

**THE RELATIONSHIP BETWEEN MACROECONOMIC FACTORS AND THE
MORTGAGE MARKET GROWTH IN KENYA**

BY

NATALIE DIANA OWUOR

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DECLARATION

This research project is my original work and has not been presented for any award in any other university.

Signed..... Date.....

Natalie Diana Owuor

D63/89188/2016

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

Signed.....

Date.....

Dr. Mirie Mwangi

Senior Lecturer

Department of Finance and Accounting

School of Business

University of Nairobi

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DEDICATION

To my beautiful family, you have been my inspiration to work harder and aim higher.

TABLE OF CONTENTS

DECLARATION.....	ii
ACKNOWLEDGEMENT.....	iii
DEDICATION.....	iv
LIST OF TABLES	viii
LIST OF FIGURES	ix
ABBREVIATIONS AND ACRONYMS.....	x
ABSTRACT.....	xi
CHAPTER ONE: INTRODUCTION	1
1.1 Background of the Study	1
1.1.1 Macroeconomic Factors.....	2
1.1.2 Mortgage Market Growth	4
1.1.3 Macroeconomic Factors and Mortgage Market Growth Rate	5
1.1.4 Mortgage Industry in Kenya	7
1.2 Research Problem	8
1.3 Research Objective	11
1.4 Value of the Study	11
CHAPTER TWO: LITERATURE REVIEW.....	12
2.1 Introduction.....	12
2.2 Theoretical Review	12
2.2.1 Arbitrage Pricing Theory	12
2.2.2 Capital Assets Pricing Theory	13
2.2.3 Title Theory and Lien Theory of Mortgages	14
2.3 Determinants of Mortgage Market Growth	15

2.3.1 Macroeconomic Variables	15
2.3.2 Government Policies.....	15
2.3.3 Long Terms Funds Availability.....	16
2.3.4 Size of the Lending Institution.....	17
2.4 Empirical Studies	17
2.5 Conceptual Framework.....	20
2.6 Summary of Literature Review.....	21
CHAPTER THREE: RESEARCH METHODOLOGY	23
3.1 Introduction.....	23
3.2 Research Design.....	23
3.3 Data Collection	23
3.4 Diagnostic Tests.....	24
3.5 Data Analysis	24
3.5.1 Analytical Model	24
3.6 Test of Significance	25
CHAPTER FOUR: DATA ANALYSIS, RESULTS AND INTERPRETATION	26
4.1 Introduction.....	26
4.2 Descriptive Statistics.....	26
4.3 Correlation Analysis	31
4.4 Regression Analysis.....	32
4.4.1 Model Summary.....	32
4.4.2 Analysis of Variance.....	33
4.4.3 Regression Coefficients	33
4.5 Interpretation of the Findings.....	34

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS ..	36
5.1 Introduction.....	36
5.2 Summary.....	36
5.3 Conclusions.....	37
5.4 Recommendations.....	38
5.5 Limitations of the Study.....	39
5.6 Suggestion for Further Research.....	40
REFERENCES.....	41
APPENDICES	49
Appendix I: Research Data	49

LIST OF TABLES

Table 4.1 Summary Statistics	26
Table 4.2 Correlation Matrix	31
Table 4.3 Model Summary	32
Table 4.4 ANOVA	33
Table 4.5 Coefficients.....	33

LIST OF FIGURES

Figure 2.1 Conceptual Model	21
Figure 4.1 Mortgages trend.....	28
Figure 4.2 Interest rates trend	29
Figure 4.3 Exchange rates trend.....	29
Figure 4.4 GDP trend.....	30
Figure 4.5 Inflation trend.....	31

ABBREVIATIONS AND ACRONYMS

BHC - Bank for Housing & Construction Bank

CBD - Central Business District

CBK - Central Bank of Kenya

FGBS -First Ghana Building Society

GCB - Ghana Commercial Bank

GDP - Gross Domestic Product

NBS - Nigeria Building Society

NPLs- Non-Performing Loans

USD -United States Dollars

ABSTRACT

The mortgage market is the market for financing real estate assets. The mortgage financing is vital in financing the property market. This study seeks to determine the relationship between selected macro factors and mortgage market growth in Kenya. The study is based on the arbitrage pricing theory, capital assets pricing theory and the title theory and lien theory of mortgages. The study utilized the descriptive research design and used quarterly secondary data for a period of 10 years from 2007 to 2016. Analysis of data was carried out through descriptive and inferential statistical techniques. The descriptive analysis including the mean, frequency and percentages was used to reveal data patterns. The inferential statistics, that is, linear correlations and multiple linear regressions were used to use to draw conclusions and make predictions on the relationship between the independent variables and the dependent variable. The research established that there was a positive and significant relationship between interest rates, inflation and the mortgage market growth. The research also found that there was an insignificant positive relationship between exchange rates, gross domestic product and the mortgage market growth. The research concluded that the mortgage market growth in Kenya is only influenced by interest rates and inflation. The research recommended that the central bank of Kenya should ensure that interest rates are stable and inflation levels are low to ensure that they do not affect the mortgage market growth.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

A mortgage is the security for the performance of an act. It involves a mortgager, the performer of the act, and the mortgagee the holder of the mortgage (Schmudde, 2004). In everyday use, the word mortgage is often used to mean mortgage loan. Mortgage loan refers to a loan used for the purposes of raising the required funds to purchase real estate or to alternatively use an existing property as security for a commercial loan for whatever purpose (Dorah, 2012). The mortgage market is vital in growth of the real estate sector as it avails funds to this market which is capital intensive in nature by encouraging savings through the institutions which in turn finance their projects (Kariuki, 2015).

From a theoretical perspective, the arbitrage pricing theory (APT) proposes that the economy experiences various forms of risks which cannot be removed through diversifying assets. The risks emanate from the economic variables which include; inflation, exchange rate fluctuations, interest rates fluctuations and changes in aggregate output (Iqbal & Haider, 2005). According to the APT, microeconomic factors affects all sectors in the economy hence they can also effect the mortgage market growth. The capital assets pricing model (CAPM) indicates that the assets returns are functions of the market beta hence any economic activity is affected by the market risk and not several macroeconomic factors (Isenmila & Erah, 2012).

In Kenya, there are various institutions which provide mortgage financing including some commercial banks as well as the firms specialized in provision of mortgage financing, pension funds, trusts and other real investment. Commercial banks dominate mortgage

lending in Kenya, with 43 banks and one Mortgage Finance Company, 36 of them having mortgage portfolios of differing sizes (Ariemba, Mboya & Kamau, 2015). However, despite having the advanced mortgage market in the east Africa region, the country cannot meet the excess demand for housing financing in the country which is mainly caused by the ever increasing rural to urban migration in the country (Kariuki, 2015).

1.1.1 Macroeconomic Factors

According to Aghionet (2011) economic factors are concerned with the economy as a whole which covers a large area like the whole nation or the globe. These include the macroeconomic factors which ranges from national output, income, government budget balances, finance among other factors (Ariemba, Mboya & Kamau, 2015). This study will consider four microeconomic factors among the interest rates, exchange rates, economic (GDP) growth and inflation.

Interest rate is the amount charged by the financing institutions for the amount advanced (Boamah, 2010). When the interest rates are high, it leads to high prices in the properties market which scares away buyers' hence low demand for funding. High interest rates make renting relatively more attractive to buying. This is made even worse if there are other competitors providing the services in the region or the country (Kariuki, 2015). High interest rates have also been associated with high repayment terms of the loans to high level that was unattained to the majority of potential homeowners. The unstable interest and inflation rates have impacted significantly on the mortgage growth. High interest rates are known to cause huge number of Non-Performing Loans (NPLs) as the borrowers become unable to make payments (Boamah, 2010).

Exchange rate can be defined rate of exchange as the prevailing unit price of another country currency against domestic currency. According to Reid and Joshua (2004), exchange rate is the value of the one unit of foreign currency against local currency. Omagwa (2005) posit that exchange rates like any other commodity are explained by the law of demand and supply. Supply of currency is explained by changes in fiscal policies whereas currency demand is influenced by a wide range of aspects like the interest rates. Murthy and Sree (2003) argued that exchange rate enables comparison of prices of commodities quoted in diverse currencies. Exchange is determined by pegging a country's currency to another currency.

Economic growth creates a legitimate expectation among consumers and investors of continued economic development (Addae-Korankye, 2014). This encourages consumer spending and business investment which in turn increases the demand on the money supply moving through the economy. Periods of economic growth have some important features that influence the mortgage market (Ariemba, Mboya & Kamau, 2015). GDP for Kenya is measured by the annual economic growth rate (Isenmila & Erah, 2012).

Inflation is the continued rise in the prices of goods and services. This is caused by availability of so much money in the economy chasing limited resources. Due to high money supply in the economy, it drives the prices of goods and services upwards hence forcing citizens to spend more on commodities hence reducing their earnings especially to those citizens earning less who have high marginal propensity to consume. Inflation was measured by average annual rate of inflation. Average inflation is the arithmetic mean for of the month by month inflation normally reported by KNBS for each of the twelve months forming one year (Addae-Korankye, 2014). High inflation leads to high

interest rates as lenders seek to compensate loss of purchasing power of their money (Ariemba, Mboya & Kamau, 2015).

1.1.2 Mortgage Market Growth

Diverse scholars have conceptualized mortgage market growth differently across the world. According to Green and Wachter (2015), mortgage growth can be conceptualized in the context of the mortgage debt relative to the household income, the mortgage loan features and the ability of the debtors to pay off their mortgage loans. The rising mortgage debt per household income indicates an increase in the mortgage growth of a country. However, this growth can be constrained by the home prices collapse leading to devaluation of housing-related securities, foreclosures, and mortgage delinquencies.

Home ownership levels through use of mortgage facilities are a major indicator of mortgage market growth in any jurisdiction. The rising numbers of homeownership levels have been seen as an indicator of mortgage industry growth. Diverse government initiatives which have contributed to this growth over the years include exemption from capital gains tax, mortgage-interest tax relief at the high marginal rate of tax, and no imputed income tax (Scanlon & Whitehead, 2011).

The number of mortgage facilities service providers is key in the determination of the mortgage market growth. Amongst the critical service providers of the mortgage services are the building societies. The building societies are key to the issuance of mortgage loans and facilities in the country. They often hold the largest market share in the mortgage market in diverse countries around the world (Scanlon & Whitehead, 2011). In the building society method, the building societies mobilize funds from their members for

the purposes of mortgage lending. This is line with the loanable theory. The theory brings together three players in an economy that is the providers of funds labeled as savers, the utilizers of these funds (loanable funds) labeled as borrowers and the institutions or systems that pool funds from savers and lends it to borrowers (Mutisya, 2016). The savers supply funds for lending through diverse actions such buying of bonds, opening of fixed accounts in commercial banks and depositing of funds in a financial institution for later use. The borrowers then consume these funds that have been deposited in terms of loans.

The mortgage portfolio size that is the amount of money lent out through mortgage service providers is a critical component of measuring mortgage market growth. The increase of the mortgage portfolio is an indicator of the growth of the mortgage market. Additionally, it implies that the public have released the money held for speculative purposes. According to the liquidity preference theory of Keynes, the public holds money for three major purposes that is precaution against extraordinary expenses, ordinary transactions, and to use for speculative purposes. Therefore, an increase in the amount of interest offered would mean that the public would prefer to hold less money for speculative purposes and exchange it for interest in the near future (Mohamed, 2012). The banks then have sufficient funds for lending purposes.

1.1.3 Macroeconomic Factors and Mortgage Market Growth Rate

There are diverse ways in which macro factors influence mortgage growth. The ability to raise long term funds is a critical component in determining the amounts of funds available for lending (Messai, 2013). In cases where a majority of the corporate real estate only had access to short term loans which made the commercial sense of long term

housing projects difficult to be financially sustainable (Nelson & Asamoah, 2014). The real estate developers often face challenges to sell their products in the required timelines to make profits. The process of real estate development takes a long period through different stages including land acquisition, development stage, construction, and leasing or sale of the property (Messai, 2013). This means that real estate developers have to wait for a longer period to get return on their investment.

The availability of the loanable funds impacts on the mortgage growth through diverse ways. According to the loanable funds theory, the amount of interest rate is determined through the supply and demand for loanable funds that is available in the credit market (Scanlon & Whitehead, 2011). Low supply of loanable funds leads to high interest rates and vice versa. The theory states that the level of interest rates determines the appetite for loanable funds amongst borrowers. High interest rates act to limit the capacity of borrowers to take up the mortgage facility hence restraining mortgage market growth.

Interest rates have a huge impact on mortgage market growth. Nelson and Asamoah (2014) indicated that an increase in interest rates on mortgage facilities pushed the repayment terms of the loans to a high level that was unattainable to most potential homeowners. This is because the prospective mortgage customers need to pay for the principal amount as well as the interest that has been charged on the loan (Martha & Daniel, 2012). Therefore, high interest rates push the loan repayment amount up. Thus, unstable interest and inflation rates have impacts significantly on the mortgage growth. Unstable interest and inflation rates make it commercially unattractive to real estate developers (Ijaiya, Lawal, & Osemene, 2012). This is because the loan repayment amount increases leading to a slower growth in mortgage market.

1.1.4 Mortgage Industry in Kenya

The mortgage industry in Kenya started with the establishment of the Housing Finance on the 18th of November, 1965. The mortgage industry has over the years been dominated by the Housing Finance, which continues to control over 20% of the mortgage industry in Kenya. Changes in the Banking Act in 2002 enabled commercial banks to offer loans that were more than five years thus enabling them to get into the mortgage business. As per Central Bank of Kenya Statistics (2016), a total of 34 commercial banks are offering mortgage services, with the Kenya Commercial Bank being the largest lender. Central Bank of Kenya, (2016) noted that the mortgage loan assets stood at 203.3 billion as of December, of 2015. The mortgage loan book of the 2015 financial year had an improvement of 23% mortgage loan book sizes (Central Bank of Kenya, 2016). However, despite the incremental growth in mortgage industry the Central Bank of Kenya noted that the growth was not adequate to cater for the market and diverse measures needed to be taken to stimulate growth in the sector (Central Bank of Kenya, 2016).

The mortgage industry is also affected by the Central Bank Rate which offers the benchmark for the mortgage rate and which are positively correlated with the interest rates offered by banks (Mohamed, 2012). The central bank of Kenya determines the liquidity in the economy through adjusting the Central Bank Rate. To reduce the liquidity in the economy, the central bank increases the CBK rate which results in an increase in the interest rates offered by the commercial banks in pricing of the loan products including mortgages. This in turn, increases the costs of borrowing for the borrowers resulting into slow mortgage uptake. In this context, Ngigi (2015) noted that in 2011 the

CBK was forced to sharply increase the Central Bank Rate in order to tame the high inflation.

The income levels and nature of employment contract are key determinant of mortgage uptake. The mortgages are long-term loans which often lock out persons who are employed for short term contracts as the installments for such loans cover long periods. Ngigi (2015) argues that the income levels of the customers determine the amount of loan that they can qualify for as well as the duration of such loans. The economy has an influence on the mortgage growth. According to Messai (2013), the availability of excess money in the economy leads to an increase in money supply and therefore a possibility of inflation. The inflation has a negative consequence on the mortgage terms such as interest rates that vary because of inflation levels.

1.2 Research Problem

There are diverse ways in which the macro factors influence mortgage growth. Availability of long term funds for lending is critical to the mortgage growth (Messai, 2013). The availability of loanable funds impacts on the mortgage growth through diverse ways. According to the loanable funds theory, the amount of interest rate is determined through the supply and demand for loanable funds that is available in the credit market. Low supply of loanable funds leads to high interest rates and vice versa. Nelson and Asamoah (2014) indicated that an increase in interest rates on mortgage facilities pushed the repayment terms of the loans to high levels that were unattainable to most potential homeowners. The mortgage loans requirements such as down payment play a significant role in the mortgage market growth. Mortgage industry is often restrained by high required down payment (at least 30 percent of the property value), and

high interest rates. This high down payment led to the decline of the mortgage market growth (Green & Wachter 2015).

In Kenya, changes in the Banking Act in 2002 enabled commercial banks to offer loans that were more than five years thus enabling them to get into the mortgage business. As per Central Bank of Kenya Statistics (2016), a total of 34 commercial banks are offering mortgage services, with the Kenya Commercial Bank being the largest Lender. The Central Bank of Kenya noted that mortgage growth was not adequate to cater for the market and diverse measures needed to be taken to stimulate growth in the sector (Central Bank of Kenya, 2016). The central bank rate affects the interest rates offered by the commercial banks in the loan products including mortgages. The economy also has an influence on the mortgage growth. According to Messai (2013), the availability of excess money in the economy leads to an increase in money supply and therefore a possibility of inflation. The inflation has a negative consequence on the mortgage terms such as interest rates that vary as a result of inflation levels.

Diverse studies have been undertaken in respect to the factors influencing mortgage uptake. Ellah (2013) undertook a study on the enhancement of economic growth through mortgage financing and capitalization. The study found that economic growth stabilized the inflation rates hence impacting positively on mortgage development. Ijaiya, Lawal, & Osemene (2012) undertook a study on microfinance and mortgage financing in Nigeria. The study found that access to long-term funds was key to development of mortgage industry. Green & Wachter (2015) examined the American Mortgage in historical and international context. The study indicated that the creation of government back bodies such as Federal National Mortgage Association and the Federal Home Loan Mortgage

Corporation have gained an increasing role in the mortgage industry but the study focused on historical development of mortgages

In Kenya, Mogaka, Mboya, and Kamau (2015) examined the influence of capital market deepening on mortgage market growth in Kenya. The study found that the pension funds availability was positively correlated with the long-term funds availability and mortgage market growth but the study focused on financial sector deepening and its effect on the mortgage market. Kigomo (2016) examined mortgage rates in Kenya and its implications for homeownership. The study established that mortgage providers should undertake diverse risk management practices. These risk management practices include mortgage insurance, and use of the title as security amongst other aspects. His study however focused on mortgage rates and not the effect of macroeconomic factors on mortgage growth.

The mortgage growth is a critical factor in enabling home and property ownership in Kenya. Access to shelter is a basic human right as outlined in the universal declaration of human rights and Kenya's 2010 constitution. The knowledge on the factors influencing the mortgage growth is critical in enabling Kenyans and the policy decision makers understand on the measures that need be taken to ensure that there are adequate mortgage facilities in a sustainable manner and affordable to the Kenyans. However, majority of the empirical studies have not examined the mortgage growth in the country under the current banking sector operational conditions that involve loan interest capping by the government, preference of lending to the government as opposed to the retail market and reduced profitability of the mortgage service providers. This study therefore seeks to

answer the question; what is the relationship between macroeconomic factors and mortgage market growth in Kenya?

1.3 Research Objective

To determine the relationship between selected macro factors and mortgage market growth in Kenya.

1.4 Value of the Study

Department of Housing under Ministry of Lands & Physical Planning, Real estate developers and Financial Institutions who will benefit from the study through understanding the discussed macro factors on mortgage market growth in Kenya so that they can plan, develop and provide housing to majority of Kenyans. The study will help the Department of Housing develop policies building on the existing framework that will mitigate the challenges these factors present.

The commercial banks and mortgage financing institutions will benefit from this study as they will gain insights into the macroeconomic factors, which they should consider when developing products for the mortgage market. This will assist the commercial banks and mortgage financing institutions develop relevant and market friendly products. This will encourage more people to take credit for mortgage, which in turn will increase the profit of these institutions from lending in terms of mortgage products.

The study will also be of critical significance to the research organizations and scholars as it will provide background information on the mortgage market in Kenya. The study will also provide critical source for literature review.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter contains the empirical studies, conceptual framework and summary of reviewed literature in relation to mortgage growth rate.

2.2 Theoretical Review

Theories are formulated to explain, predict and understand phenomena. The theoretical review is the structure that supports the research study. Several theories have been developed to explain the macro factors that affect the growth of the mortgage market. This study is based on the arbitrage pricing theory, capital assets pricing theory and the title theory and lien theory of mortgages.

2.2.1 Arbitrage Pricing Theory

This theory was put forward by Ross (1976). It mainly focuses on the risks and the rate of returns. The theory also points out the existence of a positive correlation linking the expected return to the risks ((Huberman, 2005). It outlines the main risks that investors in the industry may encounter. The model uses the macro-economic variables as the proxy for determining the risks (Iqbal & Haider, 2005). APT illustrates that the macroeconomic variables affect the property market through exogenous factors which the firms have no control over them, inflation rate that affects the purchasing as well as the saving power of the citizens (Singh, Mehta &Varsha, 2011).

APT reveals that there are numerous macroeconomic factors which operate to explain asset returns. The theory assumes that expected asset returns is influenced by various

factors including: the unanticipated variations in the inflation as well as the interest rates. Other factors include the unexpected variations in the rates of interest as well as the growth of the output in the industry. Thus, investment in residential property is affected by similar variables (Paavola, 2006). The theory further states that in a well-functioning economy, the model can be accurately being used to determine the returns and the securities are operating in autonomous market whereby the securities are traded freely (Campbell, 2012). The APT theory indicates that macroeconomic variables like interest rates, inflation, money supply and others affect the value of real estate investment.

2.2.2 Capital Assets Pricing Theory

CAPM as its commonly known was put forward by Sharpe (1964) and Lintner (1965) states that the returns of a portfolio are directly correlated to the risks associated with it expressed in beta. For the model to work, it has to conform to the linear function developed (Abdulrahim, 2011). Each stock is matched with its corresponding beta coefficient when the investor intends to identify the returns expected from a particular portfolio. Returns are thus determined by the prevailing economic conditions, which are the proxies towards attaining efficient market (Iqbal et al., 2012). Risks associated with a portfolio are major factors, which influence whether an investor is going to invest in that particular portfolio or not.

The CAPM expresses a positive relationship between an asset's returns and its systematic risk as measured by beta. The resulting regression line that describes this relationship is known as the Security Market Line (Rossi, 2016). CAPM assumes a well hedged portfolio where all the unsystematic risks are eliminated through portfolio building leaving the systematic risks as the only relevant risk which is measured using the beta

coefficient. The theory therefore reveals that there exist a direct association linking returns to risks associated with a portfolio.

2.2.3 Title Theory and Lien Theory of Mortgages

The title theory and lien theory of mortgages seek to examine ways which people hold title and the process for the foreclosure proceedings if such necessities arise. In the title theory, the borrower doesn't keep the title to the mortgage facility (Soedamah, 2016). The lender keeps the title deed to the property as security until the loan is paid in full upon which the lender gives back the title to the borrower.

The borrower has access to the facility the whole period in which the loan is being repaid. On the other hand, in the lien theory unlike the title theory, the borrower stays with the title deed during the repayment of the loan. In this context, a lien is placed on the title during the period of loan repayment period and the borrower has access to the property (Watanabe, 2008). The lien is removed only upon successful completion of the loan repayment. The foreclosure proceedings are often more challenging in the lien theory as opposed to the title theory as the borrower is holding the title deed in the line theory.

This theory is applicable to this study in the context that availability of title deeds is critical for the purposes of mortgage facilities as these items are held as security. This implies that persons with no title deeds and only have leases to their lands cannot access mortgage facilities hence reduction in mortgage growth. The process of charging the titles may also be expensive further increasing the cost of mortgage facilities.

2.3 Determinants of Mortgage Market Growth

2.3.1 Macroeconomic Variables

Diverse macro factors that influence mortgage market growth include inflation costs, interest rates, and taxes. These factors influence the amount of mortgage loan repayment amounts that in turn influence affordability of the mortgage loans and therefore the mortgage uptake levels (Martha & Daniel, 2012). The mortgage market growth in the context of the ratio of outstanding residential mortgage debt to GDP has been measured by the total mortgage lending, and the number of mortgage accounts, by Badev, Beck, Vado, and Walley, (2013), Femi (2013), and Warnock and Warnock (2008), respectively.

Major macro-economic factors in the context of commercial banks include central bank rate, growth in gross domestic product, lending rates, inflation, interest rate spread, and money supply. Lending rates are the charges on amount advanced to the borrowers for investing purposes. Interest rates on the other hand are expressed as a percentage rate over the period of one year. Ngugi (2001) also defines interest rate as the reflectors for the future property prices as it determines the amount of disposable income to the population. The control variables that will be used in this study are GDP growth and government policies.

2.3.2 Government Policies

Government policies and fiscal policies on taxation also have diverse effect on mortgage market growth in any country. The taxes charged on the building materials and houses for sale have an influence on the total mortgage cost (Nelson & Asamoah, 2014). Some of the taxes that impact on mortgage costs include the property taxes and stamp duty. When

the government offers tax exemptions on mortgage products, then the mortgage products become affordable. These exemptions could be in form of tax concessions for owner occupied houses, rental housing and first home buyers. To stimulate the mortgage industry, the government could also offer tax exemption for specific categories of building materials or lower such taxes to reduce the costs of housing (Soedamah, 2016).

The government could also offer tax reduction for house developers to encourage a higher number of players in the housing sector thus increasing the houses supply and hence a reduction on the cost of housing. In an effort to boost these institutions, the CBK has made amendments to the banking act since 2011 in order to increase mobilization of financial deposits. Additionally, level of loans advanced by financial institutions for acquisition and improvement of land have increased from 25 percent to 40 percent of total liabilities.

2.3.3 Long Terms Funds Availability

The accessibility to long terms funds for the purposes of undertaking mortgage facility lending influences the mortgage market growth. There are diverse sources of long term funding for the purposes of mortgage lending including domestic banking sector, capital markets, insurance industry, and pension funds amongst other sources (Kalui, & Moturi, 2015). The access to long term funds impacts on the funds that are available for lending to the mortgage industry. In cases of limited availability of long terms funds, the commercial banks are willing to utilize available funds for short term commercial loans as opposed to mortgage lending (Mohamed, 2012).

Commercial banks are often challenged in raising adequate long-term funds at competitive rates for the purposes of mortgage lending in an economically sustainable manner. The accessibility of the long-term funds for lending also determines the interest rates to be charged for the mortgage. In cases where the mortgage facilities are offered during scarcity of long term funds, then high interest rates may be charged to enable economic viability of mortgage lending (Kalui, & Moturi, 2015).

2.3.4 Size of the Lending Institution

The size of the bank is also another determinant of the demand for mortgage products due to its ability to influence the supply. This works through the law of demand and supply where increased supply leads to lower prices and this increased demand and vice versa. Larger commercial banks are able to issue more loans and mortgage products and therefore they influence the supply in a positive manner (Kariuki, 2015). Large banks are able to introduce variety of financing options which improves the mortgage market sector (Uchida, Udell & Watanabe, 2008).

2.4 Empirical Studies

Liping (2013) undertook a study on factors influencing mortgage growth in China whose objective was to analyze the impact of macroeconomic influences on the mortgage growth. The study noted that the commercial banks in China undertaking the mortgage credit facilities often face an increasingly high credit risk exposure due to ineffective credit risk mitigation measures. This leads to slower mortgage sector growth due to a reduced number of players in the sector. The study utilized a metadata analysis process as opposed to the current study that will utilize primary data method.

Gerlach and Peng (2005) study on interest rates and mortgage credit facilities in Hong Kong found a direct correlation linking interest rates and growth in long term mortgage loans. On the other hand, Avery, Brevoort and Canner (2006) found a direct impact of low interest rates and credit growth of mortgage finance loans. In the long term, the mortgage service providers' ability to meet the needs of the customers, and put credit risk mitigation aspects leads to the overall growth of the mortgage growth.

Boamah (2009) further notes that stability of the currency in a given country leads to a successful mortgage market. This is attributed to the stability of the currency being attractive to long term foreign capital injection. Lwali (2008) noted that the supply for housing in African continent was inadequate to meet the demand for the same. This has led to entry of players such as Shelter Afrique, East African Development Bank (EADB) among others.

Boamah (2011) study on the mortgage market in Ghana found that the major aspect influencing mortgage growth in the country is exchange rate. This was attributed to the mortgage loans being denominated in US dollar as well as the target market of the mortgage market in the country. The target market of mortgage market in Ghana often targets foreigners or Ghanians living abroad because of the strong foreign currencies. Most Ghanaians cannot afford the mortgage facilities due to high exchange rates and denomination of mortgages in foreign currencies.

Faida (2013) examined the challenges facing mortgage industry in Tanzania. The objectives of the study included identification of the challenges facing acquisition of mortgage facilities. The population of the study included the National Housing corporation staff, their clients and banks that have mortgage agreement with it. The study

depended on the descriptive research design for the purposes of analysis. The findings of the study were that high interest rates and period taken to disburse the mortgage loan impacted on the mortgage growth in Tanzania. The study utilized descriptive statistics while the current study will utilize a regression analytical model, which is more robust in nature.

Muguchia (2012) found a negative association linking flexible interest rates to mortgage financing in a study on effect of flexible interest rates. The study argues investors would be able to predict the repayable amount if banks charge a fixed rate of interest leading to stability and increased level of borrowing. Other independent variables that had an inverse impact to mortgage financing in the study include; liquidity ratio, inflation, non-performing loans, while money supply, GDP, had a direct impact to mortgage financing. The study used secondary data which was analyzed using descriptive statistics.

Mogaka, Mboya, & Kamau (2015) studied the impact of capital market deepening on mortgage market in Kenya. It aimed at examining the influence of pension assets on mortgage market growth. The study was based in Kenya. The study utilized secondary data from diverse sources such as publications of the Capital Markets Authority and Nairobi Securities Exchange. The study utilized a regression analytical model for the purposes of data analysis. The study found that the pension funds availability was positively correlated with the long-term funds availability and mortgage market growth. The study examined the capital markets but did not illustrate on the manner in which the pension funds were correlated with the capital markets which was the objective of the study.

Kigomo (2016) examined mortgage rates in Kenya and its implications for homeownership. The study sought to examine the influence of risk profiles of borrowers on the uptake of mortgages in Kenya. The study utilized a sample size of 168 respondents based on a target population of 362 respondents. The analytical model that was utilized for the study was the regression model. The study found that the mortgage lenders need to undertake diverse risk management practices. These risk management practices include mortgage insurance, and use of the title as security amongst other aspects. These findings were attributed to findings that higher risks impact the interests charged on the mortgage.

Ariemba, Mboya, and Kamau, (2015) examined the correlation linking the value of the mortgage market and key macroeconomic factors namely, exchange rates, inflation and GDP per capita. They found that GDP per capita and exchange rates were significant in the model in explaining the variation in mortgage market value. They also found that they had a positive relationship with mortgage market value. They however found that inflation is not significant in the Kenyan context in explaining the variation in the mortgage market value. William, (2008) noted that mortgage industry is often restrained by high required down payment (at least 30 percent of the property value), and high interest rates. This high down payment led to the constraining of the mortgage market growth.

2.5 Conceptual Framework

The conceptual framework examines the interrelationship between the independent variables and the dependent variable. The independent variables for the study will include interest rates measured using the weighted average lending rates, exchange rates

measured using the rate of Ksh to US dollar and GDP growth measured using the quarterly real GDP and the rate of inflation measured using the Consumer price index. The dependent variable will be mortgage market growth rate will be determined by the quarterly amount advance by financial institutions in Kenya. The conceptual model is shown as follow

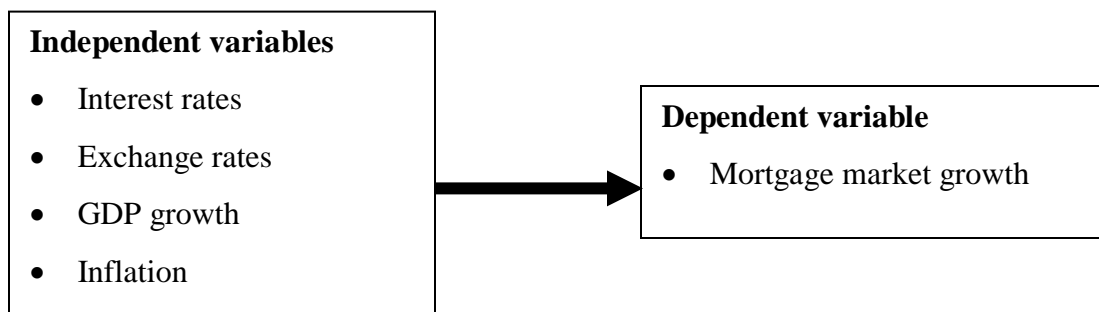


Figure 2.1 Conceptual Model

2.6 Summary of Literature Review

The reviewed literature found diverse aspects influencing mortgage market growth both in Kenya and around the world. The studies indicated that most bank customers prefer short term loans to enable them build their houses in an incremental manner over a period of time. Examined studies indicated that there was a negative relationship between mortgage interest increase and mortgage market growth. The studies also found that pension funds availability was positively correlated with the long-term funds availability and mortgage market growth. The mortgage lenders were also forced to undertake diverse risk management practices. These risk management practices include mortgage insurance, and use of the title as security amongst other aspects. These findings were

informed by the notion that higher risks were found to impact on the interests charged on the mortgage.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

The chapter identifies the research design, the method of data collection, diagnostic test and the techniques of data analysis.

3.2 Research Design

This study sought to examine the influence of the macro factors on the mortgage growth in Kenya. The study utilized the descriptive research design. Descriptive research is used in describing the research phenomenon as it is on the ground without any manipulation of the variables will be utilized (Orodho, 2003). This research design was employed in this study since the researcher sought to examine the influence of macro factors on the mortgage growth in Kenya. The study explained the influence of the factors without any manipulation of the variables.

3.3 Data Collection

Secondary data was the preferred method for collecting data. The secondary data was source from various sources. Data on the mortgage growth rate, lending rates and exchange rates obtained from CBK. Data on inflation rates and gross domestic product growth was obtained from KNBS. The research used quarterly data for 10 years from 2007 to 2016.

3.4 Diagnostic Tests

Diagnostics test including the tests of normality, serial correlation and multicollinearity were carried out. The skewness and kurtosis were used to assess normality while serial correlation was determined via the Durbin Watson test. Finally, to assess multicollinearity the variance inflation factors and correlation analysis were carried out.

3.5 Data Analysis

Analysis of data was carried out through descriptive and inferential statistical techniques. The descriptive analysis including the mean, frequency and percentages was used to reveal data patterns. The inferential statistics, that is, linear correlations and multiple linear regressions were used to use to draw conclusions and make predictions on the study variables.

3.5.1 Analytical Model

The multiple linear regression model which was used was as follows;

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

Where,

Y = Mortgage market growth rate proxied using the Natural log of total mortgages on quarterly basis

X_1 = Interest rates proxied using the weighted average quarterly lending rates

X_2 = Exchange rates proxied by the quarterly rate of Kenyan shilling to the US dollar

X_3 = Natural log of the Real GDP proxied by the quarterly gross domestic product

X_4 = Inflation proxied by the quarterly consumer price index

β_0 = Constant

$\beta_1, \beta_2, \beta_3$ & β_4 = Regression coefficients

ε = regression error

3.6 Test of Significance

This study utilized the Fisher's one way ANOVA statistics at 0.05 level of significance to test whether specific the regression model is significant. the t statistics was used to assess the significance of the coefficients of the regression model

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND INTERPRETATION

4.1 Introduction

The chapter presents analyzed data. The chapter presents the descriptive statistics, correlation and regression analysis results and finally an interpretation of the research results.

4.2 Descriptive Statistics

This comprises of summary statistics and graphical presentations of the research data to observe the trend.

4.2.1 Descriptive Summary Statistics

Table 4.1 Summary Statistics

	Mortgages (Ln)	Interest Rates	Exchange rates (USD/Ksh)	GDP (Ln)	CPI
Mean	11.3985	15.7877	83.8138	13.6097	125.470
Std. Deviation	.79127	2.06813	11.49268	.16018	29.0350
Skewness	-.581	.738	-.041	.256	.007
Kurtosis	-1.302	-.277	-.673	-1.054	-1.210
Minimum	10.04	12.87	62.65	13.36	78.46
Maximum	12.30	20.34	103.89	13.91	175.18

Source: Research Findings

Table 4.1 indicates that the average mortgage in terms of the natural log is 11.3985 with the minimum and maximum values being 10.04 and 12.30 respectively. This is indication that the average amount of mortgage by commercial banks in terms of natural log was 11.3985. The table also shows that the average interest rate was 15.7877 then the maximum and minimum values were 20.34 and 12.87 correspondingly. This means that the average interest rates over the period was 15.7877. The table also indicates that the average exchange rates were 83.8138 with the minimum and maximum value being 62.65 and 103.89 respectively. This indicates that the average exchange rate in terms of USD to Kenyan shilling over the study period was 83.8138 respectively.

The table also indicates that the average GDP value in terms of the natural log is 13.6097 then the maximum and minimum values are 13.36 and 13.91 respectively. This is an indication that the average GDP over the considered study period was 13.6097. The results further indicate that the average CPI is 125.47 with the maximum and minimum values of 175.18 and 78.46 respectively hence an indication that the average Consumer price index over the study period was 125.47. The kurtosis values and the skewness values lie within the range of -2 and +2 which indicates that the data was normally distributed

4.2.2 Graphical Trends

4.2.2.1 Mortgages Trend

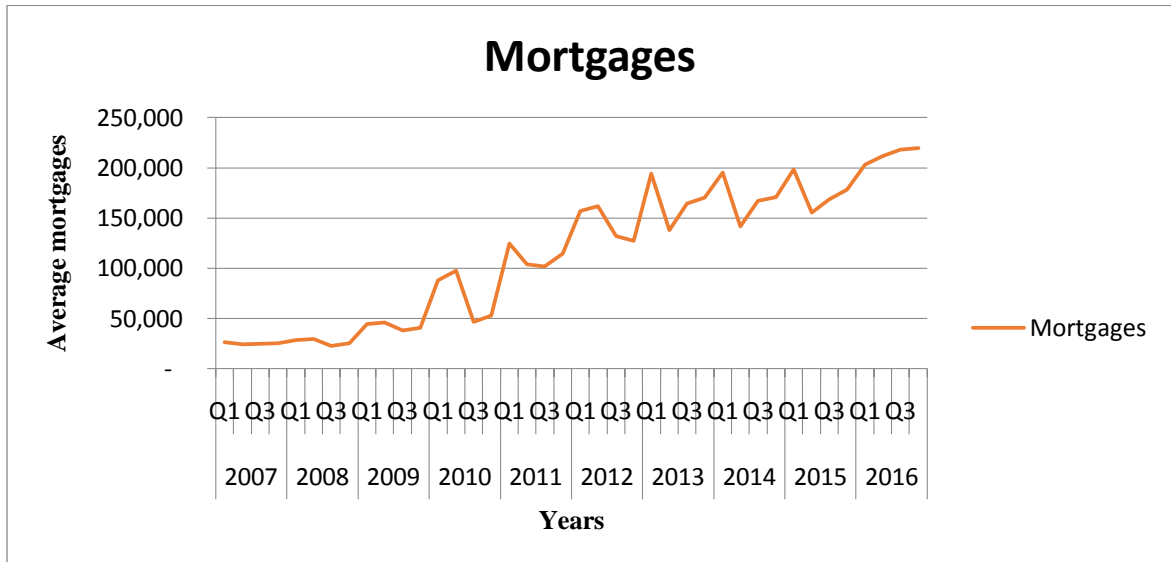


Figure 4.1 Mortgages trend

Source: Research Findings

Figure 4.1 shows that the mortgage values had been gradually increasing from up to the second quarter of 2010 then a decline was experienced in the third and fourth quarter of 2010 then a rise was witnessed a gradual increase all the way up to 2016.

4.2.2.2 Interest Rates Trend

Figure 4.2 shows that the trend of interest rates from 2007 and 2016. The figure indicates that interest rates had been gradually increasing from 2007 although up to 2011 then a sharp increase in 2012. Thereafter, the interest rates declined as from 2013 and then increased again in 2015 before decreasing in the third quarter of 2016.

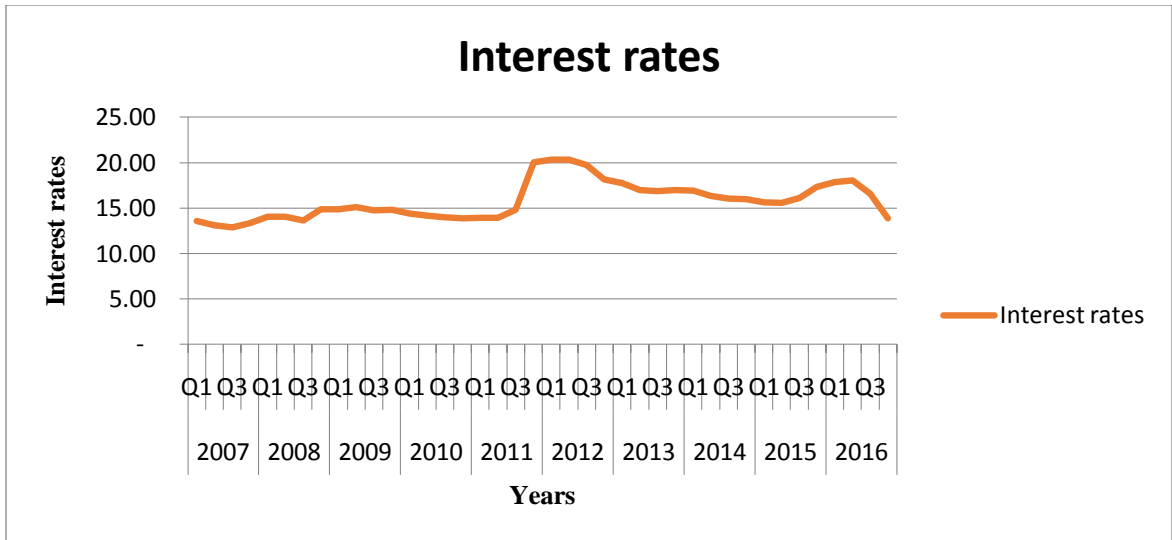


Figure 4.2 Interest rates trend

Source: Research Findings

4.2.2.3 Exchange Rates Trend

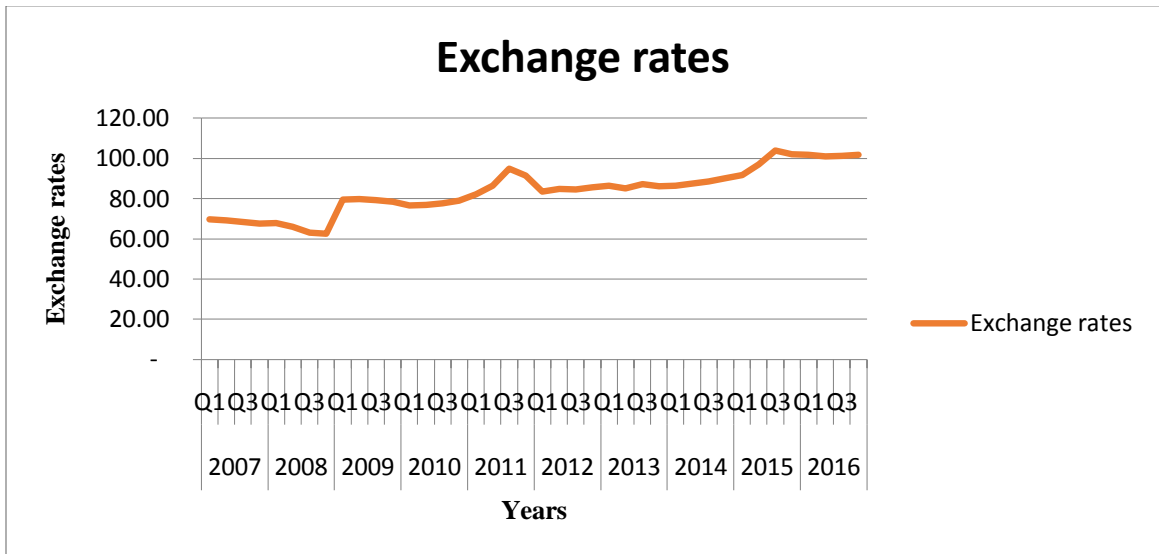


Figure 4.3 Exchange rates trend

Source: Research Findings

Figure 4.3 shows that exchange rate had been steadily increasing from 2009 all through up to 2016. However, some fluctuations were experience in between the some quarters of the year.

4.2.2.4 Real GDP Trend



Figure 4.4 GDP trend

Source: Research Findings

Figure 4.4 indicates that the trend of real GDP had been steadily rising although the considered study period. However, some fluctuations were experienced in some quarters in some of the years.

4.2.2.5 Inflation (CPI) Trend

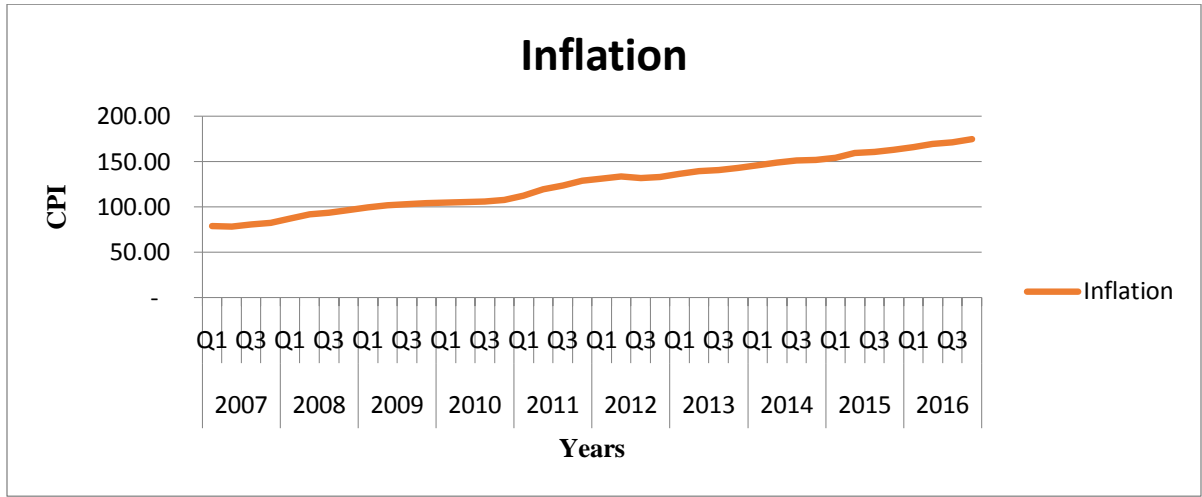


Figure 4.5 Inflation trend

Source: Research Findings

Figure 4.5 shows the inflation trend from 2007 and 2016. The figure shows that the consumer price index had been steadily increasing from 2007 and 2016.

4.3 Correlation Analysis

Table 4.2 Correlation Matrix

	Ln Mortgages	Interest Rates	Exchange rates	Ln GDP	CPI
Ln Mortgages	1				
Interest Rates	.655 ^{**}	1			
Exchange rates	.575 ^{**}	.511 ^{**}	1		
Ln GDP	.503 ^{**}	.549 ^{**}	.673 ^{**}	1	
CPI	.526 ^{**}	.581 ^{**}	.623 ^{**}	.651 ^{**}	1

** . Correlation is significant at the 0.01 level (2-tailed).

Source: Research Findings

Table 4.2 shows that there is a strong positive correlation linking interest rates, exchange rates, GDP, inflation and mortgage values. All the correlation values are less than 0.7 indicating an absence of multicollinearity among the variables.

4.4 Regression Analysis

4.4.1 Model Summary

Table 4.3 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.953 ^a	.909	.898	.25238	1.002

a. Predictors: (Constant), CPI, Interest Rates, Exchange rates, Ln GDP

b. Dependent Variable: Ln Mortgages

Source: Research Findings

Table 4.3 indicate that coefficient of determination is 0.909, which means that the independent variables, which comprises of inflation, interest rates, exchange rates, GDP explain 90.9% of variations in dependent variable (mortgage). The table also shows that the overall correlation coefficient is 0.953, which shows that there is a strong relationship between the variables. The Durbin Watson value is 1.002, which lies between the recommended range of 1 and 3 which indicates that there is no autocorrelation.

4.4.2 Analysis of Variance

Table 4.4 ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	22.189	4	5.547	87.094	.000 ^b
	Residual	2.229	35	.064		
	Total	24.419	39			

a. Dependent Variable: Ln Mortgages

b. Predictors: (Constant), CPI, Interest Rates, Exchange rates, Ln GDP

Source: Research Findings

The ANOVA results on the table above reveals significant and a good predictor of correlation linking macroeconomic variables and mortgage market growth. This is indicated by the F statistics value of 87.094 and the p value of $0.00 < 0.005$.

4.4.3 Regression Coefficients

Table 4.5 Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics		
	B	Std. Error	Beta			Tolerance	VIF	
	1	(Constant)	-15.875			7.766		-2.044
	Interest rates	.864	.423	.139	2.043	.049	.567	1.763
	Exchange rates	1.009	.731	.178	1.380	.176	.156	6.399
	Ln GDP	.896	.713	.181	1.256	.217	.125	7.988
	CPI	1.717	.645	.521	2.663	.012	.681	1.468

a. Dependent Variable: Ln Mortgages

Source: Research Findings

From table 4.5 the following regression was generated

$$Y = -15.875 + 0.864X_1 + 1.717X_4 + \varepsilon$$

The regression coefficients indicate an existence of a positive and significant correlation linking interest rates and the mortgage market growth. The results also indicate that there is an insignificant positive relationship between exchange rates and mortgage market growth in Kenya. Further, the results show that the relationship between the gross domestic product and the mortgage market growth is positive and insignificant. Finally, the results indicate that the relationship between inflation (CPI) and the mortgage market growth is positive and significant. The variance inflation factors (VIF) are 1.763, 6.399, 7.988 and 1.468 which are all less than 10 thus an indication that there is no multicollinearity.

4.5 Interpretation of the Findings

The findings of this research revealed a positive relation linking interest rate and the mortgage market growth. This means that there is a direct association between the rates of interest and the mortgage market growth in Kenya. Similarly, Avery, Brevoort and Canner (2006) found that there is a positive influence of low interest rates and credit growth of mortgage finance loans. Gerlach and Peng (2005) study on interest rates and mortgage credit facilities in Hong Kong found a positive and significant relation between interest rates and growth in long-term mortgage loans. Therefore, high interest rates push the loan repayment amount up. Thus, unstable interest and inflation rates have impacts significantly on the mortgage growth.

The findings of this research revealed a significant and positive relation between inflation and the mortgage market growth. This means that there is a direct relationship between the inflation levels and the mortgage market growth in Kenya. Similarly, Muguchia (2012) found that inflation had a positive effect on mortgage financing. Ijaiya, Lawal, and Osemene (2012) revealed that unstable inflation rates make it commercially unattractive to real estate developers.

The findings of this research revealed an insignificant and positive relation between gross domestic product (GDP) and the mortgage market growth. This means that there is an insignificant relationship between the GDP and the mortgage market growth in Kenya. Ariemba, Mboya, and Kamau, (2015) found that GDP per capita and exchange rates were significant in the model in explaining the variation in mortgage market value. Faida (2013) found that that growth in the economy and the period taken to disburse the mortgage loan impacted on the mortgage growth in Tanzania.

The findings of this research revealed an insignificant and positive relation between exchange rates and the mortgage market growth. This means that there is an insignificant relationship between exchange rates and the mortgage market growth in Kenya. However, Boamah (2011) study on the mortgage market in Ghana found that the major aspect influencing mortgage growth in the country is exchange rate. Boamah (2009) further notes that stability of the currency in a given country leads to a successful mortgage market.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter outlines the summary of the research findings, the research conclusions and the recommendation. The chapter also describes the limitation and areas, which require further research.

5.2 Summary

This research was aimed at establishing the relationship between selected macro factors and mortgage market growth in Kenya. The study was based on the arbitrage pricing theory, capital assets pricing theory and the title theory and lien theory of mortgages. The study utilized the descriptive research design and used quarterly data for a period of 10 years from 2007 to 2016. Diagnostics test including the tests of normality, serial correlation and multicollinearity were carried out. Analysis of data was carried out through descriptive and inferential statistical techniques. The inferential statistics, that is, linear correlations and multiple linear regressions were used to use to draw conclusions and make predictions on the relationship between the independent variables and the dependent variable.

The descriptive summary statistics established that the average mortgage in terms of the natural log was 11.3985 while the average interest rate was 15.7877 whereas the average exchange rates were 83.8138 respectively. The descriptive statistics also established the average GDP value in terms of the natural log was 13.6097 while the average CPI was

125.47 respectively. The graphical presentations indicated that mortgage values, the trend of interest rates, exchange rate, trend of real GDP and inflation had been gradually increasing over the study period.

The correlation results established a strong positive correlation between interest rates, exchange rates, gross domestic product, inflation and mortgage values. The coefficient of determination (R square) value was 0.909, which indicated that the independent variables, explain 90.9% of the variation in the dependent variable. The ANOVA results revealed that the model was significant since the F statistics value of 87.094 and the p value of $0.00 < 0.005$.

The regression coefficients established that there was a positive and significant relationship between interest rates and the mortgage market growth. The results also established that the relationship between inflation and the mortgage market growth was positive and significant. The research also found that there was an insignificant positive relationship between exchange rates and the mortgage market and also a positive and insignificant relationship between gross domestic product and the mortgage market growth.

5.3 Conclusions

The findings of the research found a positive and significant relationship between interest rates and the mortgage market growth. The study therefore concludes that there is a direct and significant relationship between the rates of interest and the mortgage market growth in Kenya.

The findings of the research found a positive and significant relationship between inflation and the mortgage market growth. The study therefore concludes that there is a direct and significant relationship between the inflation levels and the mortgage market growth in Kenya.

The research findings also found that there was an insignificant positive relationship between gross domestic product and the mortgage market growth. The research based on this finding concludes that there is an insignificant relationship between the GDP and the mortgage market growth in Kenya.

The research finding also found that there was an insignificant positive relationship between gross domestic product and the mortgage market growth. The research based on this finding concludes that there is an insignificant relationship between exchange rates and the mortgage market growth in Kenya.

5.4 Recommendations

The study made the conclusion that there is a direct correlation linking the rates of interest and the mortgage market growth in Kenya. The researcher therefore recommends that the central bank of Kenya should ensure that interest rates are stable to ensure that they do not affect the mortgage market growth.

The research also made the conclusion that there is a direct and significant correlation linking the inflation levels and the mortgage market growth in Kenya. The researcher thus recommends that the central bank of Kenya should also come up with strategic policy, mechanisms to ensure that inflation is maintained at the right level.

The research made the conclusion of an existence of insignificant relationship between the GDP and the mortgage market growth in Kenya. The researcher however, recommends that the government should ensure that there the economic performance in a country is good since good performance in economic terms influence other macroeconomic variables like inflation and interest rates.

Finally, the study made the conclusion that there is an insignificant relationship between exchange rates and the mortgage market growth in Kenya. The study however recommends that the government and the CBK should ensure that currency rates are stable since currency rate fluctuation may have adverse effect on the other macroeconomic variables.

5.5 Limitations of the Study

The findings of the study are limited to the considered independent variables, which included inflation, interest rates, exchange rates and gross domestic product and not all other macro-economic variables. The conclusions are made on the considered variables and not all macroeconomic variables, which might influence the mortgage market growth.

The study was carried out for the period between January 2007 and December 2016 thus the findings are limited within the considered time period. The study also relied on quarterly data on the macroeconomic variables hence its findings are based on the obtained quarterly data.

This study used secondary data, which was collected from previous and existing published records. Secondary data is normally historical and does not normally reflect the current situation though past data can be used to predict the future.

5.6 Suggestion for Further Research

The study recommends an additional research using other macroeconomic variables like money supply, foreign direct investments and the mortgage lending rates.

The study also used specific measures like the CPI for inflation, weighted lending rates to measure interest rate and the real GDP to measure economic growth. The topic can also be assessed using different measure like the GDP deflator as a measure for inflation, treasury bills rates and the GDP growth rate to measure economic growth.

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APPENDICES

Appendix I: Research Data

Year	Q	Interest Rates	Exchange rates (USD/Ksh)	GDP(M)	Ln GDP	CPI	Mortgages (M)	Ln Mortgages
2007	Q1	13.56	69.60	709,240.00	13.47	78.90	26,631	10.19
	Q2	13.14	69.16	643,248.00	13.37	78.46	24,578	10.11
	Q3	12.87	68.35	633,710.00	13.36	80.90	24,848	10.12
	Q4	13.32	67.45	647,553.00	13.38	82.68	25,285	10.14
2008	Q1	14.06	67.88	710,887.00	13.47	87.18	28,782	10.27
	Q2	14.06	65.93	687,316.00	13.44	92.14	29,902	10.31
	Q3	13.66	63.03	677,124.00	13.43	93.75	22,987	10.04
	Q4	14.87	62.65	691,916.00	13.45	96.38	25,471	10.15
2009	Q1	14.87	79.58	737,906.34	13.51	99.50	44,444	10.70
	Q2	15.09	79.81	688,912.00	13.44	101.91	46,401	10.75
	Q3	14.76	79.25	678,697.00	13.43	102.90	37,960	10.54
	Q4	14.80	78.45	693,523.00	13.45	104.07	40,908	10.62
2010	Q1	14.39	76.49	786,481.00	13.58	105.01	87,836	11.38
	Q2	14.19	76.98	713,363.99	13.48	105.65	97,637	11.49
	Q3	13.98	77.58	705,260.19	13.47	106.32	46,733	10.75
	Q4	13.87	78.94	707,158.87	13.47	108.07	52,925	10.88
2011	Q1	13.92	82.21	845,860.78	13.65	112.41	124,727	11.73
	Q2	13.91	86.33	767,418.00	13.55	119.56	104,012	11.55
	Q3	14.79	94.85	761,159.00	13.54	123.88	102,036	11.53

	Q4	20.04	91.52	789,245.00	13.58	128.81	114,815	11.65
2012	Q1	20.34	83.54	885,368.19	13.69	131.36	156,927	11.96
	Q2	20.30	84.76	818,825.41	13.62	133.63	161,660	11.99
	Q3	19.73	84.61	805,573.48	13.60	131.78	132,047	11.79
	Q4	18.15	85.71	823,766.04	13.62	133.35	127,104	11.75
2013	Q1	17.73	86.50	936,746.19	13.75	136.72	194,026	12.18
	Q2	16.97	84.98	854,348.30	13.66	139.46	138,106	11.84
	Q3	16.86	87.17	841,814.39	13.64	140.99	164,397	12.01
	Q4	16.99	86.15	862,535.49	13.67	143.25	170,320	12.05
2014	Q1	16.91	86.33	981,001.70	13.80	145.99	195,115	12.18
	Q2	16.36	87.43	918,833.17	13.73	149.27	141,558	11.86
	Q3	16.04	88.49	895,161.45	13.70	151.62	167,111	12.03
	Q4	15.99	90.04	889,416.35	13.70	152.09	171,048	12.05
2015	Q1	15.62	91.81	938,452.24	13.75	154.48	198,472	12.20
	Q2	15.57	97.01	973,401.23	13.79	159.71	155,584	11.95
	Q3	16.09	103.89	941,388.53	13.76	160.93	168,745	12.04
	Q4	17.35	102.08	1,029,804.84	13.84	163.27	178,028	12.09
2016	Q1	17.87	101.90	1,094,567.00	13.91	165.92	203,315	12.22
	Q2	18.06	101.04	1,091,008.00	13.90	169.76	211,651	12.26
	Q3	16.55	101.34	1,058,375.00	13.87	171.56	218,212	12.29
	Q4	13.88	101.73	1,055,138.00	13.87	175.18	219,885	12.30

Source: Kenya National Bureau of Statistics