

**THE EFFECT OF INTEREST RATES ON THE FUNDING OF
MORTGAGES BY BANKS IN KENYA**

BY:

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DECLARATION

This project is my own original work and to the best of my knowledge it has not been submitted for a degree award in any other University or institution of higher learning.

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ABBREVIATIONS

CBK	-	Central Bank of Kenya
GDP	-	Gross Domestic Product
MBS	-	Mortgage Backed Securities
NSE	-	Nairobi Securities Exchange
ANOVA	-	Analysis of Variance

ABSTRACT

Financial institutions play the role of provision of credit facilities to both businesses and individuals. Empirical evidence has always shown that access to finance even in form of credit, has a profound effect on access to and affordability of basic, decent commodities. Such credit facilities include, among others, mortgage loan which is influenced by interest rate and other macro and micro economic factors. Despite the intervention of the central bank on the interest rate charged on mortgages by mortgage providers, interest rate has persistently remained high hindering mortgage uptake. The objective of this study was to investigate the effect of interest rates on mortgage uptake in financial institutions in Kenya. This study employed descriptive research design and multiple regressions analysis. The study covered the period between 2011 and 2015 with a sample size of 22 banks offering mortgage financing. Secondary quarterly data was collected from Central Bank of Kenya annual reports, websites belonging to the target financial institutions and published financial reports. The study findings established a coefficient determinant of 84.5%. The findings of the study found that interest rates and inflation rate positively influences funding of mortgages in banking institutions in Kenya. In line with this finding, the study concludes that there is a direct relationship between interest rates, and inflation rates in banking institutions in Kenya. In addition, the study revealed that funding of mortgages is negatively influenced by mortgage risk in banking institutions in Kenya. This leads to the conclusion that mortgage risk has an inverse effect on funding of mortgages and high level of mortgage risk reduces funding of mortgages.

The study concluded that there is a direct relationship between interest rates, and inflation, which are part of the monetary policy instruments used by the Central Bank of Kenya. The study recommends that the Central Bank of Kenya should instate measures to ensure that interest rates and inflation do not affect funding of mortgages from banking institutions.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Interest rates impact on the long-term plans of banks, as they keep fluctuating to an extent that this affects the long fixed term assets as liabilities to the banks. In other words, the rise in interest rates translates to the decline in economic values of the assets held by the banks compared to the liabilities. Moreover, the changes in interest rates affect banks either positively or negatively. Positively in the sense that when interest rates go down, banks are likely to increase the lending while increased interest rates lead to decreased lending as customers are discouraged. As argued by Turner (2013) observed that persistent nominal interests affect banks in a negative way because banks are exposed to risk factors.

Hanson and Stein (2015) argued that the reduction of nominal interest rates means that banks have realized the rebalancing of assets as an approach to achieving maturities that are longer and ensuring that outputs of the assets do not over decrease. Crowley(2007) points out that interest rate is that fee or price that a borrower pays towards the amount borrowed from a lender such as financial institutions. Simply put, interest refers to the amount paid for rented out money. On the other hand, Ngugi (2001) suggest that interest rate reflects the information in the market in relation to the anticipated change on inflation and purchasing power.

Schmudde (2004) points that a mortgage is the collateral held on behalf of a given act. Moreover, mortgage encompasses a mortgager and the performer of a given act. To this end, a mortgage loan is the loan extended to an individual for the purchase of real property whereby the holder of the mortgage must secure it with collateral. It is imperative to point out that there exist three types of mortgages and they include fixed rate loans, fixed interest contracts, and floating rate instruments. The fall or fluctuation of interest rates means that the economic value of mortgage assets significantly falls. However, in fixed interest rate contracts, the value of the assets does not decrease given that the payment of the interest had not been paid. The rising of interest rate means that individuals with mortgage assets gain in terms of nominal capital given that the rate of the loan is still below interest rate in the market.

Fixed rate mortgages are appropriate for moderate to low and stable inflation settings. In other words, low to moderate interest rate settings means there is unlikely inflation and, therefore, the instances of variations and inflation are low.

According to World Bank (2011), fixed rate mortgages are difficult for banks to offer in environments that experience higher inflation volatility. In environments that experience moderate inflation, the most preferred mortgage is adjustable rate mortgages and this is because in these particular settings, incomes, prices, and interest rates move in a manner that is modest. Due to sluggish incomes and higher interest rates, high inflation environments are never preferred. To this end, World Bank (2011) report argues that adjustable rate mortgages are not appropriate in economies that experience higher inflation, fixed incomes, and unstable incomes. Against this backdrop, it is noteworthy to examine how the level of interest rate affects the overall growth of the real estate sector with specific reference to mortgage financing in the country as Kenya presents an environment that experiences inflation with fixed and unstable incomes.

1.1.1 Interest Rate

Interest rate is defined as the “rent” paid to borrow money; the lender receives as compensation for foregoing other uses of the funds including personal consumption (Thygeson, 1998). Radha (2011) defines interest rate as the amount received in relation to an amount loaned, generally expressed as a ratio of dollars received per hundred dollars lent.

In relation to assets, interest rates on a particular financial instrument for example, a mortgage or bank certificate of deposit reflects the time for which the money is on loan, the risk that the money may not be repaid and the current supply and demand in the market place for funds available for lending (Siddiqui, 2012). According to Aboagye et al (2008), interest rate always changes as a result of inflation and Central Bank rate and slightly varies from bank to bank depending on asset, staff cost, market power among other factors.

The November 1975 rebases debate led to the introduction of mortgage interest rate as part of the Consumer Price Index because it affected goods and services. Interest rate as argued by Crowley (2007) refers to the amount of fee that a borrower pays for the money he or she has borrowed from a lender, whereby the lender can be a financial institution. The role of central bank in controlling the interest rates in the mortgage industry cannot be understated. For instance, central bank has the

responsibility of setting the interest rate ceiling otherwise referred to as Central Bank Rate as revealed in the Central Bank of Kenya overdraft rates.

1.1.2 Mortgage Funding

Bienert and Brunauer(2006)defines mortgage funding as the loan extended to an individual through collateral placement and the individual is required to make payment installments. Mortgage funding specifically targets the buying of real estate property such as a house or construction. The capital markets authority introduced the various options of mortgage funding by proposing the best interest rates. In other words, capital markets across the world provide many options that enable borrowers to fund loan repayment for their mortgages. For instance, reforms in the insurance and pensions sector have provided avenues for pooling of funds. Bienert and Brunauer (2006) argue that the inception of institutional investors has made it possible for the management of housing finance. To this end, the advent of mortgage related securities has made it possible for the players of the housing sector to better manage their portfolio through increased management of industry risks.

Further, Bienert and Brunauer (2006) point out that the advent of management of mortgage related risks is relatively new in Kenya compared to the developed west and as such, the concept has a long history. For instance, Europe was the first part in the world whereby mortgage bonds were intruded and this took place during the 18th century. Mortgage bonds still remain one of the most essential parts of housing finance in the contemporary society. Mortgage bonds and securities have been instrumental in changing the landscape of the housing finance such as in countries like the United States.

In emerging economies, there have been deliberate policies formulated towards better mortgage securities with a view of developing policies that will guarantee long-term financing of the housing sector. Moreover, the approaches have been instituted with an aim of ensuring that domestic borrowing can be mobilized in an efficient approach for it to finance housing. In addition, the development of the mortgage securities aims at ensuring that fixed income environments are able to add to the gains made in the mortgage industry. Notwithstanding this approaches, emerging markets continue to face dwindled development of the market securities even though capital markets requests for strong financing housing. It is recommended that for the financing housing to achieve better mortgage securities there is need to institute regulatory and legal frameworks as an

approach to opening up the financial sector and this encompasses the development of a primary mortgage market.

Kimberly Amadeo (2012) argues that the banks charge higher interest rates, which has translated to low number of people who can afford to borrow and this adversely affects the growth of the mortgage industry. With reduced capital, it is arguably difficult for the industry to blossom as there is no capital to fund expansion and, therefore, translating to low demand by consumers. Moreover, higher interest rates discourage consumers from borrowing and give them the motivation to save because of the higher interest rates to an extent that this stifles growth owing to reduced liquidity in the money market.

On the other hand, Kimberly Amadeo(2012) argues that reduced market interest rates encourages consumers to take up loans and this, therefore, translates to increased demand for housing thereby stimulating the economy. On the other hand, Bienert and Brunauer (2006) argues that there is need for the commercial banks to lower the interest charged on mortgages because they are long-term.

1.1.3 Effect of Interest rates on Funding of Mortgages

The change of interest rates affects the way banks plan for their activities and one of the ways it affects banks is when there is prolonged fall of interest rates, which affects the economic value of the banks' assets and a large extent, the anticipated future cash flows. In other others, the nominal interest rates are affected in which banks are unable to balance between the present and future cash flows due to fluctuations in interest rates.

With projected growth in the Kenyan mortgage market, there have been efforts aimed at ensuring that the market is efficient. The Central Bank report of 2012 shows that the year 2012 affected the mortgage industry in a negative way whereby because of the increase in NPLs to Kshs. 6.9 billion down from Kshs. 3.6 billion in the year ending 2011. Further, the report showed that there was slow growth in the mortgage industry because banks were only inclined to offer loans that had variable interest rates.

Interest rates have considerable effect on growth of mortgage market in Kenya as per above statements. It's apparent that there is lack of sensitivity in mortgage rate setting to the macro environment in the absence of response in mortgage rates to the sharp decline in the cost of money.

The absence of a strong link to capital market funding and the lack of 5 consumer price elasticity mean that banks are able to offer rates which are much higher than their cost of funds (World Bank, 2011). The issue of risk premiums and bank margins has recently been tackled in depth in a World Bank paper 7. The paper shows that Kenya's banking system is efficient relative to its immediate neighbours. Banks charge a net interest margin of 7 percent in Kenya which is exactly the sub-Saharan average. The difficulty with such a high interest margin for term finance is that it has to be additional to the capital market rate as set by the yield curve. Lenders are able to blend funds and partly use their deposit bases, capital and other funding sources to achieve a lower cost of funds, but over the long term the net interest margin will have to reduce if financial access is to improve (World Bank, 2011). Mortgage financing is highly underutilized in Kenya. Kenya has about 24,085 mortgage loans which is a drop in the ocean for a country of 45 million; therefore interest rates have a big role to play in maximizing the potential.

Against this backdrop, it is evident that interest rates affect the mortgage industry as it determines the level of loan take up by consumers. Moreover, this insensitivity in the financing of mortgage affects macro environment.

1.1.4 Mortgage Market in Kenya

The mortgage industry immensely contributes to the Kenyan economy as it account for 2.5 of the country's GDP and this places Kenya in number three in sub-Saharan Africa in terms of the development of mortgage industry. South Africa and Namibia are ranked above Kenya, and Botswana closely follows Kenya. Kenya faces undersupply of housing whereby there is a deficit of 156, 000 units in every year partly due to migration trends in the country (rural-urban).

Mortgage financing can only finance a smaller portion and many of the lower incomers go for housing microfinance which can enable them to own homes. Banks finance majority of the mortgage, in which an ideal of say Kshs 4 million will attract an annual interest of 14%, and paid for a period of 15 years. In light of this, it is evident that majority of people residing in the urban places are not able to repay this amount of money and those in the rural areas are more affected as they do not have good incomes to support loan repayment. The Kenyan mortgage industry is estimated at Kshs 800 billion (World Bank, 2011).

The financing of home ownership in Kenya has experienced tremendous growth according to the statistics as presented by the CBK. Presently, the Kenya central bank has only authorized two

lenders to finance the housing sector and this include mortgage companies and Kenyan banks. Kenya commercial bank is the largest mortgage lender and this partly been because the bank undertakes saving and loans. According to World Bank (2011), there are a few Kenyan banks that control the mortgage industry and they include 1 small bank, 6 medium banks, and 9 large banks and they have a mortgage portfolio that is in excess of Kshs 1 billion. However, majority of Kenyan cannot be able to afford taking up mortgage as evidenced by World Bank (2011) report, which presented that a paltry 12% of the urban population that is able to afford mortgage and to a large extent this presents an estimated 2-3% of the entire Kenyan population that is able to take up loans.

Ngugi (2004) argues that inflation is the major factor that drives interest rates and this in turn translates to poor value of money. Moreover, the author contends that interest rates affect the activities of government such as the floating of treasury bills and securities. Further, interest rates are affected by the political environment in Kenya as evidenced during the 2007/2008 post election violence that rocked the country, in which the interest rates increased by an estimated 1.6% as argued by (Ng'etich&Wanjau, 2011).

The net worthy of loan assets in arrears increased to Kshs. 122.2 billion during the year 2012 down from Kshs 90.4 billion at the end of 2011, and this represents 35.2%. Statistics according to the central bank of Kenya indicated that mortgage loans in the Kenyan market stood at 19,177 in the year 2012 compared to 16,029 in the year 2011. The same statistics indicated that the average loan price in the year 2012 stood at Kshs. 6.4 million down from Kshs. 5.6 million witnesses at the year ending 2012. And this was partly premised on the increase in the prices of properties. The increased interest rates in the year 2012 affected the mortgage industry in which there was an increase in NPLs to Kshs 6.9 billion down from Kshs 3.6 billion witnesses in the end of 2011.

The central bank of Kenya sanctioned a survey of commercial banks in Kenya with a view of establishing the level of interest rates charged by banks on mortgages. The survey established that on average the banks charged 18%, in which this ranged from 11-25%. The same survey established that majority of the loans (85.6%) were variable in terms of the interest base as opposed to 2011 when they were around 90%.

As outlined earlier, the mortgage industry faces a myriad of challenges and the main challenge pegs on the financing part, which encompasses banks. To this end, the banks identify some risks

associated with mortgage financing and one of these challenges is the lack of access to resources that could guarantee long term financing. One challenge was interest rates because of the economic volatility the country continues to face. The issue of interest rate affects the asset portfolio of the company. The central bank of Kenya report of 2012 identified interest rates to be the major factor that affects mortgage financing by Kenyan banks. For instance, the report pointed out that on average, the interest rate pegged at 18%, which the banks found to be too high for majority of their customers to afford. It is, therefore, noteworthy to point out that the high rates of mortgage loans has translated to slowed development of the real estimate market in Kenya.

1.2 Research Problem

Mortgage finance has tremendous benefits to a country as it indicates the level of household incomes. Notwithstanding this importance, the industry faces a myriad of challenges in the developing and emerging economies. In other words, the lenders in the mortgage financing face many drawbacks such as interest rates and liquid issues. On the other hand, prospective home owners are unable to access credit facilities because of high interest rates coupled with the nature of the Kenyan banks that are more depository-based. Against this backdrop, the mortgage financing in Kenya is very expensive and therefore only attained by a few individuals who are at higher echelons of socio-economic class (Hass Consult, 2013).

On the other hand, Pittman (2008) observed that the mortgage industry is extremely complicated and as such difficult for many people to own homes. For instance, the author pointed out the inadequate services provides and a myriad of procedures makes it hard for people to access financing. This assertion by Pittman (2008) is evidenced by a report prepared by Hass Consult (2013), which pointed out that the number of mortgage holders in the year ending 2012 stood at 17,000 in a country which has an estimated population of 43 million people. Moreover, the report by central bank of Kenya (2012) indicated that the number of mortgage holders is very low and showed that in the year 2011, the number of individuals with mortgage was 16,135.

In light of the above, it is evident that the take up of mortgage in the country is very low and as evidenced by World Bank (2010), majority of the Kenyan population is unable to access mortgage due to financing problems caused by high interest rates. Loutskina and Strahan (2007) argued that wide array of challenges facing the industry is the reason to blame for low take up of mortgages. Some of the reasons pointed out by the authors include availability of mortgage financing, cost,

and security concerns. A report by World Bank pointed out that many Kenyans cannot afford an average mortgage, and the number of Kenyans who can afford stands at only 11%. Statistics from the central bank of Kenya (2011) indicated that an average loan stands at Sh6.6 million and this requires that individuals who take this loan for 20 years are supposed to pay a monthly installment of 90,000. Clearly, this is unaffordable for many people who have a disposable income of less than 100,000. As argued by Bonyo (2010), the increase in the prices of construction materials means that the prices of houses continue to rise. Business Post Statistics (2010) report showed that in the year 2010 the average prices of construction materials increased by 7.4%. The minimal efforts aimed at alleviating the challenges facing the industry have translated to dwindled growth.

Muguchia (2012) studied the effect of flexible interest rates and the findings indicated a negative association between flexible interest rates and financing of mortgage. The findings indicated a negative association between flexible interest rates and the growth of mortgage financing. The document also argues that if banks charge a fixed rate of interest, it would be possible for investors to plan for a predictable amount of money to be repaid hence stability and increased level of borrowing.

A study by Deng, Zheng & Ling (2004) established that borrowers' characteristics are significant in determining prepayment behavior in residential mortgage performance in China. Risk-based pricing in residential mortgage lending in China was found to help improve the efficiency of the market and enhance the credit availability to the most needed households. Increase in interest rates were also found to be positively and significantly related to growth in long term mortgage loans in Hong Kong housing market (Gerlach & Peng, 2005). Avery, Brevoort & Canner (2006) also carried out a study on higher priced home lending in 2005 and the result showed that low interest rate schemes in commercial banks has a positive impact on the credit growth of mortgage finance loans for loan takeovers from existing lenders. California (USA), the study conducted by (Krainer & Laderman, 2011) showed that adverse changes in house prices leads to mortgage default.

Locally, Agao (2012) established a positive relationship between mortgage uptake and interest rates though the relationship was found to be insignificant as Muguchia (2012), studied the effect of flexible interest rates on the growth of mortgage financing in Kenya and the findings showed that flexible interest rates negatively impacts on mortgage financing. Additionally, Njongoro

(2013) found a strong negative relationship between mortgage interest rate and growth of mortgage financing while Wambui (2013) assessed the effect of interest rate volatility on mortgage default rate in Kenya between 2008 and 2012 and the findings indicated a positive relationship between the level of interest and default rate. Makori & Memba (2015) established that interest rate spreading affects mortgage financing among commercial banks to a very great extent due to high interest rates. Njuguna (2013) established an inverse relationship between the amount of mortgage lending granted by mortgage financial institutions and the level of interest rates.

Therefore from both the global and local studies conducted on interest rates and mortgages, there is evidence of mixed result on the effect of interest rate on mortgage uptake. Also, despite intervention of the Central Bank on the interest rate charged on mortgages by mortgage providers, interest rate has persistently remained high barring many households from applying for mortgages.

This study therefore seeks to answer the research question and fill the gap in knowledge and empirical study in Kenyan context, on the outcome of mortgage interest rate on the development of mortgage financing.

1.3 Research Objectives

The overall study objective sought to examine the effect of interest rates on the funding of mortgages by banks in Kenya.

1.4 Value of the Study

In practice findings of this study will be important to mortgage companies and banks, as they will be a position to comprehend the association between interest rates and demand for purchase of housing units and be in position to enhance bank management to seek ways to leverage on the demand to finance the purchase of the housing units to boost their financial performance. The findings of the study will assist central bank of Kenya in formulating guidelines and policies to facilitate commercial banks to offer relevant financial products to its customers at lower cost.

In theory the study will add and enrich the existing body of knowledge on the association between interest rates and demand for purchase of housing units by the groups not only in Kenya but other regions of the world. The study findings will offer the contextual information to research organizations and provide a basis of further research.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter covered the review of literature in relation to the objective of the study. Further, the chapter covered the theoretical framework, which captured relevant theories to the objective of the study. The conceptual framework covered in this chapter detailed the relationship between the dependent variable and the independent variables.

2.2 Theoretical Framework

This section covered the review of relevant theories to the objective of the study. The study reviewed the classical theory of interest rates and Loanable Funds Theory.

2.2.1 Classical Theory of Interest

The key tenet of this theory postulates that the determinant of interest rates premises on the demand and supply of capital. As argued by Blang (1992), interest rate charged in the market stands at the point where demand and supply of capital are same, whereby the supply of capital is a function of savings while demand for capital arises out of the need to undertake investment activities. The theory is also known as real theory because of its endeavor to provide the determinants of interest rates such as time, productivity of capital among other determinants.

The theory observes that the demand for capital premises on the productivity of the demanded capital and this is because marginal productivity of demanded capital diminishes when more of it is applied in the production endeavors. In other words, the theory observes that as the interest rates come down, more and more capital is demanded for the purpose of investment. It is imperative to note that capital emanates from savings, whereby savings are also influenced by the level of interest rate. To this end, the theory posits that the when interest rates are high, there is propensity to save among individuals and when interest rate go down, there is low savings hence low supply of capital. Further, the theory points out that the point of equilibrium determines the interest rates, whereby interest rates are likely to remain stable when various market factors such as loanable funds market, foreign currency markets, and money market remain at equilibrium in a simultaneous time.

2.2.2 Loanable Funds Theory

Loanable funds theory points out that the major determinants of interest rate in the market are the supply of loanable funds and the level of demand for loans. The theory observed that the demand for loanable funds comes from foreign borrowers, governments, consumers, and governments. On the other hand, the theory argues that the supply of loanable funds emanates from foreign lending, money balances in the banking system, and domestic savings. The aforementioned factors determine the level of interest rates in the long-term while monetary and financial conditions in the market determine the level of interest rates in the short term. McGibany and Nourzad (2004) point out that the factors that affect loanable funds will reach the equilibrium point when all the aforementioned factors separately are at the equilibrium point. Debelle (2004) argues that consumers in economies with variable mortgage rates are very sensitive to the variations in the interest rates.

Vries and Boelhouwer (2005) argue that expected prices and income, and interest rates are the major determinants of prices of houses. Owing to the risk averseness of many commercial banks, these banks are not sensitive to the variations of monetary stance. It is argued that the increase in the interest rates in the east Africa region has translated to many financial institutions investing in other markets as an approach to evading risks posed in the money market. Accordingly, this has translated to reduction of expected returns, as people are discouraged from taking up mortgage financing.

2.3 Determinants of Mortgage Funding

2.3.1 Interest Rates

Ojijo (2013) argues that interest rates have the biggest impact on the take up of mortgages. In other words, when interest rates rise, individuals are unable to service their loans and this may lead to lose of homes. Moreover, when the interest rates come down, there is perceived rise in demand as such that all prospective buyers may not get opportunities to purchase property. Thus, reduced interest rate pushes up demand, which in turn pushes up the prices. Continues pressures on the central bank of Kenya and the commercial banks may yield positive results as the banks have been asked to reduce prices they charge.

There are various factors, which influence the level of interest rate and they include expected inflation, Real Risk-Free Rate, and default-Risk Premium. Real Risk-Free Rate refers to a

proposition where a lender assumes that there is no uncertainty or risk and only considers the timing of the borrowing and the preference to lend and collect later or spending of the funds and paying later. On the other hand, expected inflation refers to the proposition where the market anticipates the rise of aggregate prices to an extent that there is reduced purchase power. Inflation reduces the strength of currencies and this sometimes used to calculate the nominal interest rate.

$$\text{Nominal Rate} = \text{Real rate} + \text{Inflation rate}$$

Muguchia (2012) argues that default-risk premium refers to the chances of the borrower paying back on time, delaying to make payments or defaulting to pay at all and normally calculated from the credit worthiness of the borrower. Further, Muguchia (2012) contends that majority of the Kenyan population does not have the financial capacity to pay for mortgages and argues that it is only 2-3% of the Kenyan population that can afford to pay mortgages, whereby only 12% of the Kenyan urban population can afford the same.

2.3.2 Mortgage Liquidity and Maturity

Mortgage liquid is a significant factor that influences mortgage financing and refers to the real estate properties being easily exchanged for cash. According to World Bank (2009), C.B.R strongly affects interest rates, whereby when the interest rates rise, the C.B.R also rises and vice versa. It is imperative to point out that C.B.R is an essential tool which enhances the measurement of the rate of inflation, whereby when the economy experiences inflation, interest rates tend to increase. To this end, inflation is a critical aspect, which negatively influences the real estate industry because when inflation increases, the propensity of prospective individuals taking up loans decreases and as such this hurts the industry through slowed consumption. In other words, an inflationary environment hurts mortgage financing because of price variations coupled with fluctuations of interest rates.

2.3.3 Mortgage Risk

Mortgage risks is one of the critical factors that negatively influences mortgage financing as most lenders perceive high probabilities of borrower default. There are two types of lending risks and one of them is known as default risk, which refers to the likelihood that borrowers are likely to default on loan repayment. Another lending risk is called market risk and typically refers to the likelihood of the interest rates changing through time to an extent that the lender may earn less if interests rate rise after giving out a loan. The reserve also holds that the lenders may earn more

when the interest rates come down after finishing the contractual negotiations and as such the borrower may pay more for an economically less value property.

Therefore, the unpredictability of the change of interest rates presents uncertainty in the market as the borrower and lender are keen to avoid losing on their investments (Scanlon & Whitehead, 2004).

Scanlon and Whitehead (2004) argue that the diversity in terms of the lenders and borrowers presents an uncertain proposition in the mortgage financing. On the same breadth, Lewis and Neave (2008) point out that the default risk also affects the mortgage financing because the lenders is not sure whether the borrower can pay the loan. There is also investment risk in which the property owners are not sure whether the value of the acquired property will rise or fall. Lea (1990) points out that default risk affects business prospects whereby the price of a property may fall below the market price. On the other hand, Agaba et al. (2009) argued that the property market faces the challenge of Interest-rate risk, whereby both the borrower and the lender are not certain of the expected future interest changes. For instance, when the interest rates rise and the borrower had fixed rate loan, the lender may lose on the economic value of the loaned funds. Agaba et al. (2009) further points that the under occupancy is another factors that adversely affects the property market.

Stiglitz and Weiss (1981) did a study and established that when borrowers do not show capability in terms of loan repayment, lenders are inclined to charge them more as an approach to compensating on perceived defaulting. The trend of charging a higher interest rate is common in mortgage financing mostly for prime properties. Moreover, Stiglitz and Weiss (1981) pointed out that uncertain market conditions and issuing high risk loans is a because of equilibrium credit rationing.

2.3.4 Inflation

Nelson (2013) observes that inflation has direct ramification on the level of interest rates because an increase in inflation leads to upsurge in interest rates. As observed in the central bank report, the government has been taking interventions aimed at bringing down the budget deficit through monetary policies. For the mortgage industry to blossom, there ought to be concerted efforts aimed at bring down the inflation level as this has a direct consequence on the level of funding of mortgages.

Further, the rate of interest rate is determines the propensity of people to invest their incomes. Higher inflation rates means that people are purchasing goods and services at higher prices, thereby this affects their disposable incomes, and hence their ability to bring to make meaningful investment is deterred. Additionally, inflation has a direct consequence on strength of the shilling against the dollar and as such, a weak shilling may discourage foreign investment from making investments in the country.

2.4 Empirical review

Muguchia (2012) conducted a study on the level of interest rates and mortgage financing by use of secondary data and regression approach in data analysis. The analysis of the study findings established that when banks charge fixed interest rates, borrowers tend to have a sense of security in terms of planning for repayment and hence more stability in fulfilling loan repayments. Moreover, fixed interest rates increases the level of borrowing as borrowers are cushioned against fluctuations of interest rates. Further, Muguchia (2012) captured other factors that influence mortgage financing and the factored included GDP, size of the bank and capitalization, and customer deposits as money supply factors. Other reasons included inflation, liquidity ratio, and none performing loans as factors that had a negative effect on mortgage financing.

In a study to investigate the factors influencing 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 influence 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) conducted a study on the association between volatility of interest rates and level of interest rates in Kenya. The author used time series data from the year 1991 to 2007 from the treasury. The analysis of the study findings indicated that interest rates volatility had a short term positive correlation with the level of interest rates. In other words, there existed a positive relationship between interest rates volatility and short term interest rates.

Mwega (2009) conducted a study between the year 1993 and 2002 and the study findings pointed out that most of the commercial banks preferred lending to none risky business ventures such as government bonds as opposed to small and medium enterprises, which are regarded as risky. Against this backdrop, the researcher noted the aforementioned context in Kenya hinders the growth and development of the mortgage markets. Gerlach and Peng (2005) conducted a study on the mortgage credit and long term and short term interest rates with specific reference to Hong Kong mortgage sector and noted that an upsurge in interest rates had a significant relationship to the long run mortgage loans.

Ngugi (2004) observed that there is a minimal effect between the interest rates and the extent of credit in the economy. Instead the overall net credit available in Kenya financial industry is influenced more by other factors such as information asymmetry between the borrowers and the lenders, value of the reserve requirements, debit credit controls on the banking system and observation of risk concerning the solvency of other banks. Martinez et al (2003) found out that housing prices and real income were positively related to mortgage credit while interest rates have a negative relationship on the changes in short term credit.

On the other hand, Rubio (2008) studied the effect of the proportion of fixed and variable-rate mortgages in an economy on the way shocks are propagated. The study analyzes optimal implementable simple monetary policy rules and the welfare implications of this proportion. A New Keynesian dynamic stochastic general equilibrium model is developed and solved that features a housing market and a group of constrained individuals who need housing collateral to obtain loans. A given proportion of constrained households borrow at a variable rate, while the rest borrow at a fixed rate. The model predicts that in an economy with mostly variable-rate mortgages, an exogenous interest rate shock has larger effects on borrowers than in a fixed-rate economy.

Moss (2001) conducted a study on Housing Finance Systems in Four Different African Countries: Tanzania, Nigeria, Ghana and South Africa. The researcher concluded that the generic problem that excludes low-income earners from the housing market is affordability. The gap between income and shelter cost is very wide. If the cost of constructing new houses is not within reach of low-income earners, then revitalizing the existing stock can be an alternative mechanism to improve housing. Incremental housing is implemented in South Africa and Ghana through micro-

finance for housing. In Tanzania and Nigeria, it is almost non-existent because micro-finance is a fairly new concept. Micro-finance in certain quarters has been regarded as a successful instrument in lending to the poor for them to spend those loans on home improvements and expansions. One would have expected incremental housing to be at gross scale in Nigeria as retail bankers mostly lend on a short-term basis arguing that they have to meet withdrawal requests at the shortest notice. To them servicing transactions with low profit margins would not worth taking the risk. They argued that there is a negative relationship between interest rates and affordability to construct new houses.

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.

2.5 Summary of Literature Review

Empirical findings indicate positive, negative and even no relationship between interest rates and mortgage funding. Interest rate setting on mortgage debt; government instruments and fiscal measures are the major policies that govern mortgage financing. Additionally, increase in interest rates have a significant relationship to development in long term mortgage loans in that interest rates effect on the amount of credit to the economy.

Global studies have explored the relationship between interest rates and mortgages extensively and they are based on different contextual conditions hence the diversity of findings. Locally empirical study in the relationship between interest rates and mortgages 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. 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 the funding of mortgages by banks in Kenya.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The chapter presents the methodology of the study, which includes the research design, target population, the sampling procedure and sample size, collection of data and analysis, and presentation.

3.2 Research Design

The study adopted a descriptive research design and the researcher preferred this approach because it enhanced the capability of the researcher to describe phenomenon without bias when collecting as argued by Cooper and Schindler (2003). On the other hand, Saunders, Lewis and Thornhill (2000) point out that a descriptive research design is a research design that enhances accurate description of characteristics, events, or persons. In other words, a descriptive design enables accurate description of beliefs, opinions, knowledge, abilities of a given phenomenon or individuals.

3.3 Population and Sample

Cooper and Schindler (2008) define a target population as the entire group of unit from where the researcher intends to gather data for the purpose of making generalizations. The target population comprised of twenty two (22) commercial banks that offer mortgage facilities and one mortgage bank (Housing Finance Corporation Kenya) (see appendix I). A census survey of all commercial banks that offer mortgage financing was conducted. The use of census is ideal for smaller populations, as it enables the researcher to negate sampling errors with a view of providing data for all the study population. The research covered a period of five years (2011-2015).

3.4 Data Collection

In the words of Creswell the process of data collection refers to the approaches of gathering data from the sampled units of the study. The researcher used secondary data by collecting data from the respective banks as provided by CBK. Mugenda (2003) describe secondary data as information that has previously been collected, utilized by a person other than the one who collected the data. It can be obtained from books, journals and electronic materials.

The secondary data was retrieved from Central Bank of Kenya Annual reports, websites belonging to the target financial institutions and published financial reports. The type of data that was collected included: data on mortgage rates, data on market size in the past five years, data on inflation rates and data on other factors affecting mortgage funding.

3.5 Data Reliability and Validity

Morgan and Colleen (2004) points out that data reliability is the degree to which collected data is able to provide meaningful generalizations upon analysis. Reliability has to do with data precision. It refers to a consistency of a measure. The reliability checks used were internal consistency reliability and inter-rater reliability. This went on to verify the findings of the study thus making it appropriate for the study.

3.6 Data Analysis and Presentation

Shamoo and Resnik (2003) points out that data analysis is the systematic approach of using logical and statistical techniques as a means to describe and assess the gathered data. Application of different analytical approaches makes it possible for the researcher to draw valid and inductive conclusions.

The collected data was categorized purposefully, edited and coded. After coding, the data was analyzed using Statistical Package for Social Sciences to help organize and summarize data by the use of descriptive statistics. An analytical model was then used together with percentages and coefficients calculated to support or conflict the study tests. Presentation of data was in form of tables and graphs, only where it provided successful interpretation of the findings.

3.7 Analytical Model

The study used regression statistics to test the significance of the association between interest rates and funding of mortgages in Kenya using the following regression model:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \epsilon$$

Where:

Y= Dependent variable (Funding of mortgages)

X₁, X₂, X₃= Independent Variables (Interest rate, mortgage risk management and Inflation)

β_1 , β_2 and β_3 = Partial Slope Coefficients

E= Error Term.

The analytical model was used to test statistical significance of the variables under study.

3.8 Test of Significance

The researcher applied Analysis of variance (ANOVA) approach to test the significance of the overall model at 95% confidence level. This was because multiple sample cases were involved. As argued by Kothari (2004), the analysis of variance approach makes it possible for the researcher to draw inferences concerning whether the samples have been drawn from a population having the same mean

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents the data findings and analysis in form of tables, figures, and inferential statistics. Descriptive statistics was used to analyze the findings obtained from the quarterly data obtained from listed commercial banks in Kenya.

4.2 Data Analysis and Findings

The study used descriptive and inferential analytical techniques to analyze the data obtained. Ordinary Least Squares (OLS) regression model was thus employed. However, before running the regressions, descriptive statistics and correlation analysis were calculated. Correlation analysis shows the relationships between the different variables considered in the study. The correlation matrix presented simple bi-variate correlations not taking into account other variables that may influence the result.

4.3 Descriptive Statistics

Table 4.1 presents the descriptive statistics and the distribution of the variables considered in this research: inflation, interest rates, mortgage risk, and funding of mortgages. The descriptive statistic considered was minimum, maximum, mean and standard deviation. Mean was used to establish the average value of the data whilst standard deviation gave the dispersion in the data.

Table 4.1: Descriptive Statistics

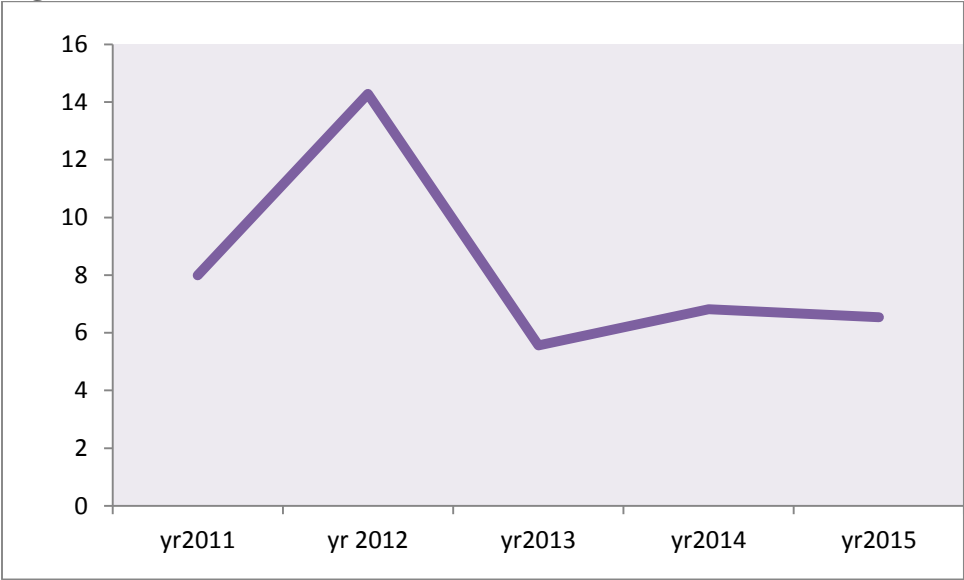
	Minimum	Maximum	Mean	Std. Deviation
Inflation	4.16	16.29	8.2375	3.70811
Interest Rates	13.90	20.21	16.9350	1.83588
Mortgage risk	5.88	18.00	10.2840	3.55833
Funding of mortgages (000)	102036.00	256955.00	182512.5500	46542.87589

The results on table 4.1 indicate that on the average, inflation rate recorded a mean of 8.2375 percent with standard deviation of 3.70811. Kenya also experienced high levels of inflation in the study period as indicated by a maximum overall annual inflation rate of 16.29 percent with a minimum inflation rate reaching 4.16 percent. High inflation rate was attributed to increase in crude oil prices; drought and a low agriculture produce which pushed the consumer price index. Interest rate registered an average rate of 16.935% with a standard deviation of 1.85388. Mortgage risk had a mean value of 10.284% with standard deviation of 3.55833. Funding of mortgages had a mean of 182,512,550 between 2011 and 2015 with a standard deviation of 46,542,875.89

4.3.1 Variables Trend

The trend in inflation is indicated by figure 4.1 below. Inflation graph is characterized by shifts in inflation from low too high in some periods. The shifts in inflation were due to growth in money supply and depreciation and appreciation of the local currency.

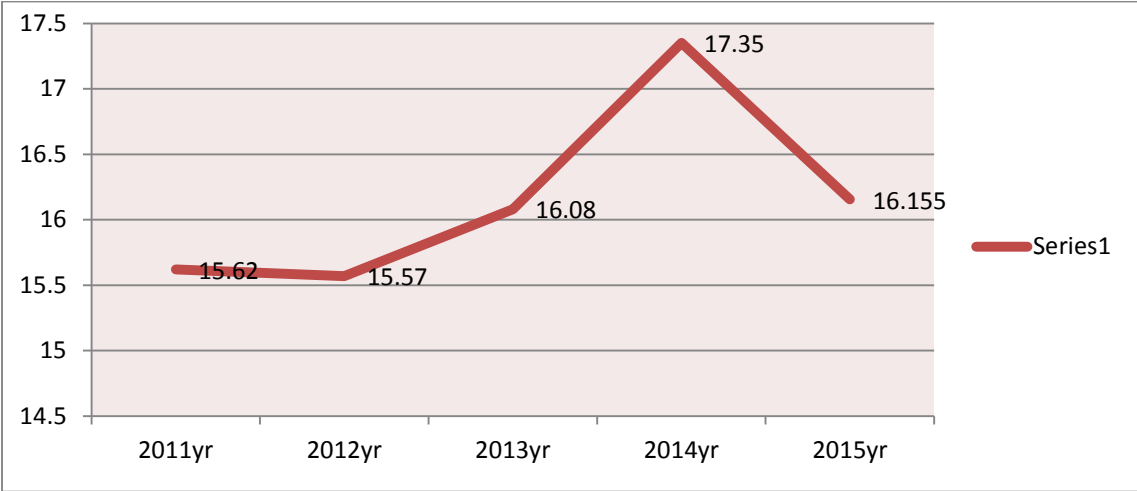
Figure 4.1: Trend in inflation



Source: Research Findings

The trend in interest rate is indicated by figure 4.2 below. A sharp increase in interest was witnessed in the first quarter of the year 2011 to 2014 and a subsequent decline in 2014 and 2015.

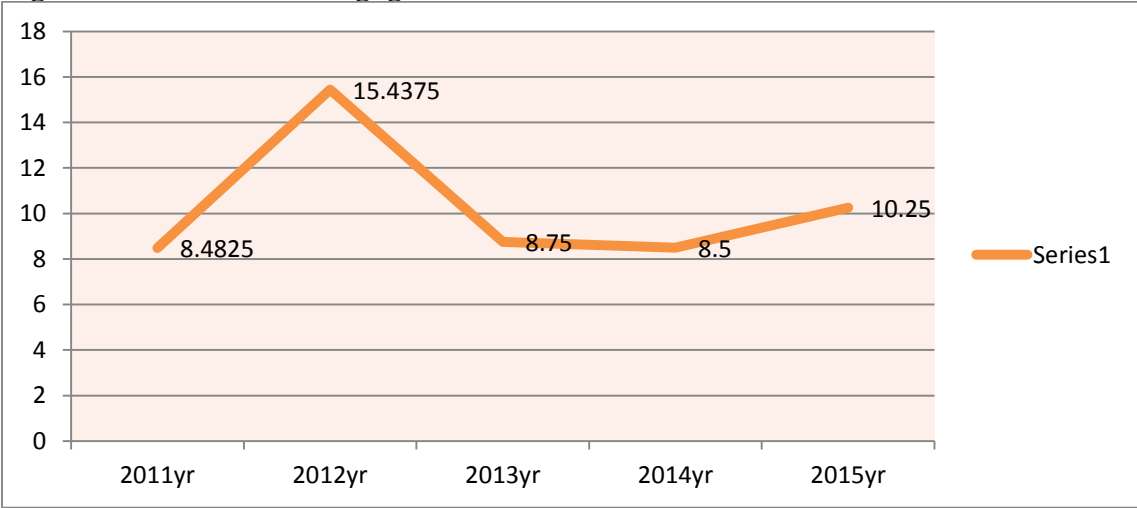
Figure 4.2: Trend in interest rate



Source: Research Findings

Based on the study findings in figure 4.3 below, the mortgage risk increased from 8.45825 in year 2011 to 15.4375 in year 2012 which further declined to 8.5 in 2014 and slightly increasing to 10.25 in 2015.

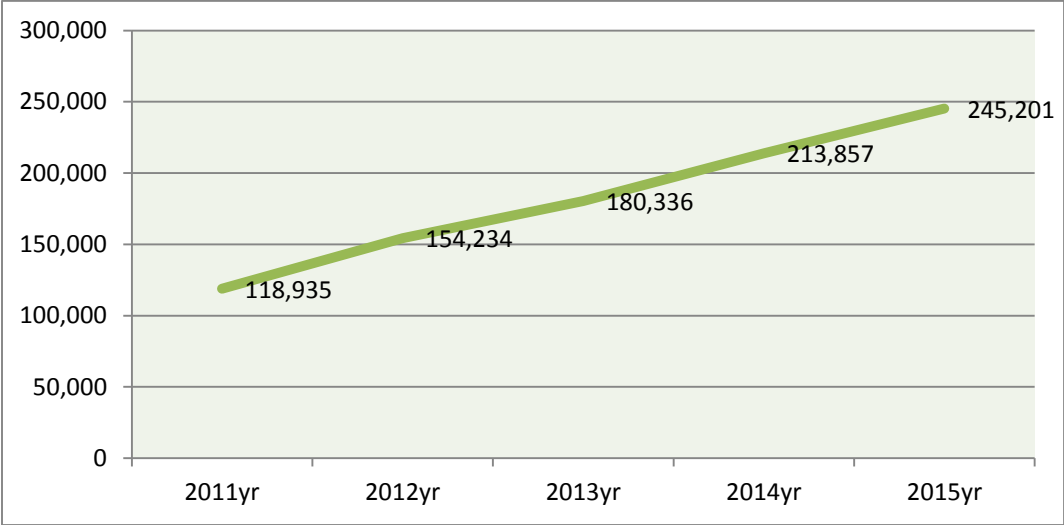
Figure 4.3: Trend in mortgage risk.



Source: Research Findings

Figure 4.4 shows steady increase in funding of mortgages in thousands of Kshs. from 2011 to 2015. Steady increase in funding of mortgages resulted from increase in middle class, economic growth and lower interest over the period.

Figure 4.4: Trend in funding of mortgages



Source: Research Findings

4.4 Inferential Statistics

The inferential statistics involved the use of correlation and multiple linear regression analysis. The regression analysis was done using Ordinary Least Squares (OLS) method. Correlation statistics is a method of assessing the relationship between variables. It measures the extent of association between the ordering of two random variables although the correlation matrix presented simple bivariate correlations not taking into account other variables that may influence the results.

4.4.1 Regression Analysis

The study sought to determine the fit of the regression equation using the coefficient of determination between the overall independent variables and funding of mortgages. Coefficient of determination explains the degree to which changes in the dependent variable will influence change in the independent variables. In this case how funding of mortgages will be affected by the interest rate.

4.4.1.1 Model Summary

Model summary table, provides information about the regression line's ability to account for the total variation in the dependent variable

Table 4.2: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.921a	.849	.845	.04131

Dependent Variable: Funding of mortgages

Predictors: (Constant), Inflation rate, mortgage risk, and Interest rate

Table 4.2 illustrates the strength of the relationship between funding of mortgages and independent variables. From the determination coefficients, there is a strong relationship between dependent and independent variables given R² values of 0.849 and adjusted to 0.845. This shows that the independent variables (Interest rate, mortgage risk and inflation rate) accounts for 84.5% of the variations in funding of mortgages.

4.4.1.2 ANOVA Results

Analysis of variance (ANOVA) is a collection of statistical models used to analyze the differences among group means and their associated procedures (such as "variation" among and between groups)

Table 4.3: ANOVA of the Regression

	Sum of Squares	df	Mean Square	F	Sig.
Regression	195.568	4	48.892	9.44956	0.0008179
Residual	77.61	15	5.174		
Total	273.178	19			

Dependent Variable: Funding of mortgages

Predictors: (Constant), Inflation rate, mortgage risk, Interest rate

Analysis of Variance (ANOVA) was used to test possible significant relationships between variables (dependent and independent variables). This helps in assessing the significance of the regression model. The one-way analysis of variance (ANOVA) was used to determine whether there were any statistically significant differences between the means of independent (unrelated) groups. The ANOVA results presented in Table 4.3 shows that the regression model has a margin

of error of $p = .0008$. This indicates that the model has a probability of 0.08% of giving false prediction thus it was appropriate.

4.4.1.3 Coefficient of Correlation

Multiple regression analysis was conducted as to determine the relationship between the Funding of mortgages and the three variables.

Table 4.4: Coefficient of Correlation

	Un-standardized		Standardized	t	Sig.
	Coefficients		Coefficients		
	B	Std. Error	Beta		
(Constant)	3.77	0.451		8.359202	0.004
Interest rate	0.782	0.121	0.146	6.46281	0.003
Mortgage risk	-0.463	0.079	0.126	5.860759	0.021
Inflation rate	0.473	0.073	0.045	6.479452	0.005

a. Dependent Variable: Funding of mortgages

$$\text{Funding of mortgages} = 3.77 + 0.782 * \text{Interest rate} - 0.463 * \text{Mortgage risk} + 0.473 * \text{Inflation rate}$$

From the finding in Table 4.4, the study found that holding Interest rate, mortgage risk, and inflation rate, at zero funding of mortgages will be 3.77. Also, a unit rise in interest rate, while holding (mortgage risk, and Inflation rate) constant, will lead to a raise in Funding of mortgages by 0.782 ($p = 0.003$). Further, unit raise in mortgage risk, while holding (Interest rate, and inflation rate) constant, will lead to a decrease in funding of mortgages by 0.463 ($p = 0.021$). A unit rise in inflation rate, while holding (Interest rate, and mortgage risk) constant, will lead to a raise in funding of mortgages by 0.473 ($p = 0.005$).

This infers that interest rate contribute most to the funding of mortgages followed by inflation rate. At 5% level of significance and 95% level of confidence, mortgage risk, and interest rate are significant in funding of mortgages.

4.5 Interpretation of the Findings

The study findings established that the relationship between interest rates and funding of mortgages was statistically significant at 5% level of significance as shown by the ANOVA results.

The results also show that interest rates and inflation have a significant positive relationship with mortgage funding. There is a strong relationship between dependent and independent variables and the regression analysis shows that the independent variables (Interest rate, mortgage risk and inflation rate) accounts for the variations in funding of mortgages.

In addition, the study revealed that funding of mortgages is negatively influenced by mortgage risk in banking institutions in Kenya. Similar to the study findings, Scanlon & Whitehead, (2004) observed that mortgage risks is one of the critical factors that negatively influences mortgage financing as most lenders perceive high probabilities of borrower default. There are two types of lending risks and one of them is known as default risk, which refers to the likelihood that borrowers are likely to default on loan repayment. Another lending risk is called market risk and typically refers to the likelihood of the interest rates changing through time to an extent that the lender may earn less if interests rate rise after giving out a loan. The reserve also holds that the lenders may earn more when the interest rates come down after finishing the contractual negotiations and as such the borrower may pay more for an economically less value property. Therefore, the unpredictability of the change of interest rates presents uncertainty in the market as the borrower and lender are keen to avoid losing on their investments.

The trend in mortgage funding has averagely grown from Kes 118m in 2011 to just over Kes 245m by December 2015. This translates to an annual average growth of 51%, indicating an exponential increase in mortgage loans and can be attributed to the sharp increase in interest witnessed in the first quarter of the year 2011 to 2014. This means that changes in interest rates have a significant effect on change on funding of mortgage.

Several scholars have also obtained similar findings: For instance, Syed and Anwar (2012) found that interest rate has a more direct effect on financial market, an increase in interest rate leads to investing decisions to make a change in the structure of investment, generally from capital market to fixed income securities. Njiru and Moronge (2013) found that the factors that affect growth of mortgage industry in were interest rate volatility and mortgage loans accessibility and credit risk. Kariuki (2015) established that the determinants of mortgage funding include property prices, interest rates, level of income, costs of operations, the mortgage process as well as the size of the bank. She concluded that that increases in interest rates lead to lower uptake of mortgage products

and this can be attributed to the fact that higher interest rates results to high cost mortgages which in turn results in less consumer interest.

Njuguna (2013) found that there are other factors that affect lending by mortgage financial institutions other than mortgage interest rates e.g. monetary and fiscal policy, recession. Ngugi (2004) found out that the effect of interest rates on the amount of credit to the economy is largely minimal. Internationally, these findings agree with the findings of Gerlach and Peng (2005) who found that the increase in interest rates was to a significant extent positively related to growth in long term mortgage loans. Other studies, such as Bett (2011) and World Bank (2011) only show general effects of how interest rates influence other variables in the financial transmission mechanism without giving the specifics. Interest rates impact more on mortgage finance uptake than inflations rates hence people tend to take up mortgages which attract small interest rates over a given period of time. Low uptake of mortgages has a negative effect on the GDP of the country in the sense that banks which contribute significantly to the Kenyan economy are negatively impacted on their performance.

Njongoro (2013) sought to determine the effect of mortgage interest rates on the growth of mortgage financing in Kenya. He found out that there's negative relationship between these two variables indicating that as the interest rates increase mortgages will be affected to an extent.

CHAPTER FIVE:

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

Chapter five summarizes the study findings, provides the conclusions and presents the recommendation for the study. The chapter also describes the limitations of the study and suggestions for further research.

5.2 Summary of Findings

The objective of this study was to examine the effect of interest rates on the funding of mortgages by banks in Kenya. The study focused on interest rates and mortgage risk as the independent variables whereas inflation was used as the control variables while funding of mortgages was the dependent variable. The study carried out a census of the 22 listed banking institutions, which offer mortgage financing in Kenya.

The findings of the study found that the Kenya experienced high levels of inflation in the study period as indicated by a maximum overall annual inflation rate of 16.29 percent with a minimum inflation rate reaching 4.16 percent. Interest rate registered an average rate of 16.935% with a standard deviation of 1.85388. Mortgage risk had a mean value of 10.284% with standard deviation of 3.55833. Funding of mortgages had a mean of 182,512,550 between 2011 and 2015 with a standard deviation of 46,542,875.89

Further, the study found that there was a positive correlation between funding of mortgages and interest rate, and inflation rate but funding of mortgages had a negative correlation with mortgage risk. The study further found that the independent variables (interest rates and mortgage risk) and the control variable (inflation) explained 84.5% of the variation in funding of mortgages. Additionally, the study found that the regression model was significant at 95% confidence level. The findings of the regression coefficients found a significant positive relationship between interest rates, economic performance inflation and funding of mortgages but a negative and significant relationship between mortgage risks.

5.3 Conclusion

The findings of the study found that interest rates and inflation rate positively influences funding of mortgages in banking institutions in Kenya. In line with this finding, the study concludes that there is a direct relationship between interest rates, and inflation rates in banking institutions in Kenya. In addition, the study revealed that funding of mortgages is negatively influenced by mortgage risk in banking institutions in Kenya. This leads to the conclusion that mortgage risk has an inverse effect on funding of mortgages and high level of mortgage risk reduces funding of mortgages.

The study found out that interest rate contributes most to the funding of mortgages followed by inflation rate. At 5% level of significance and 95% level of confidence, mortgage risk, and interest rate are significant in funding of mortgages. This leads to the conclusion that mortgage risk, and interest rate are significant in funding of mortgages. The findings from the study concluded that a unit rise in interest rate, while holding (mortgage risk, and Inflation rate) constant, will lead to a raise in funding of mortgages. Further, unit raise in mortgage risk, while holding (Interest rate, and inflation rate) constant, will lead to a decrease in funding of mortgages. This infers that interest rate contribute most to the funding of mortgages followed by inflation rate. Fairly constant average inflation and interest rates make mortgage payment become easier to pay back over time whereas high interest rates create lower credit uptake which lowers mortgage financing and slows down acquiring of houses.

This study draws the same conclusion with international studies carried out by Gerlach and Peng (2005) who established that an increase in interest rates was positively related to growth in long term mortgage loans. Given that interest rates affect funding of mortgages than inflation rates, borrowers tend to take up mortgages which attract small interest rates over a given period of time. Low uptake of mortgages has a negative effect on the GDP of the country in the sense that banks which contribute significantly to the Kenyan economy are negatively impacted on their performance. Additionally, when borrowers display observable differences in risk attributes, competitive markets will charge higher risk borrowers higher loan rates.

5.4 Recommendations

The study concluded that there is a direct relationship between interest rates, and inflation, which are part of the monetary policy instruments used by the Central Bank of Kenya. The study recommends that the central banks of Kenya should instate measures to ensure that interest rates and inflation do not affect funding of mortgages from banking institutions.

Additional, factors affecting the mortgage uptake need to be included in the equation to elevate accuracy of prognosis. Such factors should be limited include income levels, accessibility of funds and housing supply. Moreover, appropriate methods to measure the above factors need to be used to eliminate any challenges encountered when analyzing the impact of each.

The central bank of Kenya should carry frequent surveys in the mortgage market annually noting that a detailed analysis of this market was not available. This will aid in dissemination of information to the market to reduce the level of ignorance on mortgages by the public. The government should consider supporting financial institutions to reduce risks which will reduce risk premiums on interest rates. The ministry in charge of housing should also play a role in dissemination of information to the public through regular publications. Banks and other financial institutions in general should consider innovating loan products to tap into to middle income developments which are a huge potential since they are highly untapped. The cost of loans should also be balanced because they influence affordability greatly.

In a country where the number of primary mortgage holders is still small, the idea of a higher-tier home loans market where lenders resell mortgages to external investors using the value of mortgage loans as collateral may sound far-fetched. A secondary mortgage market is what Kenya needs to ensure long-term funding as well as realize single-digit lending rates.

Finally, the study concluded that mortgage risk negatively affects funding of mortgages in banking institution in Kenya. The study recommends that managers of banking institutions should come up with effective mortgage risk management and control practices to ensure that mortgage risks do not affect the uptake of mortgage in banking institutions.

5.5 Limitations of the study

This study was limited to the 22 listed banking institutions in Kenya and did not focus on other lending institution like saving and credit cooperative societies, deposit taking microfinance institutions and credit only microfinance. Such institutions are also involved in lending but lend under different terms and mechanisms.

The study was also limited to funding of mortgages and not the funding of other loans like personal unsecured and secured loans, assets financing and funding of micro credit. The study also did not investigate funding of loans in other economic sectors like agriculture, manufacturing and transportation hence the findings are limited to the mortgage sector.

The methodology of composing and finalizing a complete research project is costly and it is clear why research companies require adequate funding.

5.6 Suggestions for Further Research

The scope of this study was funding of mortgages in banking institution in Kenya with special focus on interest rates and mortgage risk. However, from the reviewed empirical studies very few studies have explored the internal determinants (bank specific determinants) that influence funding of mortgages from the different financial institutions in Kenya. This has created an empirical research gap which research has not all addressed, hence this study recommends for additional research on the bank specific factors that influence funding of mortgages.

The study also established that mortgage risk negatively affect funding of mortgages however most studies on mortgage risk do not investigate the mortgage risk management and control strategies used to mitigate mortgage risk associated with mortgage financing. This study therefore suggests an examination of the effectiveness of mortgage risk management and control strategies used in mortgage financing. Finally, the study suggests an additional research on the effect of interest rates on the funding of other forms of loans in different economic sectors.

The categories of interest rates should be examined and to be more specific variable and fixed. This will offer an extensive analysis of interest rates taking into account that both are important in the analysis of the mortgage market.

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APPENDIX I: LISTED COMMERCIAL BANKS IN KENYA

1. African Banking Corporation
2. Bank of Africa
3. Barclays Bank of Kenya
4. CFC Bank
5. Consolidated Bank
6. Diamond Trust Bank
7. Equatorial Commercial Bank
8. Equity Bank
9. Family Bank
10. GT Bank
11. Giro Commercial Bank
12. Guardian Bank
13. Jamii Bora Bank
14. Sidian Bank
15. Kenya Commercial Bank
16. National Bank of Kenya
17. National Industrial Credit Bank
18. Standard Chartered Bank
19. Housing Finance
20. Chase Bank
21. Co-operative Bank of Kenya
22. Commercial Bank of Africa

Source :(CBK, 2016)

APPENDIX II: RAW DATA

		Inflation Rate	Interest Rates	Mortgage Risk	Funding of mortgages (000)	Ln (Funding of mortgages)
2011	Q1	4.16	13.96	5.88	102,036	5.01
	Q2	6.01	13.9	6.25	114,815	5.06
	Q3	9.02	14.42	6.63	124,727	5.10
	Q4	12.78	17.92	15.17	134,162	5.13
2012	Q1	15.83	20.05	18	140,950	5.15
	Q2	16.29	20.21	18	157,397	5.20
	Q3	14.3	20	14.75	156,927	5.20
	Q4	10.7	18.32	11	161,660	5.21
2013	Q1	7.26	17.9	9.5	164,397	5.22
	Q2	5.04	17.43	8.5	170,320	5.23
	Q3	4.56	16.95	8.5	194,026	5.29
	Q4	5.39	16.96	8.5	192,602	5.28
2014	Q1	6.2	17	8.5	202,103	5.31
	Q2	6.83	16.68	8.5	209,939	5.32
	Q3	7.24	16.4	8.5	217,775	5.34
	Q4	6.98	15.98	8.5	225,611	5.35
2015	Q1	6.67	15.62	11	233,447	5.37
	Q2	6.66	15.57	11.5	241,283	5.38
	Q3	6.39	16.08	8.5	249,119	5.40
	Q4	6.44	17.35	10	256,955	5.41

Inflation rate					
Quarter	2011	2012	2013	2014	2015
Q1	4.16	15.83	7.26	6.2	6.67
Q2	6.01	16.29	5.04	6.83	6.66
Q3	9.02	14.3	4.56	7.24	6.39
Q4	12.78	10.7	5.39	6.98	6.44
Average	7.99	14.28	5.56	6.81	6.54
Interest Rates					
	13.96	20.05	17.9	17	15.62
	13.9	20.21	17.43	16.68	15.57
	14.42	20	16.95	16.4	16.08
	17.92	18.32	16.96	15.98	17.35
Average	15.05	19.645	17.31	16.515	16.155
Mortgage Risk					
	5.88	18	9.5	8.5	11
	6.25	18	8.5	8.5	11.5
	6.63	14.75	8.5	8.5	8.5
	15.17	11	8.5	8.5	10
Average	8.4825	15.4375	8.75	8.5	10.25
Funding of mortgages (000)					
	102,036	140,950	164,397	202,103	233,447
	114,815	157,397	170,320	209,939	241,283

	124,727	156,927	194,026	217,775	249,119
	134,162	161,660	192,602	225,611	256,955
Average	118,935	154,234	180,336	213,857	245,201
Ln(Funding of mortgages)					
	5.01	5.15	5.22	5.31	5.37
	5.06	5.20	5.23	5.32	5.38
	5.10	5.20	5.29	5.34	5.40
	5.13	5.21	5.28	5.35	5.41
Average	5.07	5.19	5.25	5.33	5.39