

**DETERMINANTS OF RESIDENTIAL REAL ESTATE PRICES
IN NAIROBI**

BY JULIUS SUSAN MAKENA

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DECLARATION

Student Declaration:

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

Signed.......... Date *9th November, 2012*.....

JULIUS SUSAN MAKENA

D63/67900/2011

Supervisor Declaration:

This research paper has been submitted for presentation with my approval as University Supervisor.

Signed.......... Date *8/11/12*.....

DR. JOSIAH ADUDA

DEDICATION

I dedicate this project to my family members for the love, tolerance, encouragement and enduring support they have given me in pursuit of education. I also dedicate this study to Moses who has been there for my sake and for all-round support. May this be an inspiration for you to strive for even greater things in life.

Thank you and God bless you abundantly.

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ABSTRACT

Residential properties are properties that serve as housing or a dwelling and encompass single-family, duplexes and other multi-family homes. In Nairobi real estate industry has played a key role in the growth of the economy due to its high multiplier effect through increased investments in production and marketing of building materials, employment generation and wealth creation. In Nairobi real estate market, little has been done to check the set of forces behind the housing prices. As such the study sought to investigate the determinants of residential real estate prices in Nairobi. In this study a quantitative approach was followed. The researcher used data for the main players in the financial sectors which are mainly concerned with the regulation of the real estate industry. The study used secondary data which were largely quantitative and descriptive in nature. Data analysis was carried out by use of simple mean, standard deviations, percentages, regression and correlation analysis by use of Statistical Package for Social Sciences (SPSS) Version 21. The study found that the level of money in supply information can give economists and financial analysts a better understanding of the real estate market and its influence on real estate prices. To the financial analysts, it is important to realize the need to sensitize their clients to do more investment in real estate in municipality areas like Nairobi because there is need for more residential real estates. Further, they need to let financial institutions realize that real estate investment in such metropolitan and municipalities is not exhausted in financing so that they can open up possibilities for their client who would like to venture in the same.

TABLE OF CONTENTS

DECLARATION	i
DEDICATION	ii
ACKNOWLEDGEMENT	iii
ABSTRACT	iv
LIST OF TABLES	vii
ABBREVIATIONS	viii
CHAPTER ONE	1
INTRODUCTION	1
1.1 Background to the Study	1
1.1.1 Determinants of Residential Real Estate Prices	2
1.1.2 Real Estate Market in Nairobi.....	4
1.2 Statement of the Problem	8
1.3 Objectives of the Study	9
1.4 Value of the Study.....	9
CHAPTER TWO	11
LITERATURE REVIEW	11
2.1 Introduction.....	11
2.2 Theoretical Review	11
2.2.1 The Agency Theory.....	11
2.2.2 Prospect Theory	12
2.2.3 Decision Theory.....	13
2.2.4 Game Theory.....	14
2.3 Real Estate Valuation Methods.....	15
2.4 Empirical Review.....	16
2.7 Conclusion	21
CHAPTER THREE	23
RESEARCH METHODOLOGY	23
3.1 Introduction.....	23
3.2 Research Design.....	23

3.3 Population	24
3.4 Sample.....	24
3.5 Data Collection Methods.....	24
3.6 Data Analysis	25
CHAPTER FOUR	27
DATA ANALYSIS AND INTERPRETATIONS	27
4.1 Introduction.....	27
4.2 Descriptive Statistics for Interest Rates	27
4.3 Descriptive Statistics for Level of Money Supply	28
4.4 Descriptive Statistics for Inflation Rate	29
4.5 Descriptive Statistics for Population Growth.....	29
4.6 Descriptive Statistics for Employment Growth	30
4.7 Descriptive Statistics for Residential Real Estate Prices	31
4.8 Inferential Analysis.....	31
4.8.1 Karl Pearson’s Correlation on Determinants of Residential Real Estate Prices	32
4.8.2 Coefficient of Determination on Determinants of Residential Real Estate Prices	33
4.8.3 Multiple Regression Analysis on Determinants of Real Estate Prices.....	34
CHAPTER FIVE	37
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS.....	37
5.1 Introduction.....	37
5.2 Summary	37
5.3 Conclusions.....	39
5.4 Policy Recommendations.....	40
5.5 Limitations of the Study.....	40
5.6 Areas of Further Studies	42
REFERENCES	43

LIST OF TABLES

Table 4.1: Descriptive Statistics for Interest Rates.....	27
Table 4.2: Descriptive Statistics for Level of Money in Supply	28
Table 4.3: Descriptive Statistics for Inflation Rate	29
Table 4.4: Population Growth	30
Table 4.5: Employment Growth	30
Table 4.6: Residential Real Estate Prices	31
Table 4.7: Karl Pearson Correlation on Determinants of Real Estate Prices	32
Table 4.8: Coefficient of Determination on Determinants of Real Estate Prices.....	34
Table 4.9: Multiple Regression Analysis on Determinants of Real Estate Prices.....	34

ABBREVIATIONS

CBD – Central Business District

CBK – Central Bank of Kenya

CEE – Central Eastern Europe

CMA – Capital Market Authority

CPI – Consumer Price Index

GDP – Gross Domestic Product

GIS – Geographic Information System

GOK – Government of Kenya

KNBS – Kenya National Bureau of Statistics

NSE - Nairobi Securities Exchange

OECD - Organization for Economic Cooperation and Development

REITS - Real Estate Investment Trusts

SPSS - Statistical Package for Social Sciences

UK - United Kingdom

UN - HABITAT- United Nations Human Settlement Programme

USA - United States of America

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

According to Brueggeman and Fisher (2005) and Pagourtzi, Assimakopoulous, Hatzichristos and French (2003) real estate refers to land and anything fixed, immovable or permanently attached to it such as buildings and fences. Title to real estate normally includes title to air rights, mineral rights, and surface rights which can be bought, leased, sold, or transferred together or separately. Real estate is categorised into residential and non-residential properties. Residential properties are properties that serve as housing or a dwelling and encompass single-family, duplexes and other multi-family homes. They include flats, condominiums, bungalows and massionattes. These properties may be located in urban, rural or suburban areas. The non-residential properties encompass commercial, industrial, hotel/motel, institutional and recreational buildings. Commercial properties include shops, offices and car parks. This study focuses on residential properties.

Economists agree that the value or price of an asset or product is determined by the market, more specifically by the theory of supply and demand. According to the price theory the most optimal market price for any good or service is the point at which the benefit gained from those who demand the entity meets the seller's marginal cost. Aggregate demand is the total demand for goods and services in an economy at a given price. Higher prices decrease the demand for any particular good or service as they erode the purchasing power of disposable income and vice versa (Baumol & Blinder, 2011).

Aggregate supply is the relationship between the economy's price level and the amount that the output firms are willing and able to supply, determined in the long run by changes in technology, patent laws, conventions of the market place and others (McEachern, 2011). Residential real estate prices are guided by the relationship between supply and demand.

Nairobi is the capital city of Kenya and one of the largest in Africa. It was previously known as the 'city in the sun' because of its appealing environment. According to the 2009 Census Nairobi has a population of 3,138,369 people living within an area of 695KM² (KNBS, 2010). Nairobi is an international, regional, national and local hub for commerce, transport, regional co-operation and economic development connecting eastern, central and southern African countries. The city employs 25% of Kenyans and 43% of the country's urban workers and also generates over 45% of GDP hence a major contributor to Kenya's economy (UN-HABITAT, 2006). In Nairobi real estate industry has played a key role in the growth of the economy due to its high multiplier effect through increased investments in production and marketing of building materials, employment generation and wealth creation.

1.1.1 Determinants of Residential Real Estate Prices

Real estate market is a very important part of an economy. This study analyses the main determinants of residential real estate prices in Nairobi. The first determinant considered is interest rate. An interest rate is the rate at which interest is paid by a borrower for the use of money that they borrow from a lender (Brigo & Mercurio, 2006). Trends in

interest rates affect housing affordability and thus demand for new and resale homes. An increase in interest rates increases the cost of borrowing. This results in high mortgage repayments thus reducing the affordability and also the demand for property. A study done by Egert and Mihaljek (2007) found that real interest rate was an important determinant of house price in Central and Eastern Europe. The second determinant is the 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 real estate market. The excessive growth in money supply may lead to an inflationary environment and might affect the investments because of higher discount rates (Liow, Ibrahim & Huang, 2005). According to Allen and Gale (2000) the period of financial liberalisation contributed to the Japanese bubble in the real estate and stock markets during the 1980s and 1990s through the expansion of credit.

The third determinant of residential real estate prices is inflation rate. Inflation affects the purchasing power of money and also plays a significant role in real estate investment decision. According to Liow, Ibrahim and Huang (2005) inflation is measured by changes in Consumer Price Index (CPI) which measures the retail prices of goods and services purchased by households. Inflation is categorized into expected and unexpected inflation rate. Unexpected inflation rate is defined as the difference between actual and expected rate. Unexpected inflation could be a source of economic risk and a risk premium would be added for such an investment which has exposure to unexpected inflation. According to a study by Tsatsaronis and Zhu (2004) residential house prices in most industrialized countries were affected by inflation. The study noted that a generally higher inflation

could have a negative impact on house prices. Inflation explained about 25% which was the highest figure among the variables of the overall variance of house prices. The fourth determinant analysed is population growth. Population is the total number of persons inhabiting a country, city, or any district or area. Total demand for property is determined by population size and changes in the structure of the population caused by migration and long-term changes in the birth and death rates. Borowiecki (2009) indicated that residential house price changes were most sensitive to population growth in Switzerland housing economy. The last determinant is employment growth. Case and Shiller (1990) study showed that changes in employment levels were effective in predicting house prices in US.

1.1.2 Real Estate Market in Nairobi

Real estate markets are characterized by heterogeneity, consisting of a series of geographical and sectoral submarkets that lack a central trading market. There are no two properties which are identical and information on market transactions is often limited and generally not available. Real estate markets are generally characterized by infrequent trades, a negotiated pricing process, large transaction costs and rigid supply. International comparisons are complicated by differences in financing structure, regulatory framework, tax treatment, and the use of real estate collateral. The price of an existing property should in principle equal the discounted present value of the expected stream of future income (rents), which depends on expected growth in income, anticipated real interest rates, taxes and other structural factors. The price should equilibrate demand and supply in a well functioning market. The fundamental equilibrium price can be thought of as the

price at which the stock of existing real estate equals the replacement cost (Hilbers et al., 2001).

Real estate market is a key contributor to the socio-economic developments of nations as there is creation of employment through construction of houses and related infrastructure. Also real estate sector is a significant contributor to the gross domestic product (GDP) of many nations, Kenya included. For many households their owned houses not only offer an alternative for a place to live in but they also represent the most important chunk of assets in their household's portfolio. Real estate is the greatest component of private households' wealth in most industrialized countries. As a consequence, the value of their house has a major impact on households' consumption and savings opportunities (Case et al., 2004). House prices are of great interest to real estate developers, banks, policy makers or, in short, the general public as well as to actual and potential home owners (Schulz & Werwatz, 2004).

Housing is a major problem in Kenya especially in Nairobi. Despite initiatives by the Government of Kenya to ensure that Kenyans have access to basic housing requirements millions of people are living in the sprawling slums and also in other informal settlements around Nairobi (UN-HABITAT, 2008). Statistics indicate that the demand for housing, which has possibly led to increase in house prices, has been on the rise at a faster rate than the numbers of houses available or under construction (National Housing Corporation, 2009). Even though plans are underway to ensure adequate dwelling units for the Nairobi city residents are in place the Government of Kenya and the private sector

entities have been unable to meet the shortfall in housing demand, which currently stand at 150,000 units annually. The average annual supply is about 35,000 units. The GOK goal of meeting the annual housing demand is made more urgent by the bill of rights in the constitution of Kenya 2010 that provides for adequate housing as a right to all Kenyans.

The Kenya real estate market has experienced a boom since 2002, confounding many in the region. Kenya's rapid economic development and a dynamic business regime are some of the reasons for the property market to remain strong despite the dip in other markets in the world. Another key mover of real estate sector is the remittances by the Kenyans in the Diaspora (Kabukuru, 2012). In the year to July 2012, total remittances inflow to Kenya stood at US\$ 1,101 million, 42.86 percent higher than the total remittances of US\$ 770 million in the year July, 2011 (CBK, 2012).

The perimeters of Nairobi are expanding to bursting point due to the demand for real estate. Improved infrastructure like the Thika super highway project, access to utilities, communication and financial services are some of the factors attributed to influencing Kenya's real estate performance. The rising demand for quality housing and plush office space has seen the emergence of innovative and futuristic multibillion-dollar gated communities and mini cities. These include Northlands City, Thika Greens Golf Estate, Four ways Junction, Tatu City, Migaa Golf Estate and Edenville Estate on the outskirts of Nairobi. The move to introduce Real Estate Investment Trusts (REITS) by the Capital Markets Authority (CMA) is another boost to the sector players. These plans will make real estate companies to be listed in the Nairobi Securities Exchange (NSE). According to

the Kenya National Bureau of Statistics the real estate demand has exceeded the supply by more than five times during the last decade. Heavy remittances by Kenya's diaspora, hefty pensioners' funds, private equity investments and the large base of expatriates are some of the factors that have led to spiraling costs of housing and escalating property prices (Kabukuru, 2012).

There are good reasons why the public and policymakers should monitor residential property prices developments closely. In most countries, housing is generally households' single largest investment and hence house price risk may be considered to be the major financial risk they face (Cocco, 2004; Yao & Zhang, 2005). Fluctuations in residential property prices tend to have a bigger wealth effect than those of financial assets. In addition, there are strong linkages between the residential property cycle and the credit cycle and by extension the banking sector and the macro economy. This is because the purchase of a house or land is predominantly funded by mortgage loans originated by financial institutions, and real estate property is widely used as a major collateral asset for bank loans.

The valuation of real estate is required to provide a quantitative measure of the benefit and liabilities accruing from the ownership of the real estate. Valuations are required, and often carried out, by a number of different players in the marketplace such as real estate agents, appraisers, assessors, mortgage lenders, brokers, property developers, investors and fund managers, lenders, market researchers and analysts and other specialists and consultants. Market value is estimated through the application of valuation methods and

procedures that reflect the nature of property and the circumstances under which the given property would most likely trade in the open market (Pagourtzi et al., 2003).

1.2 Statement of the Problem

Price of houses in industrialized countries increased unusually in recent years and in some cases these increases did not seem to be fully explained by economic fundamentals (Hou, 2010 and Terrones & Otrok, 2004). Demand for affordable housing in Kenya, particularly in urban areas, has continued to rise without the requisite on the supply side thus increasing the prices and making the houses for the majority of Kenyans to be unaffordable. As investors and the well-to-do are putting up houses in every corner of the country, those who are economically challenged and in this case, the slum dwellers, are constantly threatened with evictions for various reasons (Hakijamii, 2012).

A number of studies have been done in Kenya on real estate prices. Kagendo (2011) carried out a study to identify the determinants of real estate property prices on the case of Kiambu municipality. The study found that location and realtors were key factors affecting real estate prices in Kiambu municipality. Kagendo also found that agents played a key role in real estate price determination in Kiambu as many property owners bought their property through them. On the other hand, an examination of the relationship between house prices and mortgage credit in Kenya showed that the changes in housing prices are positively and significantly related to the long-term evolution of mortgage credit. Most house purchases are financed by credit thus affecting prices through liquidity effects (Muli, 2011).

It is said that Kenya has been money laundering hub with illegally acquired cash from Europe, South Africa, South America, Democratic Republic of Congo, Sudan, Rwanda, Burundi, Uganda and Tanzania finding its way into local financial markets. The country has suffered the effects of money laundering especially in the property sector where values have been skyrocketing due to money being brought in from the acts of piracy off the coast of Somalia (Anyangu, 2009). This raises the question whether the injection of funds derived from money laundering could be among the reasons for the rise in residential property prices in Nairobi.

Price theory asserts that the market price reflects interaction between supply and demand in a free market economy. Prices in most areas are influenced by supply and demand forces. In Nairobi real estate market, little has been done to check the set of forces behind the housing prices. This study therefore seeks to fill in the research gap by investigating the determinants of residential house prices in Nairobi.

1.3 Objectives of the Study

To investigate the determinants of residential real estate prices in Nairobi.

1.4 Value of the Study

It is hoped that the findings of this study will add to the body of knowledge that is already in existence in the field of real estate valuation and also form a basis for further research by other researchers. As such, the study will further make a contribution to the literature

on determinants of real estate property prices which will be part of articles that will be useful to researchers who want to further in this study and to other wider stakeholders in the field. Real estate agents and brokers will also benefit from this study by getting information concerning real estate patterns and thus be able to advise their clients on these patterns.

It is also expected that the results of this study will be of importance to the lenders, especially those who advance mortgages as they would find it useful to assist them in fine tuning loan advancement decisions to real estate investors. Financial analysts should also find this study useful in providing information necessary in advising their clients in financial decisions. Additionally, since the study will draw attention to the determinants of residential real estate prices, the study will help real estate investors to make informed choices in the real estate property investment.

The findings of this study may also be used by the government and other policy making bodies as a guideline in formulation and development of policies that are concerned with real estate sector of the economy. The government as the regulator of real estate sector would benefit with the findings of this study as it would be enlightened on the various approaches that real estate firms can adopt to determine the prices of properties. Information gathered through this study would help the government to formulate policies beneficial in the best approaches in the real estate sector in Kenya.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter brings relevant literature required to find answers and connect to the research. It focuses on theoretical review, real estate valuation methods and empirical literature review.

2.2 Theoretical Review

A number of theories have been developed on real estate property prices. Some of these are the agency theory, prospect theory, decision theory and game theory.

2.2.1 The Agency Theory

The agency theory explains the relationship between the principal and the agent. An agency relationship exists whenever one party (the principal) engages another party (the agent) to perform a task on their behalf. This task involves specialized skills and it is done in exchange for reward (Eisenhardt, 1989; Balkin & Gomez, 1992). The agency problem arises as a result of the agent not acting in the best interest of the principal thus the conflict of interest. It also may consist of the agent engaging in self-serving behavior which includes task evasion.

Real estate market is a classic example of conflict of interest between the principal who is the seller of a house and the agent who is the real estate broker. A study conducted by Arnold (1992) on the principal's-agent relationship between a home owner and her

broker revealed two principal-agent problems between them. He first found the existence of agency problem since the broker plays the role as an agent who searches for buyers to purchase the house then advises the owner in setting a reservation price and provides information about current market condition. The broker may have an incentive to provide an inefficiently low level of effort if the owner is unable to monitor the broker's search activity. The second problem was that homeowners are infrequent market participants as they are not fully informed of demand and supply conditions in the housing market while brokers are well informed of market conditions. This makes the owner to rely on the broker in setting a reservation price. This informational asymmetry can create an incentive for the broker to misinterpret market information (Arnold, 1992).

2.2.2 Prospect Theory

According to prospect theory people value gains and losses differently and, as such, will base decisions on perceived gains rather than perceived losses. Prospect theory is characterized by three essential features. First, gains and losses are examined relative to a reference point. Second, the value function is steeper for losses than for equivalently sized gains. Third, the marginal value of gains or losses diminishes with the size of the gain or loss. Under prospect theory, a seller with a potential loss compared to his purchase price would be expected to set a higher reservation price than a seller with a prospective gain. The former can avoid or mitigate loss by setting a sufficiently high reservation price and sticking with it until trade goes through. Genesove and Mayer (2001) examining seller behavior in the Boston housing market using the home purchase price as the reference point find evidence that loss aversion explained the behavior of

condominium sellers in their choices of asking prices and in their decisions as to whether to accept an offer or not. They find that property owners, faced with a prospective loss, set a higher asking price and in fact do sell at a higher price than other sellers, suffering as a result less sale frequency or, in effect, a longer time on the market.

2.2.3 Decision Theory

Decision theory is a theory about people's actions. It has both a prescriptive and a descriptive version. The prescriptive version says that a person should choose the action that maximizes expected utility. The description version says that a person does choose the action that maximizes expected utility. Residential real estate decisions are made by a variety of actors pursuing a broad range of objectives. These actors include home buyers and renters, builders, brokers, bankers, and the public agencies that provide physical networks and services such as streets, utilities and schools. Property managers also face every day critical risk management decisions as determining the price for sell or rent of a property, choice of financing, investment analysis, real estate portfolio management, real estate valuation. In these cases a decision support system can be very valuable in order to minimize the risk of potential losses due to wrong decisions. Roberts and Henneberry (2007) explore the decision making processes of property investors. The study covered a broader sample of countries across three European markets namely France, Germany and U.K. Interviewees in this study constituted those most likely to engage directly in property investment decision-making. The study proposes a ten stage normative model. The study finds that the actual decision-making process is much simpler than the normative model suggested. Both the UK and the French and German models are found

to follow a broadly similar path, with investors setting a strategy, searching for properties, undertaking an analysis of market conditions and purchasing properties that fulfill that strategy (Roberts & Henneberry, 2007).

2.2.4 Game Theory

Game theory is built upon the assumption that the decision making of players is always interdependent. Consequently, players have to think ahead and devise a strategy based on expected countermoves of the other player(s). Basically, game theory deals with the modeling of situations of conflict and cooperation, together with the analysis of these models using mathematical techniques. Several scholars have tried to analyze the real estate market using game theory. Jianrong and Binyi (2004) established a three-party dynamic game model with incomplete information and concluded that policies have been determining the basic direction of China's real estate market. Zhenguo and Li (2006) using game theory demonstrated it's the individuals' rational behaviors that resulted in the arising, transmission, and burst of bubbles in the China real estate market. Ning and Zhanglu (2006) studied the formation of housing price in China's real estate market and found that the developers would always develop and sell property at a high price. Geng and Yun (2006) pointed out that the real estate market is a typical asymmetric information market. The pricing of commercial real estate and consumers' decision-making constitutes a dynamic game with incomplete information. The developers could take their information advantage to influence consumers' decisions and push up the real estate price. Yuanbin (2006) thought that the price game between consumers and

speculative investors are one of the factors contributing to the high housing price in China.

2.3 Real Estate Valuation Methods

Property valuation process may be described as the carefully considered estimate of the worth of the property based on experience and judgment by identifying and assessing characteristics of a given property. This valuation is of great importance and interest to many socio-economic agents, including property buyers and sellers, municipalities (tax purposes), financial institutions (loan policies) and estate brokerage firms. All these agents want to have a realistic description of the real estate market behavior in order to make right decisions. The market value is the most probable price that the property would exchange for under competitive market conditions in which the forces of demand and supply are left to operate freely (Herzog, 1963). In real estate valuation the appraiser's job is to determine the fair market value of the house, while the buyer and seller want to find, respectively, the lowest and highest feasible price for it.

In the estimation of the value of residential property, three approaches are used (Brueggeman & Fisher, 2005). They are the sales comparison approach, the cost approach and the income approach. The use of a particular property valuation technique is dependent on property type and the purpose of the valuation. The sales comparison approach estimates the value of a property by making a comparison of the selling prices of recently paid similar properties followed by adjustments for dissimilarities. The valuer's problem is to determine what the market considers to be recent and similar. Sales

comparison approach is often the most simple and efficient means of determining market value, especially for single-family residential properties in an active market (Dale & McLaughlin, 1988).

Income approach states that the market value of an interest in property is equal to the present value of the net income that should come from the property in future. The net income is the gross income less the cost of overheads, such as depreciation of the building stock and its maintenance and upkeep. The valuer's needs to determine the net benefits expected from the property by comparison with similar properties and then determine the market discount rate by analysis of recent sales of similar assets (Dale & McLaughlin, 1988). The cost approach assumes that the cost of replacement, less appropriate depreciation, is equal to the value. The problem is to assemble suitable cost data including the cost of the site, and to estimate depreciation rates. The method is particularly useful for insurance purposes, where the cost of site clearance may be added to cover the possibility of a building being destroyed by fire, and for valuing new constructions (Dale & McLaughlin, 1988).

2.4 Empirical Review

Studies conducted on real estate have mainly focused on real estate bubbles, analyzing relationship between real estate market and other economic sectors and changes in real estate prices. Mishkin (2007) finds that increases or decreases in house prices fundamentally affect economic activity and economic fluctuations and as a result of this can alter the business cycle. In addition, the housing and real estate markets account for a

significant share of national aggregate wealth. According to Case and Shiller (2003) the development of real estate market is inextricably linked to the condition of the banking sector and to financial and credit markets as well as the fiscal structure of the country.

Klyuev (2008) using the fundamentals model and the asset pricing approach studied the development of house prices in the United States from 1970 to 2008. In the fundamental model for house price determinants, he uses real disposable income, construction cost, unemployment, real mortgage rate and average household size. Klyuev links real rents and interest rates under asset pricing approach. In this study both methods yield substantial overvaluation in the U.S. housing market starting from 2001. He also found that house prices can deviate from their equilibrium values for long periods of time.

Selim (2008) using hedonic regression model analysis the determinants of house prices in Turkey for both urban and rural areas. The study reveals that water system, number of rooms, type of house, pool, house size, type of building and locational characteristic are the most significant variables affecting the house prices. Stepanyan, Poghosyan & Bibolov (2010) in their analysis of house price determinants in the selected Former Soviet Countries found fundamentals such as GDP and external financing as the significant drivers of house prices. They also found that house prices adjust to the long-run equilibrium in response to the shocks and correction seems to be rather speedy. On the other hand Chung (2012) focuses on Hong Kong real estate market from 1984Q1 to 2009Q4 and determined that housing rental, excess liquidity, stock price and interest rate are the significant factors affecting the prices of the residential housing units in Hong

Kong, Chung (2012) also found that housing rental, excess liquidity and stock price has a positive relationship while interest rate has a negative relationship with residential property prices.

Egert and Mihaljek (2007) used panel DOLS techniques in their study of determinants of house price dynamics in eight transition economies of central and eastern Europe and 19 OECD countries. They analysed fundamentals such as real income, real interest rates and demographic factors. They also analysed the importance of transition specific factors such as improvements in housing quality and in housing market institutions and housing finance. In their study they established that per capita GDP, real interest rates and housing (or private sector) credit as significant factors affecting house prices in both CEE and OECD countries. Demographic factors and labour market developments also played an important role in house price dynamics.

Tsatsaronis and Zhu (2004) did a study on cross-country evidence to determine what drives housing price dynamics. The study shows that house prices generally depend on inflation and the yield curve and bank credit. On average, across countries, inflation accounts for more than half of the total variation in house prices at the five-year horizon studied. In the short run the size of the impact was even larger as its contribution nears 90% of the total price variation in the one-quarter horizon and drops to about two thirds over the one-year horizon. The study also indicate that a declining real short-term interest rate environment, which kept servicing costs of ever larger mortgages within the household budget limits imposed by current income, typically boost the demand for

residential real estate. According to the study low interest rates were the major contributors to the booming housing markets in most industrialized countries such as Australia, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, Netherlands, Norway, Spain, Sweden, Switzerland, United Kingdom and the United States.

Mulaku and Kamau (2010) conducted a study on computer-assisted analysis of the impact of location on residential property value in Nairobi. The selected neighborhoods where the study was conducted are Buruburu, Karen and Westlands. This study has shown the impact of location in the modeling of real estate property values to be significant. The results show three factors; distance to CBD, area of parcel, and distances to desirable amenities, stands out consistently as strong value determinants in all the three areas of Buruburu, Karen, and Westlands. The case study demonstrated that multiple regression analysis and GIS-based geostatistical analysis are viable computer-assisted valuation techniques that can bring some level of automation to the traditional valuation process, with the potential for ultimately building a knowledge-based GIS or expert system that would be an intelligent digital assistant to a human valuer. Such automation is especially desirable in mass valuation situations that would clearly arise when creating new valuation rolls or updating grossly outdated ones (Mulaku & Kamau, 2010).

Omboi (2011) conducted a study on the factors influencing real estate property prices in Meru Municipality. The variables used in this study are income of real estate investors, location of a real estate property, demand and realtors and brokers. Income from real

estate property was found to be the key factor influencing real estate property prices in Meru Municipality accounting for more than 70% of the changes in property prices other factors remaining constant. Demand for real estates in Meru was found to be the second most important factor influencing real estate prices as it contributed to 20% of the changes in prices. Location of the property and realtors and brokers were found to be insignificant in determining property prices in Meru Municipality.

Smith and Smith (2006) define a bubble as a situation in which the market prices of real estate assets rise far above the present value of the anticipated cash flow from the assets. Several researches have been done on real estate bubbles in different countries. Hou (2010) conducted a study in two cities in China (Beijing and Shanghai). He showed that between 2005 and 2008 Beijing appeared to have been on the way of forming a housing price bubble. In Shanghai, Hou found that a housing bubble perhaps existed from 2003 to 2004. Due to bubble forming Beijing market was divided into three stages which are cycle peak stage (1991-1997), cycle trough stage (1998-2003) and the second cycle peak stage (2004-2008).

The housing bubble in the USA grew up alongside the stock bubble in the mid-90s. The bubble caused and increased demand for housing which led to increase in house prices. The increase in prices in both the ownership and rental markets had a substantial supply-side effect and housing starts rose substantially from the mid-90s through the late 90s. By 2002, housing starts were almost 25% above the average rate over the three years immediately preceding the start of the bubble (1993-95). Low interest rates from

mortgages accelerated the run-up in house prices which had the predictable effect on savings and consumption. The bubble began to burst in 2007 as the building boom led to so much over-supply that prices could no longer be supported. The prices started to decline in the year 2006 and by the end of the year 2008, the Case and Shiller home price index (2008) reported the largest price drop in history. The increased rates of foreclosure in 2007-2007 among the USA home owners led to a crisis in 2008 for the subprime, mortgage, hedge fund and foreign bank markets (Baker, 2008).

The rapid rises and increase in house and land prices in Kenyan real estate market could indicate that a housing bubble is forming. Globally, key signals as to whether or not a bubble is forming in a market are increasing cases of fraud; investors owning a high proportion of properties; large number of holiday homes being built – indicating that there would not be enough buyers to take up the properties, and weak re-sale markets. In Kenya, there are increased cases of fraud in land and property purchases. In November 2011, the government demolished real estate projects worth millions of shillings in Syokimau in Nairobi City, saying the homes stand on fraudulently acquired public land (Nyagah, 2012).

2.7 Conclusion

Real estate market is a very important part of Kenyan economy. The inelasticity of housing supply makes the real estate market different from markets of goods and services. The volatility of land and housing prices has been of concern to both the governments and individuals since they influence socio-economic conditions and also

have an impact on national economic conditions. Capital gains expectations from housing investments affect their prices by increasing their demand thus leading to high volatility in house prices. This in turn leads to increase in house prices as the supply of housing cannot adjust in the short run.

Several studies have been carried out on the determinants of housing prices such as Case and Shiller (1990), Bourassa and Hendershott (1995) and Abelson et al., (2005). However, in Kenya little research has been done on real estate valuation. Reliable data on properties is very difficult to obtain as property managers are unwilling to disclose it either for confidentiality purpose or to avoid losing out to competition. Also the tools for analysis in property valuation are very limited and this makes analyses to be based on similar events in international property markets. While real estate continues to significantly impact investors in Kenya, they do not have real information on the pricing to enable them invest wisely. This research aims to fill this gap in study and also provide information to interested stakeholders and concern to investors on key areas of opportunity in the real estate market.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the research methodology and design that was adopted in this study. The chapter highlights the research design, population, sample size, data collection methods and data analysis techniques.

3.2 Research Design

A research design is a programme to guide the researcher in collecting, analyzing and interpreting observed facts (Orotho, 2003). This study used cross sectional research with a time series approach where a quantitative approach was followed to investigate the determinants of residential real estate prices in Nairobi. That is, it was undertaken at a particular point in time. This approach was credited due to the fact that it allows analysis of the relations of variables under study using linear regression as long as the sampling units for the study are many. It also allowed greater flexibility in terms of money and time as well as avoiding the hardship of hunting for respondents more than once to produce high response rate. These reasons justify why this study became cross sectional study. Quantitative research is defined as a formal, objective, systematic process to describe and test relationships and examine cause and effect interactions among variables. This was an analytical study which used panel data to measure, first, the factors that affect the residential real estate prices and, secondly, the association of these factors to residential real estate prices. Thus the study adopted a time series or longitudinal approach, supplemented by cross-sectional comparisons.

3.3 Population

Target population is the specific population about which information is desired. According to Ngechu (2004), a population is a well defined or set of people, services, elements, events, group of things or households that are being investigated. In this study, the researcher used data for the main players in the financial sectors which are mainly concerned with the regulation of the real estate industry. As such secondary data for five years was obtained from Central Bank of Kenya (CBK) data source, Kenya National Bureau of Statistics and HassConsult Limited.

3.4 Sample

Ngechu (2004) underscores the importance of selecting a representative sample through making a sampling frame. From the population frame the required number of subjects, respondents, elements or firms were selected in order to make a sample. The sampling plan describes how the sampling unit, sampling frame, sampling procedures and the sample size for the study. The sampling frame describes the list of all population units from which the sample was selected (Cooper & Schindler, 2003). This study used secondary data for five years which was obtained from Central Bank of Kenya (CBK) data source, Kenya National Bureau of Statistics and HassConsult Limited.

3.5 Data Collection Methods

The study used secondary data which were largely quantitative and descriptive in nature. The secondary data to be collected was obtained from Central Bank of Kenya (CBK) data source, Kenya National Bureau of Statistics and HassConsult Limited.

3.6 Data Analysis

Data analysis is the process which start immediately after data collection and ends at the point of interpretation and processing (Mugenda & Mugenda, 2003). Data analysis was carried out by use of simple mean, standard deviations, percentages, regression and correlation analysis by use of Statistical Package for Social Sciences (SPSS) Version 21.

Regression analysis was used to come up with the model expressing the relationship between the dependent variable (Residential Real Estate Prices) and independent variables; interest rate, level of money supply, inflation rate, population growth and employment growth.

The Multiple Regression equation or function that includes all the independent and dependent variables for this study was computed as follows:

$$RREP = \beta_0 + \beta_1 INTR + \beta_2 LMS + \beta_3 INFR + \beta_4 PPG + \beta_5 EMPG + \varepsilon$$

Where;

RREP = Residential Real Estate Price

INTR = Interest Rate

LMS = Level of Money Supply

INFR = Inflation Rate

PPG = Population Growth

EMPG = Employment Growth

β = regression coefficient (parameter of the function)

ε = the error term

The multiple regression function shown above is to investigate the effect of each of the independent variable on dependent variable at the same time and of the same set of analysis. The changing in value β would be the degree of effects on RREP and the positive and negative sign of the value showed how the direction of effects would be. The higher the value of β for a particular variable represents the higher the effects of that variable on RREP.

Pearson Correlation Analysis is the statistical tool that indicates the strength and direction of the linear relationship between two random variables. Correlation was used to check the overall strength to establish regression model and individual significance of the independent variables.

CHAPTER FOUR

DATA ANALYSIS AND INTERPRETATIONS

4.1 Introduction

This chapter presents the analysis and interpretations of the data from the field. It presents analysis and findings of the study as set out in the research methodology on the determinants of residential real estate prices in Nairobi. The data was gathered exclusively from the published reports obtained from the Central Bank of Kenya (CBK) data source, Kenya National Bureau of Statistics and HassConsult Limited. The data obtained was fed into SPSS version 21.0 and used to compute the ratios used as proxies to measure determinants of residential real estate prices in Nairobi. This chapter sets off with the descriptive statistics then it presents tests of the determinants. In addition to the descriptive analysis, regression analysis and Karl Pearson Correlation analysis were conducted. Discussions of these findings are presented in this chapter.

4.2 Descriptive Statistics for Interest Rates

To establish the relationship between interest rates and real estate prices a descriptive analysis was done. The study collected data on the interest rates over a period of five years, i.e. from year 2007 to year 2011. The results are as shown in table 4.1.

Table 4.1: Descriptive Statistics for Interest Rates

Year	2007	2008	2009	2010	2011	Mean	Std. Dev.
Average Interest Rates (%)	6.80	7.71	7.38	3.61	8.70	6.84	1.931

Source: Study Data, 2012

From the study, the average interest rate for the year 2007 was 6.80%. In 2008, the average was 7.71%, in 2009 the average interest rate was 7.38%, in 2010 the recorded interest rate was 3.61% while in 2011 the interest rate was 8.70%. According to the results the highest interest rate recorded was 8.70% while the lowest interest rate was 3.61%. The mean score on this aspect was 6.84 and the standard deviation was 1.931. The interest rate has a long run influence on price and may rise with a tightening of liquidity conditions related to stricter macro-economics.

4.3 Descriptive Statistics for Level of Money Supply

Money in supply is another factor that determines the real estate prices. The level of money in supply information can give economists and financial analysts a better understanding of the real estate market and its influence on real estate prices. The results on this factor over the period of 5 years are depicted in table 4.2.

Table 4.2: Descriptive Statistics for Level of Money in Supply

Year	2007	2008	2009	2010	2011	Mean	Std. Dev.
Amount	709,63	850,51	960,54	1,183,36	1,403,33	1,021,480,	274,859,95
in	6,916,6	4,083,3	7,000,0	3,500,00	6,416,66	000,000.00	9,888.6677
KShs.	67	33	00	0	7	00	0

Source: Study Data, 2012

The study results show that the average amount of money in supply in year 2007 was KShs. 709,636,916,667, during year 2008 the level of money in supply was KShs. 850,514,083,333, the level of money in supply in year 2009 was KShs. 960,547,000,000, in 2010 was KShs. 1,183,363,500,000, while in 2011 the level of money in supply was

KShs. 1,403,336,416,667. The mean score over the period was 1,021,480,000,000.0000, while the deviation from the calculated mean was 274,859,959,888.66770. The money in supply is likely to influence the price of real estate properties. The rise in property prices is well explained by highly supportive macroeconomic fundamentals which include the aspect of money in supply which drives the prices of commodities and properties high when it is in abundance.

4.4 Descriptive Statistics for Inflation Rate

Inflation has a significant explanatory power on the real estate prices. In this study the data is expressed in terms of geometric calculation for inflation for the period between year 2007 and 2011. These results are summarized in table 4.3.

Table 4.3: Descriptive Statistics for Inflation Rate

Year	2007	2008	2009	2010	2011	Mean	Std. Dev.
Average Inflation	4.3	16.2	9.4	4.1	14.0	9.40	5.550

Source: Study Data, 2012

According to the results, year 2008 recorded the highest geometric inflation rates of 16.2%, followed by year 2011 with 14.0%, then year 2009 at 9.4%, then 2007 with 4.3%, while year 2010 recorded the lowest at 4.1%. The mean score for the period recorded was 9.4 and the standard deviation was 5.55.

4.5 Descriptive Statistics for Population Growth

The study was also interested in establishing the population growth over the same period. The data obtained from the sources is as displayed in table 4.4.

Table 4.4: Population Growth

Year	2007	2008	2009	2010	2011	Mean	Std. Dev
Average Pop. growth	2,981,179	3,092,164	3,205,414	3,300,156	3,651,272	3,246,036.82	256,233.13934

Source: Study Data, 2012

From the data above, the population growth was in an increasing trend over the years. As such, year 2007 recorded the least average population growth of 2,981,179, followed by year 2008 with 3,092,164, then 2009 with 3,205,414, then year 2010 with 3,300,156, while year 2011 recorded the highest average population growth of 3,651,272. On this, the mean score was 3,246,036.82, while the deviation from this calculated mean was 256,233.13934.

4.6 Descriptive Statistics for Employment Growth

Table 4.5: Employment Growth

Year	2007	2008	2009	2010	2011	Mean	Std. Dev
Employment growth	479,300	488,400	503,400	521,100	538,600	506,160.00	24,083.45905

Source: Study Data, 2012

On the average employment growth, year 2007 recorded the lowest employment growth with 479,300, year 2008 followed with 488,400, then year 2009 at 503,400, then year 2010 with 521,100 and year 2011 recorded the highest employment growth with 538,600. The mean score for employment growth over the years was 506,160.00, while standard deviation was 24,083.459.

4.7 Descriptive Statistics for Residential Real Estate Prices

The main aim of this study was to investigate the determinants of residential real estate prices. The study therefore found it worth to investigate the residential real estate prices over the period under study. Table 4.6 shows the results.

Table 4.6: Residential Real Estate Prices

Year	2007	2008	2009	2010	2011	Mean	Std. Dev
Prices	16,537,449.00	18,212,041.50	19,402,731.00	20,458,792.75	21,352,515.75	19,192,706.02	1,892,350.209

Source: Study Data, 2012

As expected there has been a gradual increase of the residential real estate prices since year 2007 all through to year 2011. The mean score for the period was 19,192,706.02 and the standard deviation was 1,892,350.209. The rise in property prices is well explained by macroeconomic fundamentals.

4.8 Inferential Analysis

Inferential analysis is utilized in this study to determine if there is a relationship between an intervention and an outcome, as well as the strength of that relationship. The inferential statistics analysis aimed to reach conclusions that extend beyond the immediate data alone between the independent variables in this study. The study conducted inferential analysis to establish the relationship between the independent variables and the dependent variable of which involved a Karl Pearson Correlation analysis, coefficient of determination and a multiple regression analysis. The independent

variables in this study included interest rate, level of money supply, inflation rate, employment growth and population growth while the dependent variable was residential real estate prices.

4.8.1 Karl Pearson's Correlation on Determinants of Residential Real Estate Prices

To quantify the strength of the relationship between the variables, the researcher used Karl Pearson's coefficient of correlation (r) to study the correlation between the study variables and the findings.

Table 4.7: Karl Pearson Correlation on Determinants of Real Estate Prices

FACTOR		RREP	INTR	LMS	INFR	PPG	EMPG
RREP	Pearson Correlation	1	-.049	.967	.259	.923	.972
	Sig. (2-tailed)	.	.938	.007	.674	.026	.006
INTR	Pearson Correlation	-.049	1	.008	.740	.219	-.021
	Sig. (2-tailed)	.938	.	.990	.153	.724	.974
LMS	Pearson Correlation	.967	.008	1	.240	.976	.997
	Sig. (2-tailed)	.007	.990	.	.698	.005	.000
INFR	Pearson Correlation	.259	.740	.240	1	.352	.182
	Sig. (2-tailed)	.674	.153	.698	.	.561	.769
PPG	Pearson Correlation	.923	.219	.976	.352	1	.969
	Sig. (2-tailed)	.026	.724	.005	.561	.	.007
EMPG	Pearson Correlation	.972	-.021	.997	.182	.969	1
	Sig. (2-tailed)	.006	.974	.000	.769	.007	.

From the findings, it was clear that there was relationship between residential real estate prices and various factors studied. Employment growth showed a strong positive correlation with residential real estate prices as shown by a correlation figure of 0.972. It was also clear that there was a strong relationship between residential real estate prices and population growth which was in a positive direction with a correlation figure of 0.923. There was also a positive correlation between residential real estate prices and inflation rate with strength of correlation value of 0.259 and a positive correlation between residential real estate prices and level of money in supply with a correlation value of 0.967. However, the study found that there exist a negative correlation between residential real estate prices and interest rate with a figure of -.049. These results show that there was positive correlation between residential real estate prices and level of money supply, inflation rate, employment growth and population growth and a negative correlation between residential real estate prices and interest rate.

4.8.2 Coefficient of Determination on Determinants of Residential Real Estate Prices

The coefficient of determination is a measure of how well a statistical model is likely to predict future outcomes. The coefficient of determination, r^2 is the square of the sample correlation coefficient between outcomes and predicted values. As such it explains the extent to which changes in the dependent variable can be explained by the change in the independent variables or the percentage of variation in the dependent variable (residential real estate prices) that is explained by all the five independent variables (interest rate, level of money supply, inflation rate, employment growth and population growth).

Table 4.8: Coefficient of Determination on Determinants of Real Estate Prices

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.792 (a)	.627	.303	.125

Predictors: (Constant), interest rate, level of money supply, inflation rate, employment growth and population growth.

The five independent variables that were studied, explain only 62.7% of the residential real estate prices as represented by the R^2 . This therefore means the five independent variables only contribute about 62.7% to the residential real estate prices while other factors not studied in this research contribute 37.3% of the residential real estate prices.

4.8.3 Multiple Regression Analysis on Determinants of Real Estate Prices

In addition, the researcher conducted a multiple regression analysis so as to establish the determinants of residential real estate prices in Nairobi. Multiple regression is a statistical technique that allows us to predict a score of one variable on the basis of their scores on several other variables. The main purpose of multiple regressions is to learn more about the relationship between several independent or predictor variables and a dependent or criterion variable.

Table 4.9: Multiple Regression Analysis on Determinants of Real Estate Prices

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.224	.312		4.358	0.000
Interest rate	-0.353	.088	-.167	1.379	0.0041
Level of money supply	0.217	0.1440	0.185	.776	0.0387
Inflation rate	0.118	0.0847	0.023	0.4069	0.0460
Employment growth	0.299	0.0715	0.235	2.7936	0.0440
Population growth	0.272	0.1264	0.089	.849	0.0380

Dependent Variable: residential real estate prices

The researcher conducted a multiple regression analysis so as to determine the relationship between residential real estate prices and the five independent variables. The regression equation ($Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5$) now becomes:

$$Y = 1.224 - 0.353X_1 + 0.217X_2 + 0.118X_3 + 0.299X_4 + 0.272X_5$$

Whereby Y = Residential real estate prices

X_1 = Interest rate

X_2 = Level of money supply

X_3 = Inflation rate

X_4 = Employment growth

X_5 = Population growth

According to the regression equation established, taking all factors (interest rate, level of money supply, inflation rate, employment growth and population growth) constant at zero, the residential real estate prices would be 1.224. The data findings analyzed also shows that taking all other independent variables at zero, a unit increase in interest rate would lead to 0.353 decrease in the residential real estate prices; A unit increase in level of money in supply lead to a 0.217 increase in residential real estate prices; a unit increase in inflation rate will lead to a 0.118 increase in residential real estate prices; a unit increase in employment growth will lead to a 0.299 increase in residential real estate prices whereas a unit increase in population growth will lead to a 0.272 increase in residential real estate prices. These results infer that increased employment growth contributes more to residential real estate prices, followed by population growth and level of money supply, while inflation rate contributes the least to residential real estate prices

and an increase in interest rate leads to a consequential decrease in the price of residential real estates.

At 5% level of significance and 95% level of confidence, interest rate had a 0.0041 level of significance, level of money supply had a 0.0387 level of significance, inflation rate showed a 0.0460 level of significant, employment growth had a significant level of 0.0440; while population growth showed a 0.0380 level of significance. Hence the most significant factor in determining the residential real estate prices in Nairobi is interest rate. The analysis is based on the regression described above, which treats the determination of real estate price fundamentals as region-specific/city-level (or market-level) and relies on a panel data regression to analyse the patterns of long and short-run dynamics.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The purpose of this study was to investigate the determinants of residential real estate prices in Nairobi. Having identified the problem of study in chapter one, reviewed existing literature and shown gaps of knowledge in chapter two, chapter three explained the methods that the study used to collect data and chapter four analyzed the data obtained from the study. This chapter provides the summary of the findings, the conclusions and recommendations of the study based on the objective of the study. The chapter finally presents the suggestions for further studies.

5.2 Summary

The study found that the highest interest rate recorded was 8.70% while the lowest interest rate was 3.61%. The study also found that the level of money in supply information can give economists and financial analysts a better understanding of the real estate market and its influence on real estate prices. The average amount of money in supply in year 2007 was KShs. 709,636,916,667, during year 2008 the level of money in supply was KShs. 850,514,083,333, the level of money in supply in year 2009 was KShs. 960,547,000,000, in 2010 was KShs. 1,183,363,500,000, while in 2011 the level of money in supply was KShs. 1,403,336,416,667.

The study also found that inflation has a significant explanatory power on the real estate prices. Year 2008 recorded the highest geometric inflation rates of 16.2%, followed by

year 2011 with 14.0%, then year 2009 at 9.4%, then 2007 with 4.3%, while year 2010 recorded the lowest at 4.1%. The study further established that the population growth was in an increasing trend over the years with 2007 recording the least average population growth of 2,981,179 while year 2011 recorded the highest average population growth of 3,651,272.

The study found that year 2007 recorded the lowest employment growth with 479,300, year 2008 followed with 488,400, then year 2009 at 503,400, then year 2010 with 521,100 and year 2011 recorded the highest employment growth with 538,600. The study also found that there has been a gradual increase of the residential real estate prices since year 2007 all through to year 2011. From the inferential analysis, there was positive correlation between residential real estate prices and level of money supply, inflation rate, employment growth and population growth and a negative correlation between residential real estate prices and interest rate. The five independent variables that were studied, explain only 62.7% of the residential real estate prices as represented by the R^2 .

According to the regression equation established, taking all factors (interest rate, level of money supply, inflation rate, employment growth and population growth) constant at zero, the residential real estate prices would be 1.224. The data findings analyzed also shows that taking all other independent variables at zero, a unit increase in interest rate would lead to 0.353 decrease in the residential real estate prices; A unit increase in level of money in supply lead to a 0.217 increase in residential real estate prices; a unit increase in inflation rate will lead to a 0.118 increase in residential real estate prices; a

unit increase in employment growth will lead to a 0.299 increase in residential real estate prices whereas a unit increase in population growth will lead to a 0.272 increase in residential real estate prices.

5.3 Conclusions

The study concludes that the interest rate has a long run influence on price and may rise with a tightening of liquidity conditions related to stricter macro-economics. The level of money in supply information can give economists and financial analysts a better understanding of the real estate market and its influence on real estate prices. The rise in property prices is well explained by highly supportive macroeconomic fundamentals which include the aspect of money in supply which drives the prices of commodities and properties high when it is in abundance.

The study also concludes that inflation has a significant explanatory power on the real estate prices. The population growth was in an increasing trend over the years and employment growth has also seen an upward trend over the years. As well, there has been a gradual increase of the residential real estate prices.

The study also concludes that increased employment growth contributes more to residential real estate prices, followed by population growth and level of money supply, while inflation rate contributes the least to residential real estate prices and an increase in interest rate leads to a consequential decrease in the price of residential real estates. From

the study the most significant factor in determining the residential real estate prices is interest rate.

5.4 Policy Recommendations

From the findings and conclusions, the recent, rapid rise in property prices is well explained by highly supportive macroeconomic fundamentals with the equilibrium price derived from the model tracking the actual price quite closely. To the financial analysts, it is important to realize the need to sensitize their clients to do more investment in real estate in municipality areas like Nairobi because there is need for more residential real estates. Further, they need to let financial institutions realize that real estate investment in such metropolitan and municipalities is not exhausted financing so that they can open up possibilities for their clients who would like to venture in the same.

5.5 Limitations of the Study

The study encountered various limitations that were likely to hinder access to information that the study was looking for. The first limitation of study was its inability to include more institutions across the Country. This was a study focusing on main players in the financial sectors which are mainly concerned with the regulation of the real estate industry. As such secondary data was obtained from Central Bank of Kenya (CBK) data source, Kenya National Bureau of Statistics and HassConsult Limited in Kenya. The study could have covered more institutions across country so as to provide a broader based analysis, however time and resource constraints placed this limitation. The study

countered this problem by carrying a study across the segment incorporating data for five years and serve as a representative. This was a difficult issue to investigate, especially given the difficulty of collecting data on residential properties. Written information required for this study was confidential to respective organizations like the regulator and the property management agencies. Literature review was scanty. The researcher overcame this by using more of documented information, desk search method and collecting secondary data from the real estate sector.

Although the results can be considered statistically significant in most parts, the study was faced with a limitation of incorporating only the firms concerned with the regulation of the real estate industry. The study was based on main players in the financial sectors which are mainly concerned with the regulation of the real estate industry. It would be interesting to see how the results would be if the sample included other institutions in other industries as well as other settings in the country. Thus, future replication of the study incorporating other areas would be eligible.

The other limitation of the study was that although the study set out to do a measurements study to enable correlations of the factors affecting performance of family businesses, limitations such as lack of concrete data by respondents to allow for correlation analysis the study could not analyze the data beyond the region/market level (Nairobi). The researcher countered the limitation by analyzing the determinants by considering the factors determining real estate prices and by extension the mindset in real estate

residential properties in Nairobi. As such the results would help design interventions to address the determinants of residential real estate prices in Nairobi.

5.6 Areas of Further Studies

The findings of this research set a ground for further research in the following areas: The research covered only the geographical region of Nairobi where panel data in a time series was analyzed. It is recommended that a study of a bigger magnitude and wider time period needs to be done for Kenya at large. Very little research has been done on real estates in Kenya and this research should be treated as eye opener to the same. Further, empirical review showed that interest rate and employment growth are very key factors in determining real estate prices. However, it is not clear why money in supply is almost insignificant in real estate pricing in Nairobi. This should act as a trigger for further research on this finding.

It also became a matter of concern to the researcher why location is not a critical factor in determining real estate prices in Nairobi. Scholars are requested to do further investigations. The GDP per capita has a long run influence on property prices as well as land supply, which works with a significant lag, the real interest rate, construction costs, and real domestic credit also have a significant impact. This suggests that policy should focus on raising land supply to restrain property price increases over the long run.

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