THE EFFECT OF MACROECONOMIC VARIABLES ON THE MORTGAGE UPTAKE FOR MORTGAGE INDUSTRY IN KENYA

BY

EMILY ADHIAMBO AGAO

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DECLARATION

Student Declaration

I hereby declare that this research project is my original work and has not been presented for a degree by myself or any other person from any other institution known or unknown to me.

Signed………………………………….Date ……………………………………..

Emily Adhiambo Agao

D61/79814/2012

Supervisor Declaration

This research project has been submitted with my approval as university supervisor.

Signed………………………………….Date ……………………………………..

Mr. Mirie Mwangi

ACKNOWLEDGEMENTS

DEDICATION

To the love of my life, my husband and my best friend, Wycliffe Oketch.

To the most beautiful little jewel: my treasured child, Darrel Oketch.

To my dear parents: Joyce and Wilson Agao.

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ABBREVIATIONS

CBK   - Central Bank of Kenya

CIC   - Central Intelligence Agency

CRB   - Credit Reference Bureaus

GOK   - Government of Kenya

IDB   - International Development Bank

IFC   - International Financial Corporation

IMF   - International Monetary Fund

KCB   - Kenya Commercial Bank

LTVs   - Loan to Value Ratios

NHC   - National Housing Corporation

SPSS   - Statistics Package for Social Sciences

UK   - United Kingdom

USA   - United States of America

WHO   - World Health Organization

ABSTRACT

The mortgage market plays a very important role in any economy. It is known to have a dramatic multiplier effect and is a key economic indicator. The mortgage market has experienced significant growth in the last decade with many countries experiencing mortgage boom. The Kenyan mortgage market has been experiencing a boom in the past ten years and the latest findings have shown that the trend will continue into the foreseeable future. To ensure the economy is proper positioned a study into forces behind the boom and hence the market growth is paramount. This study investigated the determinants of mortgage uptake. Monthly secondary data for a period of ten years spanning from 2004 to 2013 was collected from publications in government and financial institutions. Descriptive as well as multiple regressions were run using SPSS version 21.0. A multivariate regression model showing the relationship between mortgage uptake and various variables was tested. The results show that that there are significant negative relationship between mortgage uptake and inflation rates, and positive relationships with interest rate, and level of money supply. Interest rates have the most significant effect on mortgage uptake followed by GDP and level of money supply. Thus the rise in mortgage uptake is well explained by macroeconomic variables. Although the study established a positive relationship between mortgage uptake and interest rates, the relationship was found to be insignificant. The trend also indicates an overall increase in mortgage uptake with time hence the mortgage market in Kenya is expected to continue to grow. Even without significant changes in the variables, the effect of time is that mortgage uptake increase. This also indicates that the mortgage market is significantly stable.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Mortgage financing is the process of underwriting and extending a home loan or mortgage on commercial property to a qualified applicant. The aim or focus of mortgage financing normally centers around two specific goals (Dolde, 2006). First, the financing seeks to create revenue for the lender and secondly the extension of mortgages allows qualified individuals and business entities to secure properties that can be repaid in terms that are within the ability of the recipient of the loan to pay off in a timely manner (Okwir, 2002). Mortgage loans are secured by the real property, and provide a schedule of payments of interest and repayment of the principal to a bank. Most mortgage contracts arrange for loans to be fully amortized with adjustable mortgage interest rates and either payment or maturity is fixed for the term of the loan.

The mortgage market is important for housing because it makes the investments of real property divisible thereby allowing households more flexibility in adjusting inter-temporal allocation of savings and housing consumption between the present and the future as desired (Mehdian, 2001). Mortgage loans are generally structured as long-term loans, the periodic payments for which are similar to an annuity and calculated according to the time value of money formulae. The most basic arrangement would require a fixed monthly payment over a period of ten to thirty years, depending on local conditions. Over this period the principal component of the loan would be slowly paid down through amortization. In practice, many variants are possible and common worldwide and within each country (Tse, 2002).

1.1.1 Macroeconomic Variables

Macroeconomic factors are those economic factors that affect the whole economy in which a commercial bank operates. Major macroeconomic factors include lending interest rates, central bank rate, money supply, interest rate spread, inflation rate and growth in gross domestic product etc. Lending interest rates is the cost of capital in an economy/reward for investments. Interest can be thought of as "rent of money". Interest rates are fundamental to a 'capitalist society' and are normally expressed as a percentage rate over the period of one year. Ngugi (2001) also defines interest rate as a price of money which reflects market information regarding expected change in the purchasing power of money or future inflation. It measures the price at which borrowers of funds are willing to pay to the owners of capital while at the same time measures the price at which information regarding expected change in the purchasing power of money or future inflation. It measures the price at which borrowers of funds are willing to pay to the owners of capital while at the same time measures the price at which lenders are willing to lend their money to enterprise in exchange for consumption.

Inflation rate is the general increase in prices of commodities. It measures by how much the value of the currency has been impaired. It is measured using a price index, based on a representative basket of goods and services. Real Gross domestic product is the measure of the size of an economy adjusted for price changes and inflation. It measures in constant prices the output of final goods and services and incomes within an economy.

1.1.2 Mortgage Uptake

A mortgage loan is a loan secured by real property through the use of a mortgage note which evidences the existence of the loan and the encumbrance of that realty through the granting of a mortgage which secures the loan. However, the word mortgage alone, in

everyday usage, is most often used to mean mortgage loan. A home buyer or builder can obtain financing (a loan) either to purchase or secure against the property from a financial institution, such as a bank, either directly or indirectly through intermediaries. Features of mortgage loans such as the size of the loan, maturity of the loan, interest rate, method of paying off the loan, and other characteristics can vary considerably (Miller, 2000).

The mortgage market consists of financial institutions such as banks, mortgage companies and regulatory body. Another player is the investors who take up the loans. The housing or buildings is another important component. Mortgage uptake in the mortgage market can increase when the types of mortgage loans increase, when the rates of these mortgages are affordable, when mortgage financing is the preferred mode for acquiring housing for companies and individual, when the housing supply meets the demand in the market, when the competition in this market is strong enough to moderate rates through several competitive commercial mortgage providers.

Mortgages have a big role to play in filling this gap; mortgages have great potential to reach levels such as the average mortgage debt to GDP level in European countries is in the region of 50 percent, whilst in the US it reaches 72 percent. According to World Bank the potential size of the mortgage market is currently around Ksh 800 billion or $9.9 billion around 13 times the current level (World Bank, 2011).

1.1.3 Effect of Macroeconomic Variables on Mortgage Uptake

The Central Bank rate affects the mortgage uptake since mortgage rates are pegged towards the Central Bank rate. Increase in the Central Bank rate leads to a consistent increase in the mortgage rate which tends to slow down mortgage uptake since the Central bank rate act as a signal for commercial banks to tighten their lending .This subsequently leads to an increase in the Commercial bank lending rates which is

consistent with the mortgage rates (Central Bank Survey report, 2010). A higher mortgage rate leads to an increased cost of borrowing from both surplus income side of the demand of housing which further leads to defaults and foreclosures to the extreme cases. However, higher mortgage rates may also be seen as an opportunity for investment by mortgage investors and therefore could assess the risk return tradeoff and evaluate other competing investment in order for them to make a business out of it (William, 2008).

Money Supply is a broad measure of money in an economy. Increase in money supply gives rise to greater inflation uncertainty and this has an adverse impact on the real estate market. Excessive growth in money supply may lead to an inflationary environment and might affect the investments because of higher discount rate and this therefore affects the mortgage uptake (Liow, Ibrahim and Huang, 2005).

Another key factor that affects the mortgage finance uptake is the overall health of the economy. This is generally measured by economic indicators such as the GDP, employment data, manufacturing activity, the prices of goods, etc. The GDP is the market value of all officially recognized final goods and services produced within a country in a given period of time. GDP per capita is often considered an indicator of a country's standard of living.

Under economic theory, GDP per capita exactly equals the Gross Domestic Income per capita. When the GDP is low it means that the people's purchasing power is also low hence the demand for real estate and consequently the mortgage uptake will decrease. Conversely, when the GDP increases, the purchasing power also increases hence increasing the demand of Real estate and the mortgage uptake go up. Broadly speaking, when the economy is sluggish, so is mortgage uptake. However, the cyclicality of the

economy can have varying effects on different types of real estate. For example, an investment in hotels would typically be more affected by an economic downturn than one in office buildings. Hotels are a form of property that is very sensitive to economic activity due to the type of lease structure inherent in the business. Renting a hotel room can be thought of as a form of short-term lease that can be easily avoided by hotel customers should the economy be doing poorly. On the other hand, office tenants generally have longer-term leases that can't be changed in the middle of an economic downturn (Case et al, 2005).

Inflation is often defined as a sustained increase in prices for a broad range of prices (Gallagher, 2011). Inflation rates affect the purchasing power of money. Inflation is measured by the changes in the Consumer price index (CPI) which measures the retail prices of goods and services purchased by households (Liow, Ibrahim and Huang, 2005). It is theoretically expected that the higher the inflation rate the higher the house price and therefore the lower the mortgage uptake.

The housing prices and other associated fees may enter mortgage lending both as a demand and a supply factor. Housing prices, together with income and the mortgage rate, determine how much credit households wish to take out. At the same time, banks' decisions regarding mortgage applications may also be influenced by housing prices, which form an indicator of the collateral value of a house (Greef et al, 2000).

1.1.4 The Mortgage Industry in Kenya

In Kenya there are two types of lenders which can be authorized by the Central Bank of Kenya. These are ordinary banks, which have the right to engage in mortgage business and mortgage companies. The largest lender in Kenya is Kenya Commercial Bank (KCB) which remains as a mortgage subsidiary of KCB. Overall the two largest lenders control

over half the market and only 9 banks (6 large, 2 medium and 1 small bank) have a mortgage portfolio exceeding Ksh 1 billion (World Bank, 2011). The current cost of mortgage financing is prohibitive for the percent of the urban population could consider taking out a mortgage loan which represents just 2 or 3 percent of the national population therefore mortgages are completely out of reach for the entire rural population (World Bank, 2011).

Government has estimated a housing need of 190,000 dwellings per year in Kenya's urban areas though it is not clear what assumptions underlie the estimate (Ministry of Housing, 2011). Government further estimates that formal production by the public and private sectors is not more than 30,000 units per year and concludes that the annual deficit of more than 120,000 housing units is met by slum housing. In Nairobi, with a population of around 3 million people, nearly 60% of households live in slum areas. A recent survey of these settlements showed that 73% of households live below poverty line (Giddings, 2007).

Moreover, around 90% are tenants, are forced into this type of tenure by poor access to land and, in some cases, by the deliberate choice to invest in their rural homes. To complicate the housing matter further, the average mortgage loan is approximately Ksh. 4 million while the median household income of the non-poor in these slums was just over ksh. 10,000(USD 125) in 2004, an indication that houses are quite expensive for most Kenyans (Mutero, 2007). According to Center for Affordable Housing in Africa (2011), in Niger, the smallest mortgage is equivalent to kshs.1.228 million (USD 14,444) while 85.6% of the country population earn below kshs 5,100(USD 60). Therefore, to enable majority of the Kenyans afford to buy homes, tackling all the critical factors that leads to low mortgage uptake in Kenya.

1.2 Research Problem

As identified earlier the key macro-economic variables affecting mortgage uptake are interest rates, GDP, income opportunities, central bank rates and inflation rate. The factors may have a negative or a positive relationship with the mortgage finance uptake. The factors may also affect the market directly or indirectly. For example interest rates affect mortgage uptake by lowering the demand for the houses due to high house prices. Also, the degree to which each factor impacts the mortgage uptake varies. Knowing the relative relationship is of paramount importance in making investment decisions as well as policy formulations in a bid to boost the market even further.

Financial sector generally have been recognized in the literature to play important role in the economic development of an economy. A strong financial sector leads to higher saving and efficiency and thus to higher economic growth. Although quite a number of studies have discussed the relationship that subsists between the financial sector, real sector and economic growth. Mortgage finance at a macro level, generates economic growth via job creation, economic linkages and it spurs entrepreneurial activities (IFC, 2010). In addition, housing finance plays an important role in shaping a country's wider housing system and services the stability and effectiveness of the financial system and the overall financial portfolio of the public, providing social stability and promoting economic development (Akinwunmi et al., 2008).

Several studies have been made on the mortgage market in different geographical context. Jayantha, (2012), used multivariate analysis in determination of the mortgage rates in Hong Kong, using the demand side of the market. In a study on housing finance in Sub-Saharan Africa and focusing on South Africa, Rust,(2008) found that rising cost of

capital have had a dramatic impact on housing affordability and, while property prices have been rising, have decreased the amount of loan that a household is able to receive.

In the Kenyan setting, studies done on the mortgage lending include, Jumbale (2012) sought to determine the relationship between house prices and real estate financing in Kenya. Muli (2011) studied the relationship between property prices and mortgage lending in Kenya. Leonard and Owiti (2013), when investigating the determinants of mortgage uptake in Kenya, used the regression analysis on the capital market variables as his independent variables and they found out that the capital market variables negatively affected the mortgage uptake.

Though a similar research as this study had been conducted, Leonard and Owiti's study was limited to the capital market indicators and studied the relationship of mortgage uptake with interest rates, inflation rate and return on savings. Other studies have concentrated on the relationship between mortgage uptake and one particular variable without the relative comparison of other factors. This study sought to extend and fill the research gap by widening the scope to the whole country of Kenya. It also included economic growth and level of money supply as variables. Therefore this study seeks to answer the research question and fill the gap in knowledge and empirical study in Kenyan context, what is the effect of macroeconomic variables on mortgage uptake in Kenya?

1.3 Research Objectives

To determine the effect of macroeconomic variables on the mortgage uptake in the mortgage industry in Kenya.

1.4 Value of the Study

The study will be significant to the financial Institutions, Real estate developers and the Government who will be able to understand the contribution of mortgage financing, on real estate development in Kenya and the necessary factors for acquisition of the capital and the challenges facing financing of mortgages in Kenya so that they can be able to plan, develop and provide housing to majority of Kenyans. This study will also be of importance to the government as it will facilitate in identifying the factors facing the mortgage market in Kenya therefore come up with policies e.g. tax incentives for both the mortgagees and mortgagor hence regulatory strategies that will improve this market. In this way, mortgage players will get an opportunity to consult with the finance institutions thus achieve solutions that are relevant. The study will provide the background information to research organizations and scholars who will want to carry out further research in this area. The study will facilitate individual researchers to identify gaps in the current research and carry out research in those areas.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviews the past literature on the study. The theoretical and empirical review is critically reviewed. The chapter also reviews more studies on mortgage financing in an economy. Possible macroeconomic variables of mortgage uptake are also presented in this chapter.

2.2 Theoretical Review

Theories formulated to explain, predict and understand phenomena and, in many cases, to challenge and extend existing knowledge, within the limits of the critical bounding assumptions. The theoretical review is the structure that can hold or support a theory of a research study. The theoretical review introduces and describes the theory which explains why the research problem under study exists.

2.2.1 Title Theory and Lien Theory of Mortgages

In the title theory, the property-law doctrine states that a mortgage transfers title to a property to the mortgagee, who holds it until the mortgage has been paid off, at which time title passes to the mortgagor. Some banks retain and treat the mortgage as a title theory. Since the mortgage is said to hold a title interest, she has the right to possession under this theory. Some banks apply a lien theory. This theory only gives the mortgagee a lien interest in the property. In a title theory bank, the mortgage is treated as having transferred title to the mortgage, subject to the mortgagee's duty to recovery 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 a lien theory bank, 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 of possession (Buckley and Kalarickal, 2004).

For practical applications there is usually very little difference between a lien theory and a 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. The language of the mortgage provides for possession rights being in the mortgagor up to the time of the foreclosure.

2.2.2 Innovation Theory of Mortgage Financing

The theory was developed by Everett Mitchell Rodgers in 1962. Innovations are often adopted by organizations through two types of innovation decisions: collective innovation decisions and authority innovation decisions. The collection-innovation decision occurs when the adoption of an innovation has been made by a consensus among the members of an organization. The authority-innovation decision occurs when the adoption of an innovation has been made by very few individuals with high positions of power within an organization (Rogers, 2005). Unlike the optional innovation decision process, these innovation-decision processes only occur within an organization or hierarchical group. Within the innovation decision process in an organization there are certain individuals

termed "champions" who stand behind an innovation and break through any opposition that the innovation may have caused. The champion within the diffusion of innovation theory plays a very similar role as to the champion used within the efficiency business model Six Sigma.

The innovation process within an organization contains five stages that are slightly similar to the innovation decision process that individuals undertake. These stages are: agenda-setting, matching, redefining/restructuring, clarifying and routinizing. There are both positive and negative outcomes when an individual or organization chooses to adopt a particular innovation. Rogers states that this is an area that needs further research because of the biased positive attitude that is associated with the adoption of a new innovation (Rogers, 2005). In the Diffusion of Innovation, Rogers lists three categories for consequences: desirable vs. undesirable, direct vs. indirect, and anticipated vs. unanticipated.

The innovation adoption curve of Rogers is a model that classifies adopters of innovations into various categories, based on the idea that certain individuals are inevitably more open to adaptation than others. The concept of adopter categories is important because it shows that all innovations go through a natural, predictable, and sometimes lengthy process before becoming widely adopted within a population (Rogers, 2000). Roger's categories include; innovators (2.5 %), early Adopters (13.5 %), early Majority (34 %), late Majority (34 %) and laggards (16 %). Rogers's adopter's characteristics are important because a person's innovation adoption characteristic affects the rate of uptake of an innovation over time.

Different adopter groups buy into innovation for different reasons and have different expectations. People who are innovators and early adopters are easier to convince to innovate. Mainstream adopters (early and late majority) who make up 64 % of any population and these adopters determine whether an innovative practice is embedded. Mainstream adopters need different support structure from early adopters in terms of support, different emphasis on technology and teaching practice. Innovators may require looser and less tightly controlled conditions, while mainstream adopters may require more stability and support (Repp, 2004).

Innovators and early adopters make up only a small proportion of any population (2.5% are innovators and early adopters about 13%) and there are not enough of them to have an impact on embedding innovation in an organization. The early and late majority (called the mainstream adopters) makes up 64 % of any population and these are the ones who can make the difference to whether an innovative practice is embedded in an organization. The early majorities are more practical: they do think through the pros and cons of a new idea before they adopt, so they help to make it more tangible and acceptable. But if the support systems and infrastructure are lacking, they will hold back on a commitment.

The late majority, on the other hand, are creatures of habit and predictability. They want to know the rules, they love systems. The beautiful thing about the late majority is that when they don't find rules or systems, they'll start figuring them out. Laggards are very set in their way, and will only adopt innovation when it has become mainstream i.e. standard practice in an organization (Repp, 2004).

Another important concept described by (Rogers, 2005) is the S-shaped adoption curve i.e. successful innovation goes through a period of slow adoption before experiencing a sudden period of rapid adoption and then a gradual leveling off (forms an S-shaped curve).Rapid expansion of most successful innovations will occur when social and technical factors combine to permit the innovation to experience dramatic growth.

2.3Determinants of Mortgage Uptake

Macroeconomic factors are factors that affect the whole economy in which mortgage firms operate. The main macroeconomic factors include central bank rates, money supply, inflation rate, growth in gross domestic product and house prices. It is important to understand macroeconomic factors in an economy to aid in effective monitoring and review of uptake of mortgage measured by mortgage advances. The performance of an economy is evaluated by measuring the magnitude of its growth and the quality of its growth.

Conceptual framework is a schematic presentation which identifies the variables that when put together explain the issue of concern. The conceptual framework is therefore the set of broad ideas used to explain the relationship between the independent variables (factors) and the dependent variables (outcome). Conceptual framework provides the link between the research title, the objectives, the study methodology and the literature review (Coulthard, 2004). This study adopted some concepts generated by mortgage financing theories and conceptualized them in a framework explaining the relationship between (the independent variables-factors) such as central bank rates, income opportunities, inflation, growth domestic product and house prices on mortgage financing and how they relate to mortgage finance uptake in Kenya.

2.3.1 Central Bank Rate/ Interest Rates

Positive Interest rates (lending in excess of inflation rates) are viewed as prerequisite for successful and sustainable finance (Buckley, 1999). Long term loans, such as mortgage financing loans have higher interest rates as a result of expectation of, among other factors higher inflation, (Gitman, 1997). The market rate of interest on mortgage loans is established by what borrowers are willing to pay for the use of funds over a specified period of time and what lenders are willing to accept in the way of compensation for the use of such funds. Real estate tends to be highly levered and thus the rate of return earned by equity investors tends to be affected by changes in interest rate. Even where the investor has a fixed rate of mortgage, an increase in interest rate may lower the price a subsequent buyer is willing to pay. Furthermore the yield rate (required rate of return) that an investor requires for real estate tends to increase with the overall levels of interest rates in the economy (Fisher, 1999).

Excessive high interest rates in Kenya Finance sector have strongly discouraged long-term investment and constrained Kenyan investors' ability to take up mortgage finance. With nominal interest rates ranging from 20-30% the private sector is unable to borrow to finance long term investments in the mortgage sector. In addition, the 11-18% point spread between lending and deposit rate is much higher than the 5 point spread common in other developing countries (Economic Report on Africa, 2002).

Interest rates chargeable on mortgages influence the mortgage quality in that the higher the interest the more expensive the mortgage product becomes and the low the mortgage finance uptake. Low interest rates on the other hand encourage mortgage uptake and prompt repayment thus guaranteeing quality products.

2.3.2 Inflation Rates

According to Dobson (2002), inflation is a rise in the general level of prices of goods and services in an economy over a period of time. When the general price level rises, each unit of currency buys fewer goods and services. Consequently, inflation reflects a reduction in the purchasing power per unit of money. A chief measure of price inflation is the inflation rate, the annualized percentage change in a general price index (normally the consumer price index) over time. Inflation's effects on an economy are various and can be simultaneously positive and negative.

Negative effects of inflation include an increase in the opportunity cost of holding money, uncertainty over future inflation which may discourage investment and savings, and if inflation is rapid enough, shortages of goods as consumers begin hoarding out of concern that prices will increase in the future. Positive effects include ensuring that central banks can adjust real interest rates (to mitigate recessions), and encouraging investment in non-monetary capital projects. Inflation leads to an economic recession. All investors when making investment decisions are concerned on how inflation will affect investment returns, more so mortgage firms who have long term investments.

The rate of inflation is of particular importance to investors and lenders making or purchasing loans made at fixed rate of interest over long periods of time. Hence when deciding whether or not to make such commitments, lenders and investors must be convinced that interest rate commitments are sufficiently high to compensate for any unexpected loss in purchasing power during the period that the investment or loan is outstanding; otherwise, an inadequate real return will be earned. Therefore, a consensus of what lenders and investors expect inflation to be during the time that their loan and

investment are outstanding is also incorporated into interest rate at the time investments and loans are made.

2.3.3 Level of Money Supply

Money Supply is a broad measure of money in an economy. Increase in money supply gives rise to greater inflation uncertainty and this has an adverse impact on the real estate market. Excessive growth in money supply may lead to an inflationary environment and might affect the investments because of higher discount rate and this therefore affects the mortgage uptake (Liow, Ibrahim and Huang, 2005).

2.3.4   Gross Domestic Product

GDP per capita exactly equals the Gross Domestic Income per capita. When the GDP is low it means that the people's purchasing power is also low hence the demand for real estate and consequently the mortgage uptake will decrease. Conversely, when the GDP increases, the purchasing power also increases hence increasing the demand of Real estate and the mortgage uptake go up. Broadly speaking, when the economy is sluggish, so is mortgage uptake. However, the cyclicality of the economy can have varying effects on different types of real estate. For example, an investment in hotels would typically be more affected by an economic downturn than one in office buildings. Hotels are a form of property that is very sensitive to economic activity due to the type of lease structure inherent in the business. Renting a hotel room can be thought of as a form of short-term lease that can be easily avoided by hotel customers should the economy be doing poorly. On the other hand, office tenants generally have longer-term leases that can't be changed in the middle of an economic downturn (Case et al, 2005).

2.3.5 Residential House Prices

The housing prices may enter mortgage lending both as a demand and a supply factor. Housing prices, together with income and the mortgage rate, determine how much credit households wish to take out. At the same time, banks' decisions regarding mortgage applications may also be influenced by housing prices, which form an indicator of the collateral value of a house (Greef et al, 2000).

Mortgage contracts attract fees and costs that are levied on the mortgage that increase the cost of procurement. Such costs include; legal fees. stamp duty, arrangement fees, valuation fees, mortgage protection policy all of which add to increase the cost of mortgage and this pushes the costs of mortgages out of reach from most individuals as one not only has to bear in mind the cost of the property but also consider the additional costs which on average amount to 10% of the property value. (Central Bank of Kenya - Mortgage Finance in Kenya –a Baseline survey 2011).

2.4 Empirical Review

Martinez and Maza (2003) did a study on house prices in Spain and they 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 credit.

Gerlach and Peng (2005) examined the long and short term relationship between interest rates and mortgage credit with an application to the Hong Kong housing market and found out that the increase in interest rates were positively and significantly related to growth in long term mortgage loans.

Avery, Brevoot and Canner (2006) indicted that low interest rate schemes in commercial banks make positive impact on the credit growth of mortgage finance loans for loan takeovers from existing lenders. Over a longer term, growth rates in banks was linked to

mortgage firms ability to march services to the need of the customers and generate adequate risk-adjusted returns, besides being influenced by the overall growth in mortgage finance market.

Fang (2004), conducted a study on the relationship between home mortgage loan and real estate market in China and their effect on banks financial performance, the study sought to analyze the correlation between the development of real-estate market and home finance and their effect on banks financial performance. The study revealed that although residents" sustainable income, macroeconomic factors are all the reasons for the development of the China's real estate market, but the mortgage cannot be ignored which is also an important factor for rising home prices, and at different times, different regions show different characteristics. In the short term, the function of mortgage is more apparent in promoting house prices. While the real estate market in a region or city getting gradually mature, the effect of mortgage on the house prices tends to be less evident, but it remains an important factor that cannot be ignored. The study further revealed that both real estate financing and mortgage had positive effects on the banks profitability, (Fang, 2004).

Somoye (2010) investigated at the macroeconomic level, the correlation between nonperforming loans and a subset of economic variables: per capita gross domestic product, inflation, interest rates, and changes in the real exchange rate, interest rate spread and broad money supply (M2). Non-performing Loans were adjusted for specific provisions (nonperforming loans as a proportion of loans loss provisions) to provide the basis for cross country comparisons. Most of the variables were found to be positively correlated with non-performing loans.

Ersoy (2009) conducted a study on the impact of the global financial crisis on the efficiency of foreign banks in Turkey. The study empirically searched for the impact of the global financial crisis on the technical efficiency of foreign banks in Turkey. To estimate stochastic frontiers and to predict bank-level technical efficiencies relative to the estimated frontier, a Cobb-Douglas Stochastic Frontier Production Function is used for the period of 2002-2008.

The study also estimates the bank specific determinants of technical inefficiencies of commercial banks in Turkey using a single equation of the Frontier model proposed by Bacchetta and Wincoop, (2009). The results of the empirical research suggest that the ranking of commercial banks in terms of technical efficiency as state-owned, private domestic and foreign did not change during the crisis. The technical efficiencies of foreign bank subsidiaries, despite a decrease in 2007, are even closing the gap with private domestic commercial banks. The technical efficiency of state-owned banks, in contrast to both domestic and foreign private banks, continued to increase during both 2007 and 2008. The foreign bank subsidiaries have much higher technical efficiency scores compared to foreign bank branches, which have the most volatile efficiency scores. The technical efficiencies of commercial banks have a high, positive and statistically significant relation with the asset size.

Empirical studies done locally include; Muli (2011) studied the relationship between property prices and mortgage lending in Kenya. The research was inspired by the fact that swings in the property prices have been extremely large in the recent years. This research employed a quarterly database from 2006 to 2010. A dynamic economic model was employed to assess the relationship between housing prices and credit using multiple regressions. The study concluded that changes in housing prices are positively and

significantly related to the long term evolution of mortgage credit. This result suggests that the evolution of housing prices is not triggered by bank real estate lending and that banks just accommodate real estate financing to the evolution of house prices. Though the study shows a bi-directional causality it concludes that the real estate market does not really affect housing price changes rather changes in housing prices do affect the amount of real estate financing.

In a study to investigate the factors infl1uencing mortgage uptake in Kenya, the study was guided by several specific objectives. 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).

Muguchia (2012) studies the effect of flexible interest rates and the results show a negative relationship between flexible interest rates and mortgage financing. The document 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. Other independent variables in the study include; inflation, non-performing loans, liquidity ratio and negative effects on mortgage financing, while money supply, GDP, customer deposits, bank capitalization and bank size had positive effect on mortgage financing. The study relied on secondary data from annual reports of the banks and regression analysis was mainly used to analyze the data.

Jumbale (2012) studied the relationship between house prices and real estate financing in Kenya. The objective of the study was to determine the relationship between house prices and real estate financing in Kenya. Causal study design was employed in this research. Purposive sampling technique was used to select the sample. The study purposively selected a total of 20 respondents who formed the sample size of this study. The researcher administered a survey questionnaire to each member of the target population. Secondary data was collected for this study. Quantitative data collected was analyzed by the use of descriptive statistics using SPSS latest version (20.0).Regression analysis was done to establish the relationship between growth in Real Estate financing and house prices. The study found that the changes in housing prices are positively and significantly related to the long-term evolution of real estate financing. This result suggests that the evolution of housing prices is not triggered by bank real estate lending and that banks just accommodate real estate financing to the evolution of house prices. Though the study shows a bidirectional causality it concludes that the real estate market does not really affect housing price changes rather changes in housing prices do affect the amount of real estate financing.

2.5 Summary of Literature Review

In conclusion, there is wide literature to support mortgage finance lending. The title and lien and the innovations theories each try to explain mortgage lending from different aspects and provide a good basis for empirical study. Empirical studies have also been undertaken on the macroeconomic variables of mortgage uptake globally. Locally no comprehensive research has been done to cover the whole nation. There is evidence that the mortgage finance market is enlarging not only in Nairobi but also in other parts of the country. Hence there is need to extend the research.

Scholars have not carried out any research on the relationship between macroeconomic variables and mortgage financing uptake and as such this study seeks to address this existing knowledge gap. The objective of the paper therefore will be to determine the effect of macroeconomic variables on mortgage financing uptake by the Kenyans population.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the methodology used to conduct the research and analyze the data collected. We shall review the Research design, Population, Data Collection and Data Analysis.

3.2 Research Design

Research design is the basic plan that indicates an overview of the activities that are necessary to execute the research project. This research problem was studied through the use of a descriptive research design. According to Cooper and Schindler (2003), a descriptive study is concerned with finding out the what, where and how of a phenomenon. The nature of this study was such that the findings were generalized to all the commercial banks. This method is concerned with the intense investigation of problem solving situations in which problems are relevant to the research problem.

The research project focuses on the relationship between macro-economic variables and mortgage uptake of mortgage firms in Kenya. The underlining concept is to select several targeted cases where an intensive analysis identifies the possible alternatives for solving the research questions on the basis of the existing solution applied in the selected case study. The study attempts to describe and define a subject, often by creating a profile of group of problems (Cooper and Schindler, 2006).

3.3 Population

Target population is the entire set of units for which survey data is to be used to make inferences. It is a well-defined or set of people, services, elements, events, group of things or households that are being investigated (Ngechu, 2004). In this study the population

was therefore the 44 mortgage firms that offer mortgage financing in Kenya (Appendix 1). Since the study was about the whole industry the researcher carried out a census study consisting of all the mortgage firms offering mortgage finance hence no need for sampling.

3.4 Data Collection

Data can be either primary or secondary. Primary data is gathered directly from the respondents. It can either be quantitative or qualitative where open ended questions are asked. Secondary data is acquired from published materials. Secondary data is mostly collected where a researcher is seeking to establish relationships between variables. In this study, quarterly secondary data for a period of 10 years was collected from; Central Bank of Kenya regarding interest rates, level of money supply and mortgage uptake figures; Kenya National Bureau of Statistics regarding GDP and inflation rate, Hass Consulting Ltd regarding Residential Real Estate Prices.

3.5 Data Analysis

Data analysis was carried out by use of Simple Mean, Standard Deviation, Regression and Correlation Analysis by use of SPSS.A multivariate regression analysis was used to come up with the model expressing the relationship between the dependent variable (Mortgage Finance Uptake) and the macroeconomic variables namely interest rates, GDP, House prices, Level of money supply and Inflation rate. A multivariate regression analysis will be used where a particular internal attribute measure may have a significant impact in a multivariate context. The model was proposed by Green (1997). The form is:

$y = a + b_1x_1 + b_2X_2 + e$

Translating the variables to our study the formula will be applied as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \varepsilon$$

Where;

Y is uptake of Mortgage loans of Mortgage industry as shown by the amount of advanced mortgage loans.

β_0= the value of Y when all Xs are zero

β_1, β_2, β_3, β_4 and β_5 =are the coefficients of independent variables

X_1= Central Bank Rate

X_2= Inflation Rate (annual change in the Consumer Price Index)

X_3= Level of Money Supply (aggregate amount of monetary assets, M3)

X_4= Gross Domestic Product at Market Prices as provided by the Kenya National Bureau of Statistics

X_5=Residential Real House Prices (Composite Property Index – Average offer price of all properties listed in the Hass Consult in the three months prior to the relevant quarter).

ε = the random error term accounting for all other variables that affect mortgage loans uptake but not captured in the model. The significance of the regression model was determined at 95% confidence interval and 5% level of significance.

The multiple regression function expresses the effect of each of the independent variables on the dependent variable. The value of β will be the degree of the effect on Y. A positive or negative sign will show the direction of the relationship. The higher the value of β, the higher the effect of that particular variable on Y (Julius, 2012).

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents the analysis and interpretation of the data collected. The data was obtained from published reports from Kenya National Bureau of Statistics, Central Bank of Kenya, Hass Consult Ltd and the World Bank. Its accuracy, validity and reliability are assumed on the authority of the publishers' credibility as trusted market information sources. The data was then fed into SPSS version 21.0 and used to detect how interest rates, GDP, level of money supply, house prices and inflation affect mortgage uptake, using descriptive and multivariate regression models.

The results are presented in two parts: first using descriptive statistics to enable the researcher establish statistical conclusions about the behavior of the data and then inferential statistics to establish the relationship between the dependent and independent variables.

4.2 Descriptive Statistics

	Minimum	Maximum	Mean	Std. Deviation	Median
house Prices	9,786,099.00	30,931,658.00	17,023,394.60	5,603,287.78	10,679,370.00
GDP	260,382.00	446,247.00	348,350.05	48,153.52	277,857.00
Rate of inflation %	3.33	29.13	11.49	6.72	10.55
Money Supply	379,521.00	1,924,700.00	950,640.88	501,424.33	1,224,547.00
Interest rates in %	2.30	18.00	8.54	3.33	8.50
Mortgage Loan in (Million)	19,740.00	194,026.00	68,719.65	58,960.90	124,727.00

4.2.1 Mortgage Uptake

Table 1: Mean Mortgage Uptake in Billions by year

Year	Mean Mortgage Loan	Std Dev.	95% CI	
			Lower	Upper
2004	19.906	0.136	19.822	19.990
2005	22.891	0.953	22.300	23.482
2006	25.063	1.002	24.442	25.684
2007	25.336	0.789	24.847	25.825
2008	26.786	2.731	25.093	25.093
2009	42.428	3.245	40.417	44.439
2010	71.282	21.841	57.745	84.819
2011	118.935	11.916	111.549	126.321
2012	154.234	7.728	149.444	159.024
2013	180.336	13.155	172.182	188.490

Table 1 shows the mean mortgage uptake from 2004 to 2013. These are uptakes from a Central Bank of Kenya Statistical Bulletin. The uptake has risen steadily from KSh. 19.906 billion in 2004 to KSh. 180.336 billion in 2013. This is further presented in Figure 1 below:

Figure 1: Mean Mortgage Uptake in Billions by Year
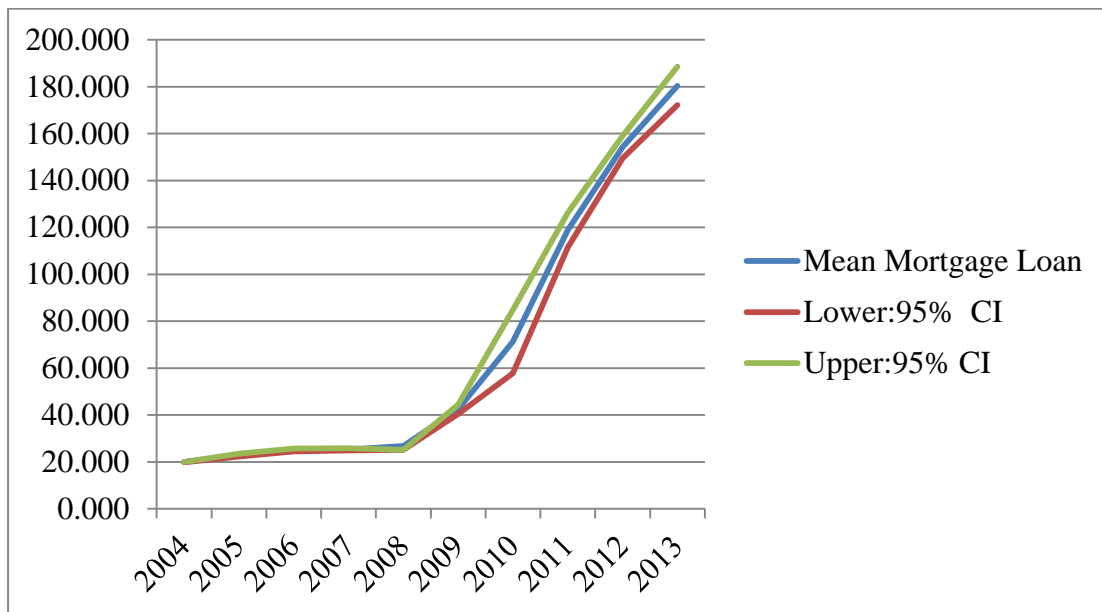
4.2.2 Residential Real Estate Prices

Table 2: Mean House Prices in Millions by year

Year	Mean House Prices	Std. Dev	95% CI	
			Lower	Upper
2004	9.927	0.153	9.832	10.022
2005	11.362	0.238	10.528	10.801
2006	11.569	0.556	11.250	11.888
2007	12.875	0.270	12.721	13.030
2008	14.892	1.200	14.204	15.580
2009	18.004	0.835	17.525	18.482
2010	19.673	0.631	19.311	20.034
2011	22.015	0.293	21.847	22.183
2012	22.504	0.848	22.536	23.509
2013	24.317	0.240	24.168	24.466

Table 2 shows the mean residential real estate prices from 2004 to 2013. These are prices

from a composite index comprising of apartments, townhouses, villas, bungalows,

cottages and maisonettes. The prices have risen steadily from KSh. 9.927 million in 2004 to KSh. 24.317 million in 2013. This is further presented in Figure 2 below:

Figure 2: Mean House Prices in Millions by Year
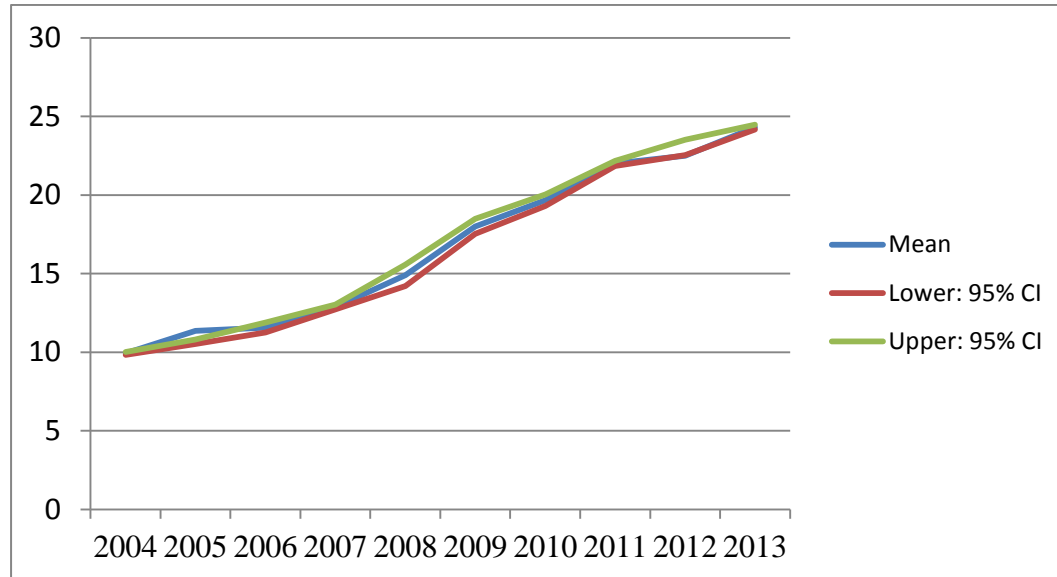
4.2.3 Interest Rates

Table 3: Mean Interest Rates by year

Year	Mean Interest Rates	Std. Dev	95% CI	
			Lower	Upper
2004	7.41	1.06	6.80	8.07
2005	8.43	0.26	8.29	8.58
2006	9.44	0.86	8.95	9.94
2007	8.50	0.32	8.32	8.68
2008	8.88	0.13	8.80	8.95
2009	7.78	0.53	7.48	8.08
2010	6.50	0.36	6.30	6.70
2011	8.48	4.04	6.16	10.80
2012	15.44	3.01	13.71	17.16
2013	8.75	0 .54	8.42	9.08

Table 2 shows the mean interest rates from 2004 to 2013. Interest rates were 7.41in 2004 and varied over time with the lowest being in 2010 at 6.50 and the highest being in 2012 at 15.44. This is further presented in figure 3 below:

Figure 3: Mean Interest Rates by year
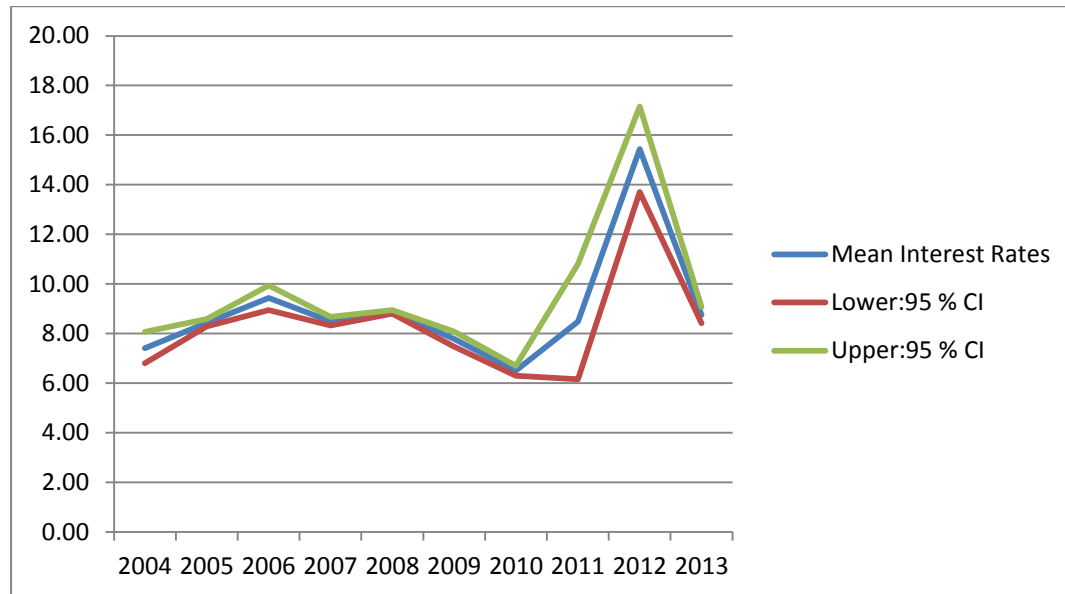
4.2.4 GDP per Year

Table 4: Mean GDP in 000's by year

Year	Mean GDP	Std. Dev	95% CI	
			Lower	Upper
2004	277.33	12.51	269.58	285.08
2005	293.81	15.35	285.02	302.61
2006	312.37	16.47	302.93	321.81
2007	334.21	15.38	325.40	343.02
2008	339.32	15.60	330.38	348.25
2009	348.60	12.43	341.47	355.72
2010	368.83	19.56	357.62	380.03
2011	384.98	20.89	373.01	396.95
2012	402.52	23.16	389.25	415.79
2013	421.54	22.75	407.44	435.64

Table 4 shows the mean GDP per year from 2004 to 2013 with the lower and upper limits. GDP has risen steadily from 277,330 in 2004 to 421,540 in 2013. Figure 4 below gives a clearer picture of the trend:

Figure 4: Mean GDP in 000's by year
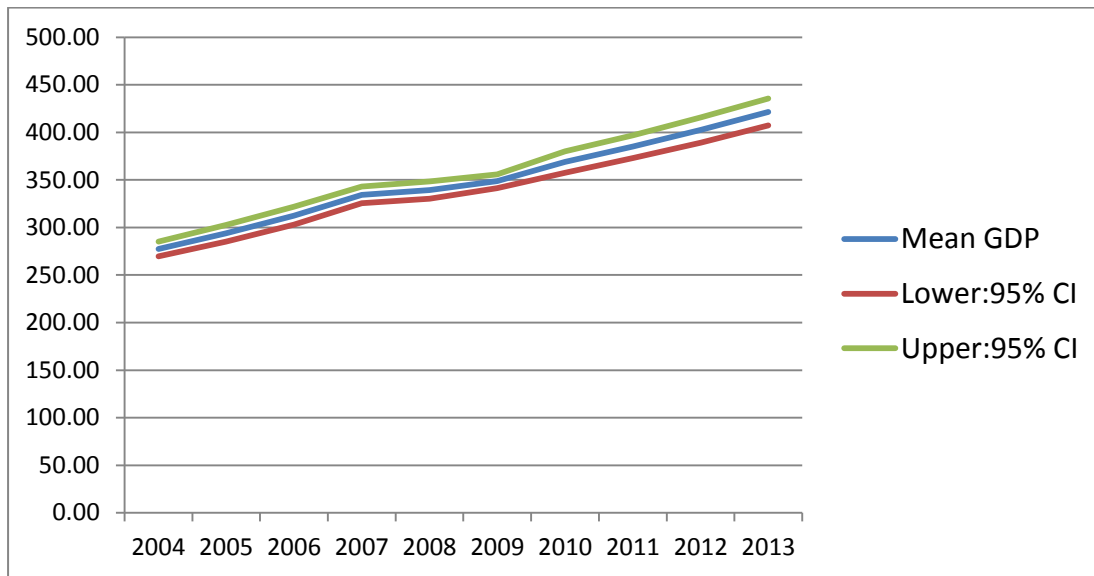
4.2.5 Level of Money Supply

Table 5: Mean LMS in 000's by year

Year	Mean LMS	Std. Dev	95% CI	
			Lower	Upper
2004	396.584	13.357	388.305	404.863
2005	443.405	16.707	433.830	452.980
2006	514.378	27.150	498.818	529.937
2007	598.281	33.063	579.333	617.229
2008	714.320	31.418	696.315	732.325
2009	810.541	42.387	786.249	834.833
2010	1183.284	72.386	1141.800	1,224.768
2011	1402.907	83.689	1354.945	1,450.868
2012	1609.326	86.526	1559.739	1,658.914
2013	1833.383	64.919	1793.146	1873.620

Table 5 shows the mean Level of Money Supply per year from 2004 to 2013 with the lower and upper limits. Level of money supply has risen steadily from 396,584 in 2004 to 1,833,383 in 2013. Figure 5 below gives a clearer picture of the trend:

Table 5: Mean Level of Money Supply
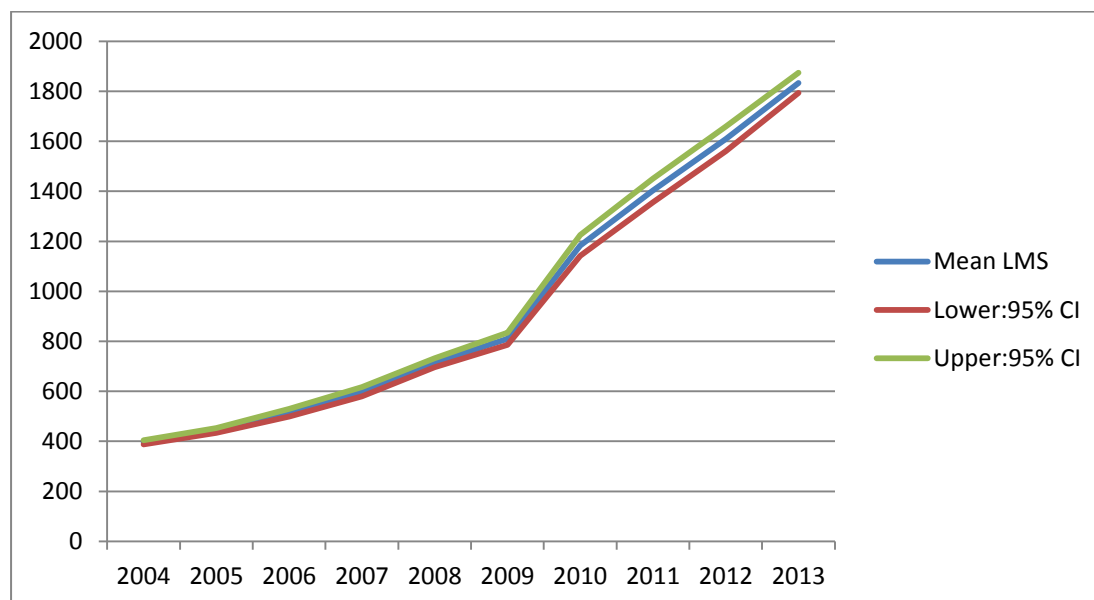
4.2.6 Inflation Rates

Table 6: Mean Inflation Rates by year

Year	Mean Inflation Rates	Std. Dev	95% CI	
			Lower	Upper
2004	10.625	0.665	10.213	11.037
2005	10.492	4.498	7.914	13.070
2006	14.467	2.827	12.847	16.087
2007	9.800	2.849	8.167	11.433
2008	26.192	4.210	23.779	28.605
2009	10.083	4.965	7.238	12.928
2010	3.913	0.714	3.503	4.322
2011	13.977	4.854	11.195	16.758
2012	9.640	5.448	6.518	12.762
2013	5.715	1.501	4.214	7.216

Table 6 shows the mean Inflation rates per year from 2004 to 2013 with the lower and upper limits. Interest rates varied significantly over the years going as high as 26.19% in 2008 and as low as 3.9% in 2010. Figure 6 below gives a clearer picture of the trend:

Figure 6: Mean Inflation Rates by year
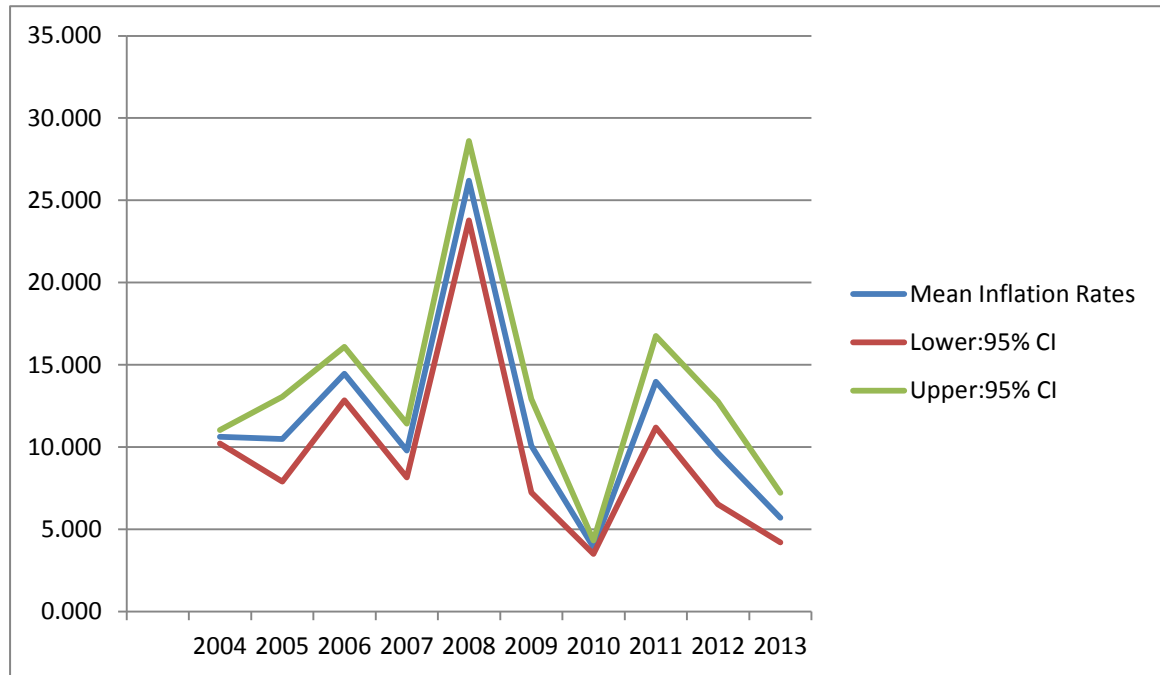
Inferential analysis in this study is used to determine whether there is a relationship between the dependent variable and the independent variables as well as the strength of that relationship. This study uses correlation as well as a multiple regression analysis to determine the strength of the relationship between the dependent and the independent variables.

4.3 Correlation analysis

Analysis on the association between mortgage uptake and other variables. The study sought to establish the association between individual independent variables (interest rate charged, GDP, levels of money supply, inflation rates, house prices and the amount of mortgage loan uptakes in the industry for the ten year period (2004 – 2013).

Pearson correlation coefficients are used to test the hypotheses:

H01: Mortgage uptake is not linearly associated with the amount of money in supply.

H02: Mortgage uptake is not linearly associated with the interest rate charged.

H03: Mortgage uptake is not linearly associated with the GDP.

H04: Mortgage uptake is not linearly associated with the inflation rate.

H05: Mortgage uptake is not linearly associated with the house prices.

Table 7: Correlations Matrix

		Mortgage Loan in (Million)	house Prices	GDP	Rate of inflation %	Money Supply	Interest rates in %
Pearson Correlation	Mortgage Loan in (Million)	1.000					
	house Prices	.859	1.000				
	GDP	.878	.889	1.000			
	Rate of inflation %	-.316	-.319	-.227	1.000		
	Money Supply	.972	.922	.928	-.306	1.000	
	Interest rates in %	.443	.336	.443	.195	.424	1.000

The results show that there is a positive and a high linear relationship between mortgage uptake and house prices (0.859), GDP (0.878) and money supply (0.972). Therefore, the study rejects the first (H01), third (H03) and fifth (H05) null hypothesis. This finding follows that the higher the amount of money supply the more customers would be willing and able to take up the mortgages, the higher the GDP the higher the customers will be able to take up the mortgage from the institutions while moderate relation with interest

rates (0.443) means that the interest rates affects the mortgage uptake is the costs of the mortgage goes up therefore (H02) is rejected.

On the other hand there is a negative and a low relationship between mortgage uptake and the inflation rate (-0.316). The study, thus, rejects the fourth null hypothesis (H04) as it follows that inflation has an effect on the interest rate and therefore has an effect on the mortgage uptake as purchasing power goes low.

4.4 Multiple Regression Analysis
Table 8: Multiple regression analysis on the predictors of mortgage Uptake between2004 and 2013

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1 dimension0	.978[a]	.957	.951	13067.43299

a. Predictors: (Constant), Interest rates in %, Rate of inflation %, house Prices, GDP, Money Supply

ANOVA[b]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1.298E11	5	2.595E10	151.997	.000[a]
	Residual	5.806E9	34	1.708E8		
	Total	1.356E11	39			

a. Predictors: (Constant), Interest rates in %, Rate of inflation %, house Prices, GDP, Money Supply
b. Dependent Variable: Mortgage Loan in (Million)

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	16279.514	31047.641		.524	.603
house Prices	-.002	.001	-.209	-2.167	.037
GDP	-.151	.123	-.124	-1.230	.227
Rate of inflation %	-332.790	356.348	-.038	-.934	.357
Money Supply	.147	.014	1.248	10.454	.000
Interest rates in %	811.835	762.917	.046	1.064	.295

a. Dependent Variable: Mortgage Loan in (Million)

Table 8 shows the relationship between mortgage loan uptake and five variables in relation to the other variables. A total of 40 data points were used by use of quarterly data for ten years. This gives the research more accuracy.

The results give us the model indicating that all factors being constant, mortgage loan uptake would be KSh. 16.279514 billion. However, after incorporating the variables the model becomes:

$$Y = 16,279.514 + 811.835X1 - 332.790X2 + .147X3 - .151X4 - .002X5 + \varepsilon$$

Where,

β_0 = the value of Y when all Xs are zero

$\beta_1, \beta_2, \beta_3, \beta_4$ and β_5 = are the coefficients of independent variables

X_1 = Central Bank Rate

X_2 = Inflation Rate (annual change in the Consumer Price Index)

X_3 = Level of Money Supply (aggregate amount of monetary assets, M3)

X_4= Gross Domestic Product at Market Prices as provided by the Kenya National Bureau of Statistics

X_5=Residential Real House Prices (Composite Property Index – Average offer price of all properties listed in the Hass Consult in the three months prior to the relevant quarter).

4.5 Discussion of Research Findings

The results indicate that the Y- intercept is 16,279.514. Holding all other factors constant, mortgage uptake would be KSh 16.279514 billion. The coefficients of correlation indicate the way each of the variables "go together" with mortgage uptake figures.

When taken in consideration with other variables, which is not the ideal situation, interest rates have a positive correlation with the mortgage uptake. A unit increase in interest rates would lead to 811.835 increases in mortgage uptake. Unit increases in GDP leads to 0.151 decreases in mortgage uptake. A unit increase in inflation rates would lead to 332.790 decreases in mortgage uptake. A unit increase in the level of money supply would on the other hand lead to 0.147 increases in mortgage uptake. A unit increase in real residential house prices would lead to 0.002 decreases in mortgage uptake.

These coefficients indicate the extent to which each of the variables affects the mortgage uptake. From the results a change in interest rates would have the highest effect on the mortgage uptake. The lower and upper limits indicate the short term effects of the variables on mortgage uptake. In the short term inflation could also have a negative relation. This is likely to be the case because inflation rates also affect interest rates.

The sig values indicate the level of significance of each of the variables to mortgage uptake. A value of less than 5% shows that the variable is significant. This shows that money supply is the most significant determinant of mortgage uptake followed by Residential house prices. On other hand, although the co-efficient for central bank rate

shows a positive correlation, the sig value of 29.5% indicates that it is insignificant. This is apparent in that despite high variations in central bank rates, the mortgage uptake continued to rise over time hence other factors were more significant. The R- square of 0.957 gives the coefficient of determination. This indicates that 95.7% of changes in the mortgage uptake figures can be explained by the determinants studied. Due to the reliability of the data having come from published government and financial institutions the model is likely to be accurate as indicated by the prob>F of 0.000.

CHAPTER FIVE

SUMMARY, CONCLUSION ANDRECOMMENDATIONS

5.1 Introduction

This chapter provides a summary of the study, discussions and conclusions. The researcher then presents the major limitations of the study and the recommendations for both the research and for the policy and practice.

5.2 Summary of Findings

The purpose of the study was to investigate the effect of macroeconomic factors on mortgage uptake for the mortgage industry in Kenya. The researcher sought to confirm theoretical relationships between mortgage uptake and interest rates, inflation rate, house prices, GDP, and level of money supply. Descriptive as well as inferential statistics were obtained. The study found out that mortgage uptake has increased over time from KSh. 19.906 Billion in 2004 to KSh. 180.336 Billion in 2013. The Residential real estate price has risen steadily from 9.927 million in 2004 to 22.015 million in 2013. Interest rates have varied from period to period with the lowest mean interest rates being in 2010 at 6.50 and the highest being in 2012 at 15.44.GDP has risen steadily from 277,330 in 2004 to 421,540 in 2013. The mean levels of money supply have risen steadily from 396,584 in 2004 to 1,833,383 in 2013. Inflation rates varied significantly over the years going as high as 26.19% in 2008 and as low as 3.9% in2010.

The regression analysis indicates that holding all factors constant, the value of mortgage uptake would be KSh. 16.279514 billion. A relationship was established between all the variables and mortgage uptakes. The positive relationship between interest rates and mortgage uptake when all other factors are held constant is reversed by the introduction of the other variables in the multiple regression. A unit increase in interest rates would

lead to an811.835 increase in mortgage uptake. A unit increase in GDP would lead to a 0.151decrease in mortgage uptake. A unit increase in the level of money supply would lead to 0.147 increases in mortgage uptake. A unit increase in inflation rates would lead to 332.790decreases in mortgage uptake. A unit increase in house prices would lead to .002 decreases in mortgage uptake.

5.3 Conclusions

From the study findings, it would be safe to conclude that macroeconomic variables have an effect on mortgage uptake in Kenya. The conclusion is supported by the study findings which showed that there was a strong positive relationship (R= 0.978) between the variables. The study also revealed that 95.7% of mortgage finance uptake in mortgage firms in Kenya could be explained by macroeconomic variables. From this study it is evident that at 95% confidence level, the variables produce statistically significant values and can be relied on to explain mortgage finance uptake in Kenya. This study concludes that there are significant relationships between mortgage uptake and interest rates, inflation rates, house prices, GDP, and level of money supply. Interest rates have the most significant effect on house prices followed by GDP and level of money supply. Thus the rise in mortgage uptake is well explained by macroeconomic variables. Although the study established a positive relationship between mortgage uptake and interest rates, the relationship was found to be insignificant. The trend also indicates an overall increase in mortgage uptake with time hence the mortgage industry in Kenya is expected to continue to grow. Even without significant changes in the variables, the effect of time is that mortgage uptake increase. This also indicates that the mortgage industry is significantly stable.

5.4 Recommendations

From the findings and conclusions, the sustained increase in mortgage uptake is explained by macroeconomic fundamentals. Financial analysts should realize the need to sensitize their clients on monitoring these factors so as to be able to make informed predictions of mortgage costs and therefore uptake. Investors would also be encouraged to invest in the mortgage industry which is relatively stable. Government should also closely monitor interest rates and maintain it at reasonable levels. This is because of the significant effect they have on the mortgage uptake and they determine lending rates and hence drive the demand through increased or reduced access to financing. The study also recommends that government takes a proactive role in collecting and analyzing data on mortgage industry. The data available was very scanty and very important in making policy decisions.

With due regard to the ever increasing desire to have better mortgage finance uptake for mortgage firms in Kenya, there is need to invest in proper mortgage financing strategies so as to meet these expectations. This should be done in a manner in which all the stakeholders are happy. This therefore calls for embracing proper financing practices which are acceptable, accessible, ethically sound, have a positive perceived impact, relevant, appropriate, innovative, efficient, sustainable and replicable.

The management of commercial banks should ensure that interests charged on mortgage facilities are competitive in the market so as to attract consumers of this product. The government should enact legislation which regulates the inflation and interest rates in the mortgage industry so as to protect the interests of both consumers and lenders in the market.

This legislation should ensure that banks issue reasonable charge affordable interest rates to their customers. The government should also enforce monetary and fiscal policies through the Central Bank of Kenya (CBK) so as to regulate money supply in the market.

5.5 Limitations of the Study

Since the research was to rely mostly on secondary data, obtained online, from published end of year accounts of financial statements, the researchers encountered many challenges particularly during the process of data collection. Most of the financial statements were obtained online from the various reliable search engines such as Google and Yahoo. The search for the information was a bit time consuming due to slow network on the search sites such as google.co.ke.

The study also encountered some other various limitations which hindered access to information. The first limitation was limited information regarding house prices. The researcher had to rely on information from one real estate company regarding residential real estate prices. No information was accessible from other institutions including government institutions responsible for housing. However, the researcher did establish that the real estate company collects data from 20 other institutions and compiles a composite index. Hence the data is believed to be reliable. The study further sought to increase the reliability and accuracy by stretching the period of study to 10 years and using quarterly data hence establishing 40 data points.

The study also experienced a limitation in collecting data on other variables such as number of houses on offer. The study could have covered more variables but with time constraints, information regarding number of houses constructed per month or number of houses on offer for sale could not be obtained. This information would have assisted the study to incorporate supply as a variable.

5.6 Suggestions for Further Research

The findings of this study set a ground for further research in the number of areas. First, the results indicated that inflation rate is insignificant in determining mortgage uptake. Further studies could be done to confirm these findings and get explanations. Secondly, the findings indicated most changes in mortgage uptake could be explained by the determinants examined. It is not clear why this is so as the coefficients of correlations were relatively small. Further studies could seek explanations for this.

This study faced the limitation of unavailable data. However there were indications that government is working to collect and analyze data relating to housing and mortgage in its efforts to achieve vision 2030. With more information available, the study should be extended to include more variables like supply side of housing. From the findings it was not clear why a correlation analysis showed a positive relationship between interest rates and mortgage uptake while the multiple regressions showed a negative one. More studies should be done to establish the short term and long term effects of interest rates and mortgage uptake.

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APPENDICES

Appendix I: Mortgage Firms in Kenya

List of commercial banks in Kenya as at December 2013

1. African Banking Corporation Ltd
2. Bank of Africa Kenya Ltd
3. Bank of Baroda (Kenya) Ltd.
4. Bank of India
5. Barclays bank of Kenya Ltd
6. CFC Stanbic Bank Limited
7. Charterhouse Bank Ltd
8. Chase Bank Kenya Ltd
9. Citibank N A Kenya
10. Commercial Bank of Africa
11. Consolidated Bank
12. Co-operative Bank of Kenya Ltd
13. Credit Bank Ltd
14. Development Bank of Kenya Ltd
15. Diamond Trust Bank
16. Dubai Bank Kenya Ltd
17. Ecobank Kenya Ltd
18. Equatorial Commercial Bank Limited
19. Equity Bank
20. Family Bank ltd
21. Fidelity Commercial Bank Ltd
22. Guaranty Trust Bank (K) Limited (Formely-Fina Bank Limited)
23. First community Bank Ltd
24. Giro Commercial Bank Ltd
25. Guardian Bank Ltd.
26. Gulf African Bank Ltd
27. Habib Bank A.G Zurich
28. Habib Bank Ltd
29. Imperial Bank Ltd
30. Investments & Mortgages Bank Limited – I&M Bank

31. Jamii Bora Bank Ltd

32. KCB Bank

33. K-Rep Bank

34. Middle East Bank (K) Ltd

35. National Bank

36. NIC Bank

37. Oriental Commercial Bank Ltd.

38. Paramount Universal Bank Ltd

39. Prime Bank

40. Standard Chartered Bank Kenya Ltd

41. Trans-National Bank (K) Ltd

42. UBA Kenya Bank Ltd

43. Victoria commercial Bank Ltd

Non-Banking Financial Institution

1. Housing Finance Company Ltd

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Appendix II: Data for Residential Real Estate Prices per Quarter

X5= Residential Real estate prices

Year	Quarter	Average Prices
2004	1	9,786,099
	2	9,787,180
	3	9,978,970
	4	10,156,401
2005	1	10,327,531
	2	10,679,370
	3	13,602,993
	4	10,842,062
2006	1	10,973,816
	2	11,200,411
	3	11,819,583
	4	12,282,800
2007	1	12,564,342
	2	12,764,759
	3	12,940,715
	4	13,230,342
2008	1	13,487,888
	2	14,246,628
	3	15,353,991
	4	16,479,519
2009	1	17,093,536
	2	17,557,885
	3	18,202,382
	4	19,161,037
2010	1	19,207,918
	2	19,237,051
	3	19,624,350
	4	30,931,658
2011	1	21,637,352
	2	22,217,417
	3	22,249,551
	4	21,954,148
2012	1	22,025,546
	2	22,483,319
	3	23,554,131
	4	24,026,169
2013	1	24,146,300
	2	24,701,665
	3	24,331,140
	4	24,087,829

Source: Hass Consult Ltd

Appendix III: Quarterly GDP at Market Prices

Quarterly GDP Values

Year	Quarter	GDP
2004	1	273,983
	2	260,382
	3	279,699
	4	295,274
2005	1	281,335
	2	277,857
	3	303,053
	4	313,004
2006	1	298,153
	2	295,111
	3	327,868
	4	328,338
2007	1	319,289
	2	319,696
	3	348,672
	4	349,189
2008	1	322,757
	2	326,599
	3	357,649
	4	350,258
2009	1	342,820
	2	332,800
	3	364,423
	4	354,344
2010	1	347,744
	2	352,979
	3	390,817
	4	383,763
2011	1	364,549
	2	365,470
	3	406,453
	4	403,440
2012	1	378,795
	2	381,962
	3	425,119
	4	424,209
2013	1	398,511
	2	399,156
	3	446,247
	4	442,235

Source: Kenya National Bureau of Statistic.

Appendix IV: Quarterly Inflation Rates
Inflation Rates per Quarter

Year	Quarter	Rate
2004	1	9.80
	2	10.30
	3	10.80
	4	11.60
2005	1	14.30
	2	14.23
	3	7.67
	4	5.77
2006	1	17.80
	2	12.97
	3	11.80
	4	15.30
2007	1	7.47
	2	7.70
	3	12.57
	4	11.47
2008	1	19.70
	2	29.13
	3	27.43
	4	28.50
2009	1	17.03
	2	10.20
	3	7.47
	4	5.63
2010	1	4.58
	2	3.68
	3	3.33
	4	3.84
2011	1	7.05
	2	13.16
	3	16.51
	4	19.19
2012	1	16.87
	2	11.78
	3	6.38
	4	3.53
2013	1	4.08
	2	4.37
	3	6.99
	4	7.42

Source: Kenya National Bureau of Statistics.

Appendix V: Quarterly Level of Money Supply, M3
LMS Quarterly Values

Year	Quarter	Amount
2004	1	379,521
	2	389,506
	3	403,113
	4	414,197
2005	1	428,743
	2	431,830
	3	446,857
	4	466,190
2006	1	478,763
	2	504,457
	3	528,507
	4	545,783
2007	1	557,650
	2	581,440
	3	615,595
	4	638,440
2008	1	673,720
	2	716,890
	3	719,543
	4	747,127
2009	1	761,007
	2	789,807
	3	824,550
	4	866,800
2010	1	1,086,504
	2	1,160,438
	3	1,224,547
	4	1,261,646
2011	1	1,305,511
	2	1,355,670
	3	1,444,592
	4	1,505,853
2012	1	1,509,222
	2	1,564,173
	3	1,640,561
	4	1,723,349
2013	1	1,744,233
	2	1,815,433
	3	1,849,167
	4	1,924,700

Source: Central Bank of Kenya

Appendix VI: Quarterly CBK Interest Rates
Quarterly Interest Rates

Year	Quarter	Interest rates
2004	1	7.60
	2	7.75
	3	7.30
	4	7.00
2005	1	8.49
	2	8.61
	3	8.61
	4	8.02
2006	1	8.02
	2	9.75
	3	10.00
	4	10.00
2007	1	8.00
	2	8.50
	3	8.75
	4	8.75
2008	1	8.75
	2	9.00
	3	9.00
	4	8.75
2009	1	8.38
	2	8.00
	3	7.75
	4	7.00
2010	1	7.00
	2	6.75
	3	6.38
	4	6.00
2011	1	5.88
	2	6.25
	3	6.63
	4	15.17
2012	1	18.00
	2	18.00
	3	14.75
	4	11.00
2013	1	9.50
	2	8.50
	3	8.50
	4	8.50

Source: http://www.tradingeconomics.com/kenya/interest-rate

Appendix VII: Mortgage loan Assets ("million")

Year	Quarter	Mortgage Loan
2004	1	19,740
	2	20,014
	3	19,805
	4	20,064
2005	1	21,355
	2	22,954
	3	23,321
	4	23,934
2006	1	26,457
	2	25,565
	3	24,002
	4	24,228
2007	1	24,848
	2	25,285
	3	26,631
	4	24,578
2008	1	22,987
	2	25,471
	3	28,782
	4	29,902
2009	1	37,960
	2	40,908
	3	44,444
	4	46,401
2010	1	46,733
	2	52,925
	3	87,836
	4	97,637
2011	1	102,036
	2	114,815
	3	124,727
	4	134,162
2012	1	140,950
	2	157,397
	3	156,927
	4	161,660
2013	1	164,397
	2	170,320
	3	194,026
	4	192,602

Source: Central Bank of Kenya