and purchase of government security in the

one market; monetary policy and intervention by the government through setting the Central Bank lending rate; general economic conditions such as economic booms and slumps (Ngugi, 2004). Interest rates in the country have also been sensitive to the existing political atmosphere. For instance the 2007/2008 post-election crisis caused a hike in the weighted average bank lending rates by 1.6% (Ng'etich and Wanjau, 2011).

When the CBR rose in the second half of 2011, the mortgage lending rate increased on average from 14.7 to 25% (Central Bank of Kenya, 2012). However, despite the CBR rate coming down mortgage rates have remained high.

According to CBK Report (2012) Kenya had a total of 19,177 mortgage accounts by December 2012, up from 16,029 in December 2011. The value of outstanding mortgage loans increased from Sh90.4 billion in December 2011 to Sh122.2 billion in December 2012, representing a growth of Sh31.8 billion or 32.5 percent. The same report points out that 85.6 percent of the mortgage loans were on variable interest rates basis, down from 90 percent in 2011 and in 2010, 73 percent of mortgage loans were on variable interest rates. “The tendency for financial institutions to grant mortgage loans on variable interest rate basis may be contributing to slow growth in residential mortgage market”, the survey said.

On the other hand, the average mortgage loan size increased from Sh5.6 million in December 2011 to Sh6.4 million in December 2012. The increase, says the CBK Report (2012), may be partly attributed to increase in property prices. Although the report does not say exactly how many borrowers defaulted on their monthly repayments, a simple calculation (dividing the value of non-performing mortgage loans, which is Sh6.9 billion

in this case, by average mortgage loan size, which is Sh6.4 million) gives the number of defaulters as approximately 1,078 compared to 764 in December 2011.

## **1.2 Research Problem**

In microeconomic terms, the housing finance market is considered as the interaction between a supply matrix of housing finance quantity classified by characteristics such as pricing / volume and a demand matrix of households classified by their characteristics, preferences and constraints (Follain et al 1980). The market allocates housing finance on the basis of the price (interest rate) and the number of households that are willing to pay the bid prices in consideration that they have their preferences and constraints. It is argued that there is disequilibrium in the housing finance market when the price does not adjust fast enough to clear the market. While theory is based towards the postulation that interest rates are inversely related to the amount of credit available in an economy, studies have shown situations when the levels of credit is independent of the official interest rates, especially characteristic of credit squeeze.

A study by Martinez and Maza (2003) found out that housing prices and real income were positively related to mortgage credit while interest rates have a negative impact on the variation in short term mortgage credit. However, Gerlach and Penguin (2005), examined the long and short term relationship between interest rates and mortgage credit with application to the Hong Kong housing market and noted that house prices are found to be more sensitive to short-term rates where floating rate mortgages are more widely used and more aggressive lending practices are associated with stronger feedback from prices to bank credit. Based on their findings considering mortgage markets are long term in nature what is the effect of interest rates on lending by mortgage financial institutions?

Given the role of interest rates in the economy, several studies have been conducted. Interest rates affect the core operation of an economy in terms of production and consumption through transmission mechanism of inflation, exchange rates amongst other monetary variables. Accordingly, studies are legion explaining the effects interest rates have on various variables in the economy. In Kenya, these studies include Ngugi (2004), Oduor, Karingi and Mwaura (2011) have tried to illuminate the point that interest rates effect on the amount of credit to the economy is largely minimal. Instead the overall net credit in Kenya's financial industry is influenced more by other factors such as information asymmetry between the borrowers and the lenders, value of the collateral used by the banks to secure the loans, central bank reserve requirements, direct credit controls on the banking system and perception of risk regarding the solvency of other banks within the banking system. Other studies include Muguchia (2012) who shows the effect of flexible interest rates on the growth of mortgage financing in Kenya. Kilonzo (2003) shows the effect of changes in interest rates on credit granted by commercial banks in Kenya.

Given that mortgages are long term in nature and interest rates determine the quantity of mortgage funds supplied and demanded in the market; this study seeks to find out the effect of interest rates on lending by mortgage financial institutions in Kenya?

### **1.3 Objective of Study**

To establish the effect of interest rates on lending by mortgage financial institutions in Kenya.



## **1.4 Value of Study**

Interest rates are used to influence the monetary policy and other aspects to achieve the desired macroeconomic framework. Therefore this study will provide important insights to relevant government departments towards achieving the country's macroeconomic target of Kenya Vision 2030. To mortgage financial institutions, this study will be useful in that it will help them to have an indication of the relationship between mortgage lending and rates of interest.

Also the Constitution of Kenya 2010 explicitly accords every Kenyan a human right to adequate and decent housing. The policy makers and market players would benefit from this study in order to consider expanding the mortgage market to as many Kenyans as possible. Will also help them understand how monetary policies on interest rates affect the mortgage market and by extension, economic growth. The study will also give a good insight to academicians who want to pursue further research in this area.

## **CHAPTER TWO: LITERATURE REVIEW**

### **2.1 Introduction**

This section focuses on both theoretical and empirical literature on the effect of interest rates on lending by mortgage financial institutions. The empirical evidence is drawn from Kenya and the rest of the world.

### **2.2 Theoretical Framework**

Various theories of interest rates put together explain or provide variables which determine their level. These theories differ because of differences of opinion as to whether interest rates are monetary or real phenomena.

#### **2.2.1 Traditional Theory**

Traditional theory defines interest rate as the price of savings determined by the demand and supply of loanable funds. With the assumption of the existence of a capital market, it is the rate at which savings are equal to investment. According to the loanable fund theory, no role is assigned to the quantity of money, the level of income on savings, or institutional factors like government and commercial banks (Gardner, Mills, and Cooperman, 2000).

According to the traditional theory, nominal interest rate adjusts fully to the expected rate of inflation leaving the real interest rate unaffected. According to the works of Irving Fisher (1901), there is a positive relationship between expected future price increases and nominal interest. To him, an increase in price increases the nominal value of trade resulting to an increase in demand for money leading to an increase in nominal interest

rate. Studies estimated the magnitude of the fisher effect and found that it was less than one suggesting that nominal interest rate are extremely slow to adjust to inflation such that there is a tendency for inflationary rate to expand the gap between nominal and real interest rates. Tobin (1965) modified Fisher's conclusion arguing that inflation reduces the demand for money balances, lowering the real rates of return such that the real rates rise by less than the inflation. However, this theory has been subjected to a lot of criticism by the Keynesian on the ground that it is indeterminate since no solution is possible as the position of the saving schedule will vary with level of income. As income increases, the saving schedule in turn shifts to the right hence one cannot know what the rate of interest will be unless we already know the income level (Hardwick, 1986).

### **2.2.2 Classical Theory**

According to the classical theory, rate of interest is determined by the supply and demand of capital. The supply of capital is governed by the time preference and the demand for capital by the expected productivity of capital. Both time preference and productivity of capital depend upon waiting or saving. The theory is therefore also known as the supply and demand theory waiting or saving. Whilst the demand for capital is inversely related to the rate of interest, the supply of capital depends upon savings rather than upon the will to save and the power to save of the community. The rate of interest is thus determined by the intersection of the demand curve and the supply curve of capital (Shapiro, 1992).

The classical theory neglects monetary factors in the determination of interest rate. It is a pure or real theory of interest which takes into consideration the real factors like the time preference and the marginal productivity of capital. This theory is also indeterminate.

Since savings depend upon the level of income, it is not possible to know the rate of interest unless the income level is known beforehand. And the income level itself cannot be known without already knowing the rate of interest. This theory also neglects the effects of investment on the level of income. A rise in the rate of interest, for instance, will bring a decline in investment by making it less profitable and decrease in credit granted by commercial banks (Shapiro, 1992; Sodersten, 1980). The implication of the above analysis is that an increase in money supply results in a fall in the interest rate. Given a non-zero elasticity of real rate of net rest to money, changes in nominal rate of interest are translated to changes in real rate of interest.

### **2.2.3 Neo-Classical or Loanable Funds Theory**

According to the neo-classical or loanable funds theory was formulated by the Swedish economist Knut Wicksell in the 1900s (Haugen, 2005). According to him, the level of interest rates is determined by the supply and demand of loanable funds available in an economy's credit market (i.e., the sector of the capital markets for long-term debt instruments). This theory suggests that investment and savings in the economy determine the level of long-term interest rates. Short-term interest rates, however, are determined by an economy's financial and monetary conditions.

Demand for loanable funnels has three sources: government, businesses, and consumers who need them for purposes of investment, hoarding, and consumption. More funds are borrowed at a lower rate of interest than at a higher rate. Supply of loanable funds on the other hand comes from savings, dishoardings, and bank credit. In this theory savings are seen as providing the supply of loanable funds and releasing resources from the production of current consumer goods into the production of capital goods. Investment on

the other hand is seen as providing the demand for loanable funds. The higher the rate of interest, the more willing households and individuals will be able to save and so sacrifice some present consumption for (uncertain) future consumption (Shapiro, 1992; Situma, 1997; Hardwick, 1986).

The neo-classical theory ignores the possibility that savers may have a given purpose for which they are saving to buy a house for example. In such a case, a higher interest rate may actually reduce savers willingness to save because rising interest rates raise real incomes and so reduce the amount of saving necessary for a given purpose. This theory has also been criticized for combining monetary factors (e.g. bank credit, hoarding) with real factors (e.g. savings, investment) without bringing in changes in the level of income. This makes the theory unrealistic. A basic conclusion of the neo-classicists is that falling interest rate will induce greater investment to take place.

#### **2.2.4 Keynesian Liquidity Preference Theory**

The Keynesian liquidity preference theory of interest rate by John Maynard Keynes postulates that the rate of interest is determined by the intersection of the supply-schedule of money and demand-schedule for money (liquidity preference schedule). Thus the theory explains that the rate of interest is determined at a point where the liquidity preference curve equals the supply of money curve. If money supply is increased by the monetary authorities but the liquidity preference curve remains the same, the rate of interest will fall. However, if the demand for money increases and the liquidity preference curve shifts upwards given the supply of money, the rate of interest rises. The Keynesian theory has been criticized on the grounds that it is indeterminate. Keynes asserts that liquidity preference and the quantity of money determine the rate of interest. But this is not correct

since liquidity preference schedule will shift as income level changes. Therefore unless the income level is already known, the demand and supply curves of money cannot tell us what the rate of interest will be. Besides, the theory treats the interest rate as a purely monetary phenomenon and by neglecting the real factors, makes the theory narrow and unrealistic (Shapiro, 1992; Harwick, 1986).

### **2.2.5 Title Theory and Lien Theory**

According to Title Theory and Lien Theory of Mortgages, some banks retain and treat mortgage as a title theory. Since the mortgage is said to hold a title interest, the mortgagee has the right to possession under this theory. In a title theory bank, the mortgage is treated as having transferred title to the mortgagee, subject to the mortgagee's duty to re convey if payment is made. The title is said to remain in the mortgagee until the mortgage has been satisfied and foreclosed. Although the mortgagee has the right of possession to the property, there is generally an express agreement giving the right of possession to the mortgagor. The mortgagee is said to hold the title for security purposes only. The mortgagor is given the right of possession (Buckley and Kalarickal, 2004).

In lien theory, the mortgagor retains legal and equitable title to the property, but conveys an interest that the mortgagee can only foreclose upon to satisfy the obligation of the mortgagor. This is equivalent to a future interest in the property which allows the mortgagee to use the process of foreclosure. The interest is a security interest or mortgage, which forms a lien on the property. In this theory the right to possession arises upon a default. The mortgagor has a right to sue the mortgagee for any interference with his right to possession (Buckley and Kalarickal, 2004).

For practical applications there is usually by little difference between a lien theory and title theory. The principle difference arising in the title theory bank is that the mortgagee is given the right to possession before the foreclosure is complete.

### **2.3 Concepts of the Study**

According to Castro and Santos (2010) a factor of relevance in the setting of bank interest rates is therefore credit risk, particularly aggregate credit risk, which is associated with the state of the economy. Another important factor is associated with the exposure of banks to interest rate risk. Since financial institutions have to cope with unsynchronized demand for loans and supply of deposits, they often turn to the money market to manage their liquidity position. Volatility of interest rates in the money market is sometimes considered in determining interest rate margins. Another important factor lies not only in increased competition within the banking and financial system as a whole, which made it possible to widen the range of funding opportunities and investment, but also in the increase in financial innovation, that have supported changes in risk management and brought down the costs of doing business. Increased competition and financial innovation are closely linked to the liberalization of financial markets and, more recently.

The evolution of bank lending theoretically results from the interaction between demand and supply factors. However, the variables that help to explain the dynamics of the loans sometimes affect both demand for and supply of credit, and it is not always, accordingly, possible to empirically identify the two channels. There are usually variables of scale, variables related to financing conditions, variables related to the position of households and corporations and factors related to structural changes in the banking sector and other variables. Another set of factors that play a predominant role, especially in the supply of

loans, is related to factors, mainly structural in nature, that affect the banking sector. Increased competition in the banking sector, led to a wave of innovation and a significant increase in the supply of new products in the financial sector (by increasing loan maturities, lower down payments, securitization, inter alia), which has had serious consequences not only in terms of amounts and conditions of credit supply but also in terms of raising funds and risk management by financial institutions (Castro and Santos 2010).

## **2.4 Empirical Evidence**

The theory of credit demand, credit supply and economic activity in USA as postulated by Balke and Zeng (2011) for the period January 1985 to December 2009. They estimated the model using Bayesian Markov Chain Monte Carlo (MCMC) methods which provides the determining factors of the credit output. The principal determinant of credit demand and supply is interest rates. There are also other factors that shift the demand for loans such as inflation rate, money supply in the economy, the GDP, non-performing loans, liquidity ratio, customer deposit and bank capitalization. This theoretical basis is supported by empirical works by Essene and Apgar (2007) who argue that mortgage finances as a result of the existing macroeconomic environment in the country which determine the operations of financial institutions. Leech (2008) theorized the significance of mortgage demand, mortgage choices and the nature of the economic environment in which macroeconomic factors such as inflation rates, GDP as well as bank operating factors such as customer deposits and liquidity ratios were found to be inter-related to mortgage financing.



According to Case and Shiller (2008), the meltdown in mortgage markets has substantially raised mortgage rates relative to their historical relationship to interest rates. They conducted a study analyzing the role of credit markets in mortgage prices and thus in house prices in USA housing market. The study showed that the spread between the interest rate on the average 30-year conforming mortgage and the 10-year Treasury bond had widened enormously in the last few years. In fact, while the yield on the 10-year Treasury bond had fallen by nearly 1.5 percent in the past 2 years, the average rate on a conforming mortgage had fallen by about 0.5 percent. Problems in the entire economy combined with the broader credit crunch were responsible for the increase in the spread between mortgage rates and treasury securities.

McShane and Sharpe (1984) 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. Their model assumes the following about banks in undertaking intermediation between depositors (suppliers of funds) and borrowers (demanders of funds): (i) maximization of expected utility (ii) 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 requests and receipt of deposits, and the uncertainty in short term interest rates. However, the study notes the narrowness of this definition of interest rate margin and embeds their model in a more general model of profit maximization.

Empirically, not much has been done on interest rates in Kenya. According to Muguchia (2012) in her study of the effect of flexible interest rates on the growth of mortgage finance in Kenya during the financial period 2007 to 2011. Through the regression

analysis conducted the study found out that the flexible interest rates have a strong negative and significant effect on mortgage financing among the financial institutions in Kenya. Specifically, a percentage change in the weighted average lending rates among Kenya's financial institutions reduces the annual mortgage output by 1.3 percent. The study revealed the other independent variables had mixed effects on mortgage financing. Inflation, non-performing loans, liquidity ratio had negative effects on mortgage financing while money supply, gross domestic product, customer deposits, bank capitalization and bank size had positive effect on mortgage financing.

Ngumo (2012) studied the effect of interest rates on the financial performance of firms offering mortgages in Kenya for the period 2007 to 2011. Linear regression analysis was used to analyze the data at 95% confidence level. The study established positive relationships in the five regression analysis between financial performance and the amount of mortgage loans advanced; three positive results were established between interest rates and the former. The study concludes that the amount of mortgage advanced by mortgage firms would lead to a high financial performance (EBIT) as it raises the revenue thereof. On the other hand, interest rate would positively relate with financial performance till it starts discouraging borrowings owing to increase in the cost of mortgage. The study recommends that mortgage firms in Kenya charge interest rates on the mortgage appropriately as ineffective interest rate policy raises the cost of mortgage borrowing, negate its demand thus lowers financial performance.

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 mortgage financing is

influenced by market and financial factors which includes 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 rates on treasury bond. The study therefore established that there is positive relationship between mortgage firms performance with factors influencing mortgage financing which are encountering competitions in the marketing, creating of wealth, improving saving, high interest rates from mortgage, diversification of investment, increase investment.

Kilonzo (2003) in his study of the effect of changes in interest rates on credit granted by commercial banks in Kenya from 1992 to 2002 used regression analysis to indicate an inverse relationship between the level of interest rates and the amount of credit granted by commercial banks. He observed that when interest rates increase, the amount of credit granted by commercial banks to their customers decreases while the interest rates decline, the amount of credit granted by commercial banks increases. He used a t-test of the regression parameters  $y = a + b(x)$  particularly (b) at 5% level of significance revealed that interest rates have o effect on the amount of credit granted by commercial banks in Kenya. This further confirmed his research findings of low correlation coefficients for all commercial banks implying the existence of a weak relationship between credit granted and interest rates. His research findings led to the conclusion that interest rates are not the most important determinant of the amount of credit granted by commercial banks in Kenya.

## **2.5 Summary of Literature Review**

The objective of the study was to determine the effect of interest rates on lending by mortgage financial institutions in Kenya. The study was driven by the need to understand how changes in interest rates are likely to affect the amount of mortgage lending advanced by mortgage financial institutions to their customers. Based on the theories the level of interest rates is determined by the supply and demand of loanable funds available in an economy's credit market. From the empirical review it provides evidence that interest rates have an inverse relationship with other variables. The identified knowledge gap from the theories and empirical review is that they don't postulate the effect of interest rates on the long term nature of mortgage lending. Therefore this research goes a long way to investigate the effect of interest rates on lending by mortgage financial institutions.

## **CHAPTER THREE: RESEARCH METHODOLOGY**

### **3.1 Introduction**

This chapter introduces the design of the research, the population of the units to be studied, the sampling framework of the population, the data collection techniques and the type of the data, the analysis of the data as well as the data validity and data reliability.

### **3.2 Research Design**

The research design used was a descriptive survey research. Mugenda and Mugenda (2003) describe research as a process of collecting data in order to answer questions regarding the current status of the subjects in the study. Mugenda (2003) defines a survey as an attempt to collect data from members of the population with respect to one or more variables. It is appropriate to use descriptive survey as it allows ascertaining of the effect of interest rates on lending by mortgage financing institutions. The study focuses on financial institutions offering mortgage facilities in Kenya.

### **3.3 Population**

A population is a well-defined or set of people, services, elements, events, group of things or households that are being investigated (Ngechu, 2004). The target population for this study is financial institutions in the country offering mortgage credit services. According to CBK, there are there are 43 licensed commercial banks and 1 mortgage finance company in Kenya as at 31<sup>st</sup> December 2012.

### **3.4 Sample**

A sample size should be chosen in a way that it gives a wide scope for the aim of the study (Ngechu, 2004). It should be in a way such that it is not biased or skewed. The sample size should be representative of the whole targeted population. This study will use a sample of 30 financial institutions 10 from each cluster as shown in appendix I. This will ensure that all clusters of the population are well represented in the study. Stratified random sampling technique will be used first to divide the population into homogenous groups, then random sample will be drawn from each strata.

### **3.5 Data Collection**

There are many methods of data collection, according to (Ngechu, 2004). This study will use time series annual secondary data on mortgage loans disbursed and lending rates charged by individual banks. The data will be collected from central bank of Kenya, for the period 2006 to 2012.

### **3.6 Data Analysis**

The model for this study is regression analysis; it's a statistical tool for the investigation of relationships between variables. Usually, the investigation seeks to ascertain the causal effect of one variable upon another. Regression analysis will be used to determine the relationship between interest rates and lending by mortgage financial institutions. Interest rates tend to have an inverse relationship with other variables and this model tests what kind of relationship exists between interest rates and lending by mortgage financial institutions in Kenya. The main model will test for each mortgage financial institution annual amount of mortgage lending disbursed ( $y$ ) as a function of lending rates ( $x$ ).

$$y = \alpha + \beta x + \varepsilon$$

Where;

$y$  is the mortgage lending disbursed on an annual basis.

$x$  is the mortgage lending rate per year.

$\alpha$  is a constant and

$\beta$  is the coefficient of the independent variable

$\varepsilon$  is the error term

The analysis will determine the extent to which lending by mortgage financial institutions is explained by changes in interest rates. Coefficient of determination ( $r^2$ ) will be used to determine the proportion of lending by mortgage financial institutions determined by interest rates, correlation coefficient ( $r$ ) will determine the strength of the relationship, and the t-statistic to determine the significance of the relationship.

Excel spreadsheet will be used to analyze the data.

## **CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSION**

### **4.1 Introduction**

This chapter presents analysis and findings of the research. From the study population of 43 licensed commercial banks and 1 mortgage finance company in Kenya as at 31<sup>st</sup> December 2012 a target sample of 30 financial institutions offering mortgages were used for analysis for the period 2006 to 2012.

The data was collected from CBK, World Bank, Hass Consult and The Mortgage Company. The studies used excel regression analysis to analyze the data. A brief explanation of the variables used in the analysis is presented in table 1. The dependent variable is the lending by mortgage financial institutions and the expected relationship of the independent variable (interest rate) with annual lending by mortgage financial institution.

Table 1: Variable definitions and measurements

<b>Variable</b>	<b>Description</b>	<b>Measurement</b>	<b>Relationship with dependent variable</b>
Interest rate	Weighted average of annual lending rate by mortgage financial institutions in Kenya.	Percentage	Inverse

### **4.2 Descriptive Statistics**

This section provides the basic features of the data in this study. It provides simple summaries about the sample and the measures.



Table 2: Summary of statistics of the study variables

<b>Variable</b>	<b>Observation</b>	<b>Mean</b>	<b>Standard Deviation</b>	<b>Minimum</b>	<b>Maximum</b>
Mortgage lent out	132	819,636,477	1,665,230,154	1,600,000	13,350,000,000
Interest	132	17.10%	3.50%	13.00%	25.00%

The average mean of annual mortgage lent out by the sampled mortgage financial institutions was Kshs 819,636,477 at an average rate of 17.10%. The level of dispersion in the amounts of mortgages lent out is substantial at Kshs 1,665,230,154 and interest rates dispersion is 3.50%. This is evident in the fact that while the lowest annual mortgage lent out was Kshs 1,600,000 the largest was Kshs 13,350,000,000 the same dispersion can be seen in interest rates where the lowest rate was at 13.00% while the highest rate was at 25.00%. This dispersion shows the differences in the capacity of the sampled mortgage financial institutions in offering mortgage loans.

Thus there's significant variability of the study variables across banks and time period of study. The common feature in all observations is that financial institutions differ significantly in size, subsequently differing in the way interest rates influence the amounts of mortgage loans advanced by financial institutions. There's a positive and very strong relationship between bank size and the amount of mortgage loans granted.

### 4.3 Diagnostic Tests for the Estimation Model

The relationship between mortgage lending (y-variable) and the interest rates (x-variable) is negative/inverse in nature while that with the constant ( $\alpha$ ) is positive in nature. The error element in the sample is assumed to be reduced to an insignificant amount.

Table 3: Summary of model

ANOVA	df	Sum of Square	Mean Square	F	Significance F
Regression	1	1.502	1.502	0.024	0.877
Residual	28	1729.622	61.772		
Total	29	1731.123			

The research has used a confidence interval of 95% (5% Significance Level) in the MS Excel package. Thus from the research the resulting model is not statistically significant. This is because Significance F (0.87722) is greater than the Significance Level (0.05). Therefore, the overall model is not reliable for decision making purposes.

From the form  $y = \alpha + \beta x$ , the regression model becomes  $y = 20.28 - 21.54x$

### 4.4 Model Estimation Results and Discussion

Table 4: Summary of regression statistics

Regression Statistics	
Multiple R	0.02945
R Square	0.00087
Adjusted R Square	-0.03482
Standard Error	7.85953
Observations	30

#### 4.4.1 Multiple R

Multiple R is a value that normally lies between zero and one. It is the coefficient of correlation between interest rates and mortgage lending. It determines whether there exists a linear relationship between the two variables and sequentially shows the strength of the relationship. The Multiple R shows that there is an inverse linear relationship between the two variables interest rates and lending by mortgage financial institutions in Kenya. However, it is a weak one since it is at only 2.95%.

#### 4.4.2 Adjusted R-Square

This is the coefficient of determination. It measures causality between the two variables. If a relationship exists, it shows the goodness of fit of the deriving model. It is a value between zero and one, and can be interpreted as a percentage. Only 3.48% of changes in the mortgage lending is influenced by corresponding inverse changes in the interest rates. Thus, 96.52% of changes in mortgage lending is explained by other external factors e.g. monetary and fiscal policy, recession.

#### 4.4.3 T Stat

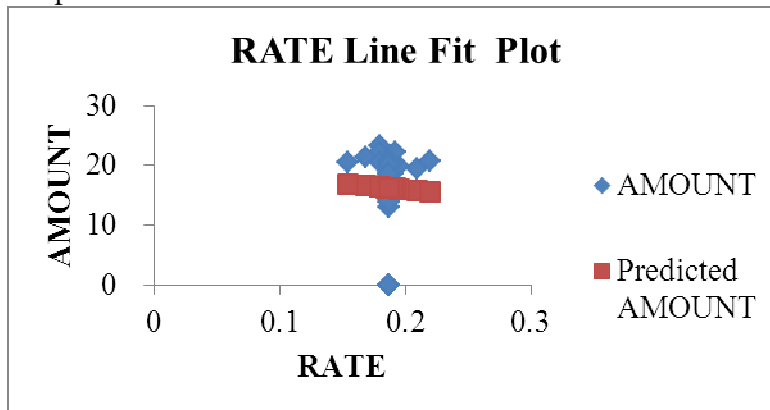
Table 5: Summary of t-stat statistics

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	20.277	25.941	0.782	0.441	-32.86	73.415
Interest Rate	-21.541	138.164	-0.156	0.877	-304.557	261.475

T-stat is used to measure the significance of individual parameters in the overall model. The higher the t-stat the more statistically significant the individual parameter is. There is a positive relationship between the dependent variable and intercept (constant) 20.277. The constant (intercept),  $\alpha$  have a higher t Stat value and thus have a higher statistical significance than the interest rates. Therefore other unexplained variables that have not been included in this study have more statistical significance than the interest rates.

At 95% confidence interval when the t-stat is greater than 1.96 then the parameters are statistically significant, in reference to the study both the constant and interest rate variables are not statistically significant because they are less than 1.96. There's an inverse relationship between the t-stat and p-value, the higher the t-stat the lower the p-value and this is confirmed from the table above. The range of coefficients is shown by lower and upper 95%. The Beta coefficient of interest rates can go as low as -305 and as high as 261 thus not so reliable because they are dispersed from the mean.

Graph 1: Line of best fit



The line of best fit usually portrays the distinction between the unexplained variables and explained variables on a scatter plot graph. Below the line of best fit we find the

explained variables and in our case that's the interest rate while above the line of best fit we have unexplained variables that is the constant and error term.

#### **4.5 Summary of Findings and Interpretations**

Role of financial institutions in the economy is offering credit, which include mortgages. On the other hand interest rates define the cost of credit in an economy. The objective of the study was to determine the effect of interest rates on lending by mortgage financial institutions in Kenya. The study was driven by the need to understand how changes in interest rates are likely to affect the amount of mortgage lending advanced by mortgage financial institutions to their customers. Based on the theories the level of interest rates is determined by the supply and demand of loanable funds available in an economy's credit market. From the empirical review it provides evidence that interest rates have an inverse relationship with other variables.

Using a sample of 30 mortgages financial institutions comprising of 29 commercial banks and one housing finance, regression results reveal that there is an inverse relationship between the amount of mortgage lending granted by mortgage financial institutions and the level of interest rates. Specifically, a percentage change in the weighted average lending rates among Kenya's mortgage financial institutions reduces the annual mortgage lending by 21.54 percent. This relationship is weak as exemplified by the low levels of coefficient of determination and correlation coefficients. Therefore this means that there are other factors that affect lending by mortgage financial institutions in Kenya other than mortgage interest rates e.g. monetary and fiscal policy, recession etc.

There is a positive relationship between the dependent variable and intercept (constant) 20.277. The constant (intercept),  $\alpha$  have a higher t Stat value and thus have a higher statistical significance than the interest rates. Therefore other unexplained variables that have not been included in this study have more statistical significance than the interest rates in the effect of lending by mortgage financial institutions in Kenya.

## **CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS**

### **5.1 Summary**

This chapter presents discussions of the key findings presented in chapter four, conclusions drawn based on such findings and recommendations there-to. This chapter is thus structured into conclusions, recommendations, limitations of the study and areas for further research.

### **5.2 Conclusion**

When interest rates increase, the amount of mortgage granted by financial institutions to their customers decreases while when the interest rates decline, the amount of mortgage granted by financial institutions increases. The conclusion of this study is that there's a weak relationship between effect of interest rates and lending by mortgage financial institutions therefore there are other external factors or determinants of lending by mortgage financial institutions other than mortgage interest rates for instance like monetary and fiscal policy, recession.

Regression results reveal that there is an inverse relationship between the amount of mortgage lending granted by mortgage financial institutions and the level of interest rates. This relationship is weak as exemplified by the low levels of coefficient of determination and correlation coefficients. Therefore this means that there are other factors that affect lending by mortgage financial institutions in Kenya other than mortgage interest rates. Specifically, a percentage change in the weighted average

lending rates among Kenya's mortgage financial institutions reduces the annual mortgage lending by 21.54 percent.

### **5.3 Study Recommendation**

While the focus and scope of this study was to establish the effect of interest rates on lending by mortgage financial institutions in Kenya, it is imperative to note that the macroeconomic environment in which interest rates operate in the country is closely interlinked with other variables not captured in this study. Thus in order to achieve the Kenya vision 2030, the right macroeconomic environment needs to be favorable targeting other factors such as inflation, reducing non-performing loans.

Government intervention on interest rates in terms of controls is not likely to lead to a significant growth in the amount of lending granted by mortgage financial institutions. Reason being according to this study interest rates are weakly related and not the most important determinant to lending by mortgage financial institutions in Kenya. Thus the government should focus its attention on the other most important variables which determine lending by mortgage financial institutions and influence these variables.

Thus the government should leave the determination of interest rates to the market forces of supply and demand but strengthen the monetary policies to ensure that the rate of inflation which is a major component of interest rate is controlled and managed below the two digit figure to avoid inflationary pressure pushing interest rates upwards.

According to CBK Report (2012) Kenya had a total of 19,177 mortgage accounts by December 2012 up from 16,029 in December 2011, and this is a reflection of low mortgage intake and this study therefore recommends the mortgage financial institutions



to promote policies that ensure higher uptake of mortgages especially by lowering the mortgage rates to be in tandem with the central bank rate. The central bank should apply stringent regulations on mortgage rates charged by mortgage financial institutions so as to promote more mortgage intake.

#### **5.4 Limitations of the Study**

The key limitation to this study was unavailability of data. Due to the sensitivity of data pertaining to interest rates and mortgages issued out, majority if not all mortgage financial institutions were reluctant to divulge this information. The resolution was to make do with the readily available annual data from CBK, Hass Consult and The Mortgage Company websites. For this reason the study is limited in so far as it fails to take into account a longer duration of period. Also due to confidentiality reasons and the tedious work involved in getting data for the 6 year period covered by the study, the study was conducted for 30 mortgage financial institutions representing only approximately 68% of the population. Analysis of the whole population would have shown a closer representation of the population.

The study did not benefit from the relevant literature from the local content on the subject matter as this area of study seems to be less traversed. The study used time series data for the period 2003 to 2012. This means that only 10 observations were included in the analysis for the 30 mortgage financial institutions in Kenya. A long period with 50 or more observations is more appropriate when working with macroeconomic data however collection of such data was not possible.

## **5.5 Suggestions for Further Research**

The study concentrated on effect of interest rates on lending by mortgage financial institutions in Kenya. A further study to incorporate the other macro-economic determinants that affect lending by mortgage financial institutions in Kenya other than interest rates could be beneficial. Like influence of capital flow and foreign exchange rates on lending by mortgage financial institutions in Kenya.

A study could be conducted on the effect of inflation on lending by mortgage financial institutions because according to the World Bank (2011), the choice of whether to levy fixed rate or variable rate interest in a given market largely depends on the inflationary environment. Also a similar research study that incorporates many data points would add value as it would increase the degrees of freedom in the analysis to determine the various factors that affect lending by mortgage financial institutions in Kenya over time.

## REFERENCES

- Bachofner, M. & Lützkendorf, T. (2005). Research Trends in the Mortgage Market, *Building Research & Information*, 33(4), 376-381
- Balke, S. B. & Zeng, Z. (2011), Credit Demand, Credit Supply, and Economic activity, Retrieved from [faculty.smu.edu/nbalke/workingpapers/credit\\_balke\\_zeng.pdf](http://faculty.smu.edu/nbalke/workingpapers/credit_balke_zeng.pdf) on 26<sup>th</sup> May 2013
- Banking Act - Cap 488
- Buckley, R. & Kalarickal, J. (2004). Shelter strategies for the urban poor. Idiosyncratic and successful but hardly mysterious *World Bank Policy Research Working Paper. 3427, Washington D.C.*
- Campbell, J. Y. (2012). Mortgage Market Design, *Department of Economics, Littauer Center, Harvard University*,
- Castro, G., & Santos, C. (2010). Bank Interest rates and Loan Determinants, *Banco de Portugal Economic Bulletin*, 65-86
- CBK's (2011) Residential Mortgages Market Survey as at December 2011
- Central Bank of Kenya (2012) Bank Supervision Annual Report.
- Central Bank of Kenya, (2012). Various monthly economic reviews, 2012.
- Cook, N., Smith, S. J. & Searle, B. A. (2009). Mortgage markets and cultures of consumption, *Consumption Markets & Culture*, 12(2), 133-15
- Del Boca, D. & Lusaidi, A. M. (2003). Credit Market Constraints and Labour market decisions. *Labour economics, Elsevier*, 10(6), 681-703

- Essene, R. S. & Apgar, W. (2007). Understanding Mortgage Market Behavior: Creating Good Mortgage Options for all Americans, *Joint Center for Housing Studies of Harvard University*.
- Fabozzi F. J. & Modigliani F. (2009). Capital Markets Institutions and Instruments (4th Ed). USA: Pearson Prentice Hall.
- Fabozzi, J. & Modigliani, F. (1992). Mortgage and Mortgage Backed Securities Market. Boston, Harvard Business School Press.
- Fratantoni, M. (2005). Housing and Mortgage Markets An Analysis, Mortgage Bankers Association
- Follain, J.R., Lim, G.C. & Renaud B. (1980). The Demand for Housing in developing Countries: the case of Korea, *Journal of Urban Economics*, 7, 315-336.
- Georgievska, L., Kabashi, R., Trajkovska, N. M., Mitreska, A., & Vaskov, M. (2011). Determinants of lending interest rates and interest rate spreads, Special Conference Paper Special, Bank of Greece.
- Gerlach, S. & Peng, W. (2005). Bank lending and property prices in Hong Kong, *Journal of Banking and Finance*, 29, 461-81.
- Hardwick, P., Khan, B., Langmead, J. (1986). An Introduction to Modern Economics. Longman Group, Burnt Mill, Harlow, England.
- Haugen, A. (2005). Modern Investments (5th Edition). New Delhi.
- International Monetary Fund (2012). Financial Intermediation Costs in Low-income Countries: The Role of Regulatory, Institutional, and Macroeconomic Factors, IMF working paper.

- Kidwell, D. S., Blackwell D. W., Whidbee D. A & Peterson R. L. (2008). *Financial Institutions, Markets, And Money* 10th Edition. USA, John Wiley & Sons, Inc.
- Kilonzo, B. M. (2003). The effects of changes in interest rates on credit granted by commercial banks in Kenya. Unpublished MBA Research Project.
- Leece, D. (2004). *Economics of the Mortgage Market - Perspectives on Household Decision Making*. Blackwell Publishing Ltd, Oxford, UK
- Martinez, P. J & Maza L. A. (2003). Analysis of housing prices in Spain, working paper 0307, Bank of Spain.
- McDonald, D. J. and Thornton, D. L. (2008). A Primer on the Mortgage Market and Mortgage Finance. *Federal Reserve Bank of St. Louis*, 90(1), 31-45.
- McShane, R. W. & Sharpe, I. G. (1984). A Time Series/Cross Section Analysis of the Determinants of Australian Trading Bank Loan/Deposit Interest Margins, *Journal of Banking and Finance*, 9, 115-136.
- Milani, C. (2010), The Determinants of Mortgage Rates: An Empirical Analysis of the Euro Area Countries, AbiServizi, Economic Research Department
- Mugenda, O. M. & Mugenda A. G. (2003). *Research Methods: Quantitative and Qualitative Approaches*. Nairobi: acts press.
- Muguchia L. (2012). Effect of Flexible Interest Rates on the Growth of Mortgage Financing in Kenya. Unpublished MBA Research Project.
- Muth, R. F. (1962). Interest Rates, Contract Terms, and the Allocation of Mortgage Funds. *The Journal of Finance*, 17(1), 63-80.

- Ngechu, M. (2004). Understanding the Research Process and Methods. An introduction to research methods. Acts press, nairobi.
- Ng'etich, J. C. & Wanjau, K. (2011). The Effects of Interest Rate Spread on the level of Non-Performing Assets: A case of Commercial Banks in Kenya, *International Journal of Public Management* ( ISSN: 2223-6244) 1(1), 58-65.
- Ngugi, R. W. (2004). Understanding Interest Rates Structure in Kenya, Kenya Institute for Public Policy Research and Analysis Discussion Paper.
- Ngumo, L. W. (2012). The Effect of Interest rates on the Financial Performance of Firms Offering Mortgages in Kenya. Unpublished MBA Research Project.
- Oduor, J., Karingi, S & Mwaura, S. (2011). Efficiency of Financial Market Intmediation in Kenya: A Comparative Analysis, *Journal of Policy Modeling*, 33(2), 226-240.
- Pandey, I. M. (2010). Financial Management, 10<sup>th</sup> Edition, New Delhi, Vikas Publishing House Pvt Ltd.
- Parliament Budget Office, (2012). High Interest Rates and the Risks to Economic Growth, Parliament Budget Office Nairobi, Kenya Discussion Paper.
- Shapiro, E. (1992), Macroeconomic Analysis. Galgotia Publications Pvt. Ltd. New Delhi
- Situma, E. N. (1997). Financial Liberalization and Private Investment in Africa, Fiscal Policy and Private Investment in Developing Countries Seminar, July.
- Stiglitz, J. E. (2010). The Stiglitz Report: Reforming the International Monetary and Financial Systems in the Wake of the Global Crisis, The New Press, ISBN 1595585206

Sodersten, Bo (1980). International Economics. Macmillan Press Ltd., London.

Tobin, J. (1965). Money and Economic Growth, *Econometrica*, 33 (4), 671-684.

Tregarthen T. & Rittenberg L. (2000). Economics, 2nd Edition. USA, Worth Publishers.

Wahome, M. W. (2010). A Survey of Factors Influencing Mortgage Financing In Kenya. Unpublished MBA Research Project.

World Bank, The (2011). Developing Kenya's Mortgage Market, accessed from [www.siteresources.worldbank.org](http://www.siteresources.worldbank.org) on 20th September 2012.

## **APPENDIX I: Financial Institutions in Kenya based on Bank Segment**

1. Kenya Commercial Bank	Large
2. Housing Finance	Large
3. CFC Stanbic	Large
4. Standard Chartered	Large
5. Barclays Bank	Large
6. Commercial Bank of Africa	Large
7. I&M Bank	Large
8. Equity Bank	Large
9. National Bank of Kenya	Large
10. Diamond Trust Bank	Large
11. NIC Bank	Large
12. Bank of India	Large
13. Cooperative Bank of Kenya	Large
14. Prime Bank	Large
15. Imperial Bank	Large
16. Bank of Africa	Large
17. Bank of Baroda	Large
18. Citibank N.A.	Large
19. Development Bank	Medium
20. Consolidated Bank of Kenya	Medium
21. Family Bank	Medium
22. Victoria Commercial Bank	Medium
23. Chase Bank	Medium
24. Fidelity Commercial Bank	Medium
25. African Banking Corp	Medium
26. Giro Bank	Medium
27. EcoBank	Medium
28. Guardian Bank	Medium
29. Fina Bank	Medium
30. Gulf African Bank	Medium
31. Habib AG Zurich	Medium
32. K-Rep Bank	Medium
33. First Community Bank	Small
34. Paramount Bank	Small
35. Trans-National Bank	Small
36. Credit Bank	Small
37. Middle East Bank	Small
38. Habib Bank	Small
39. Oriental Commercial Bank	Small
40. Equatorial Bank	Small
41. UBA Kenya	Small
42. Dubai Bank	Small
43. City Finance Bank	Small
44. Southern Credit Banking Corp	Small



## **APPENDIX II: Sample of Mortgage Financial Institutions in Kenya**

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

**Appendix III: Summary of mortgage rates and amounts lent out by Mortgage Financial Institutions in Kenya.**  
**APPENDIX III: Summary of mortgage rates and amounts lent out by Mortgage Financial Instituion in Kenya for the period 2006 to 2012**

		2012		2011		2010		2009		2008		2007	
		Y=Amount (Kshs)	X=Rate (%)	Amount (Kshs)	Rate %	Amount (Kshs)	Rate %	Amount (Kshs)	Rate %	Amount (Kshs)	Rate %	Amount (Kshs)	Rate %
1	KCB	13,350,000,000	18.00%	0	15.90%	2,334,747,000	24.00%	5,936,533,000	14.85%	3,438,751,000	14.87%	2,186,962,000	13.78%
2	HFCK	4,516,000,000	18.00%	8,877,000,000	15.20%	1,800,000,000	23.00%	3,800,000,000	14.85%	2,340,000,000	14.87%	630,000,000	13.78%
3	CFC Stanbic Standard	681,000,000	18.50%	2,309,573,000	14.00%	360,189,000	24.00%	787,306,000	14.85%	2,624,780,000	14.87%	2,072,737,000	13.78%
4	Chartered	1,970,000,000	16.90%	2,792,577,000	13.40%	62,580,000	19.90%	473,038,000	14.85%	778,731,000	14.87%	736,199,000	13.78%
5	Barclays Bank Commercial	781,078,700	15.50%	1,316,529,467	13.00%	141,437,149	21.90%	547,895,960	14.85%	664,020,096	14.87%	733,392,219	13.78%
6	Bank of Africa	425,000,000	19.00%	1,610,189,000	15.20%	45,554,000	24.00%	201,769,000	14.85%	464,577,000	14.87%	85,327,000	13.78%
7	I&M Bank	762,700,000	18.00%	813,886,532	14.50%	46,108,556	19.00%	183,366,497	14.85%	179,565,255	14.87%	76,876,620	13.78%
8	Equity Bank National Bank of	297,000,000	21.00%	2,713,732,821	24.00%	135,568,057	24.00%	238,426,939	14.85%	269,712,183	14.87%	29,560,000	13.78%
9	Kenya Diamond Trust	1,023,000,000	22.00%	2,531,722,297	16.00%	115,573,927	22.00%	179,826,139	14.85%	272,877,637	14.87%	0	13.78%
10	Bank	123,000,000	19.00%	0	21.60%	212,228,000	24.00%	124,400,000	14.85%	95,269,000	14.87%	130,415,000	13.78%
11	NIC Bank	467,000,000	19.50%	0	21.10%	39,755,000	24.00%	97,561,000	14.85%	256,883,000	14.87%	122,897,000	13.78%
12	Bank of India Cooperative	1,600,000	18.75%	0	23.00%	74,703,258	14.98%	246,104,000	14.85%	66,136,000	14.87%	15,299,000	13.78%
13	Bank of Kenya	4,477,100,000	19.25%	1,919,582,019	23.90%	190,802,141	23.25%	55,515,840	14.85%	0	14.87%	0	13.78%
14	Prime Bank	88,000,000	18.75%	34,448,805	19.90%	129,150,521	14.98%	55,468,993	14.85%	1,455,870,633	14.87%	14,904,121	13.78%
15	Imperial Bank	0	18.75%	0	18.51%	7,210,362	14.98%	0	14.85%	82,274,403	14.87%	28,198,027	13.78%
16	Bank of Africa	730,000,000	19.00%	375,461,582	22.00%	31,654,967	22.00%	19,923,271	14.85%	0	14.87%	0	13.78%
17	Bank of Baroda Consolidated	0	18.75%	382,259,000	21.20%	6,078,000	14.98%	0	14.85%	0	14.87%	0	13.78%
18	Bank	1,084,000,000	18.75%	1,969,484,197	25.00%	586,894,830	25.00%	207,620,973	14.85%	0	14.87%	0	13.78%

Development													
19	Bank	344,000,000	18.75%	561,992,140	24.00%	0	14.98%	1,025,786,985	14.85%	683,812,000	14.87%	0	13.78%
20	Chase Bank	754,000,000	18.75%	248,257,000	20.00%	45,633,000	14.98%	61,158,000	14.85%	41,076,000	14.87%	97,689,000	13.78%
African Banking													
21	Corporation	269,000,000	18.75%	1,178,762,000	22.00%	24,995,000	14.98%	7,685,520	14.85%	4,871,000	14.87%	9,026,000	13.78%
22	Family Bank	863,000,000	18.75%	0	24.50%	249,010,860	24.50%	530,772,920	14.85%	74,649,777	14.87%	67,402,808	13.78%
23	Eco Bank	0	18.75%	1,065,431,000	22.70%	234,556,000	14.98%	0	14.85%	0	14.87%	0	13.78%
Gulf African													
24	Bank	479,000,000	18.75%	590,000,000	16.70%	0	14.98%	0	14.85%	0	14.87%	0	13.78%
25	Fidelity Bank	0	18.75%	201,132,741	23.30%	44,067,112	14.98%	44,027,930	14.85%	14,794,186	14.87%	10,978,031	13.78%
26	Jamii Bora Bank	152,000,000	18.75%	66,000,000	20.00%	0	14.98%	0	14.85%	0	14.87%	0	13.78%
Transnational													
27	Bank	121,000,000	18.75%	0	26.70%	0	14.98%	55,515,141	14.85%	54,629,100	14.87%	62,649,130	13.78%
Victoria													
Commercial													
28	Bank	0	18.75%	4,919,135	21.70%	0	14.98%	68,992,178	14.85%	0	14.87%	5,627,535	13.78%
29	Habib Bank	0	18.75%	0	21.60%	0	14.98%	0	14.85%	5,303,000	14.87%	0	13.78%
Oriental													
Commercial													
30	Bank	0	18.75%	8,717,795	23.70%	9,965,882	14.98%	0	14.85%	0	14.87%	0	13.78%

**Appendix IV: Regression analysis summary output**

<i>Regression Statistics</i>	
Multiple R	0.029451362
R Square	0.000867383
Adjusted R Square	-0.034815925
Standard Error	7.859529257
Observations	30

<i>ANOVA</i>					
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	1.501546289	1.501546289	0.0243078	0.877222916
Residual	28	1729.621604	61.77220015		
Total	29	1731.12315			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	20.27743022	25.94083998	0.781679785	0.440962882	32.85997167	73.4148321	32.85997167	73.4148321
RATE	-21.54107351	138.1638782	-0.155909589	0.877222916	304.5569484	261.4748014	304.5569484	261.4748014

RESIDUAL OUTPUT

<i>Observation</i>	<i>Predicted AMOUNT</i>	<i>Residuals</i>
1	16.40003698	6.914745239
2	16.40003698	5.8308555
3	16.29233162	4.046741249
4	16.63698879	4.764310588
5	16.93856382	3.53762265
6	16.18462625	3.682973479
7	16.40003698	4.052338344

PROBABILITY OUTPUT

<i>Percentile</i>	<i>AMOUNT</i>
1.666666667	0
5	0
8.333333333	0
11.66666667	0
15	0
18.33333333	12.89921983
21.66666667	13.81551056

8	15.75380478	3.755437919	25	14.28551419
9	15.53839404	5.207611282	28.33333333	18.29284737
10	16.18462625	2.443068666	31.66666667	18.6113011
11	16.07692088	3.884918936	35	18.62769491
12	16.23847893	-1.952964744	38.33333333	18.83939108
13	16.13077356	6.091467788	41.66666667	19.41022194
14	16.23847893	2.054368441	45	19.5092427
15	16.23847893	-16.23847893	48.33333333	19.65615222
16	16.18462625	4.223928844	51.66666667	19.86759973
17	16.23847893	-3.339259105	55	19.96183982
18	16.23847893	4.565444809	58.33333333	19.98721116
19	16.23847893	3.417673284	61.66666667	20.33907286
20	16.23847893	4.202423995	65	20.40855509
21	16.23847893	3.171743006	68.33333333	20.44090293
22	16.23847893	4.337446318	71.66666667	20.45237533
23	16.23847893	-16.23847893	75	20.47618647
24	16.23847893	3.748732224	78.33333333	20.57592525
25	16.23847893	-16.23847893	81.66666667	20.74600532
26	16.23847893	2.600912147	85	20.80392374
27	16.23847893	2.372822172	88.33333333	21.40129938
28	16.23847893	-16.23847893	91.66666667	22.22224135
29	16.23847893	-2.422968373	95	22.23089248
30	16.23847893	-16.23847893	98.33333333	23.31478222