UNIVERSITY OF NAIROBI

An Assessment of the Factors Affecting the Growth in Real Estate Investment in Kenya.

BY

NZALU FRANCIS MULI

REG: B42/82160/2012

A research project submitted to the University of Nairobi ,School of Built Environment, Department of Real Estate and Construction Management in partial fulfilment of the of requirement of Post graduate Diploma in Housing Administration .

November 2013

DECLARATION

I declare that this research project is my original work and it has never been submitted in any other university for award of any academic grade.

Name: Francis Muli Nzalu **Sign_____ Date** **2**6/11/2013

Declaration by the Supervisor:

This Project has been submitted for examination with my approval as a University supervisor.

Name: Mrs Catherine Kariuki Sign_____ Date_____

DEDICATION

I dedicate this research project to the almighty God for keeping me health and giving me the capability and the strength to undertake the work. In addition special thanks go to my lovely family for their moral support and last but not least my dedication goes to my supervisors and my classmates for various contributions towards the completion of my project.

ACKNOWLEDGEMENT

First and foremost, I acknowledge the almighty God for giving me the strength to complete my project. I also acknowledge the tireless effort of my supervisor Mrs Catherine Kariuki who instructed me and directed me in writing this paper and my family and friends who gave me moral support.

TABLE OF CONTENTS

List of Figures

List of Tables

ABSTRACT

Real Estate investment represents a significant portion of people's wealth and this is especially true for many real estate investors in Kenya. Real Estate investment plays crucial role in providing employment opportunities, offering shelter to households, enhancing income distribution and alleviating poverty. However, the investment in Kenya continues to fail to fulfil this fundamental role due to a number of unique factors that affect the sector. The study investigated factors such as GDP Growth, the influence of interest rate, inflation rates and population growth. The study adopted both quantitative and descriptive research design to obtain information especially true for many real estate investors in Kenya. The study therefore, investigated the contribution on the current status of the phenomenon. The population in this study was real estate investors while the target population included private and public property investors. Data for analysis was based on the real estate and renting businesses as sourced from the various Economic Surveys and Kenya Statistical Abstracts Issues. The data obtained was analyzed by use of the Statistical Package for Social Sciences (SPSS) to obtain descriptive statistics and a regression model.

From the results the contribution of the factors affecting real estate growth as measured by Pearson correlation coefficients indicated that GDP took the highest share with a value of 83% followed by inflation growth at 78% while interest rate came third with value of 75%. Population growth contributed the least to the growth in real estate investment with a value of 29 %. Therefore the study hypothesis that GDP is the most significant contributor to the growth in real estate was supported by the data. In addition GDP growth, interest rate variation and growth in inflation were found to be statistically significant determinant of real estate growth. A summary of the regression results showed that the variables considered could explain up to about 70% of variations in the investment growth. The study recommended that Policy measures geared toward improving the economic growth and curbing rising inflation rates and interest rates should be undertaken as they increase the investment levels. Finally the study recommended future research on the impact of population growth on real estate investment

.

Acronyms and Abbreviation

GDP	Gross domestic product
RE	Real Estate Investment
REET	Real Estate Investment Trust
SPSS	Statistical Package for Social Sciences

CHAPTER ONE

1.0 INTRODUCTION

Real estate investment plays crucial role in providing employment opportunities, offering shelter to households, enhancing income distribution and alleviating poverty. However, the real estate industry in Kenya continues to fail to fulfil this fundamental role due to a number of unique factors that affect investment in the sector. In the recent past, Kenya has witnessed an upsurge in real estate investment. This has been driven by a number of factors notably the quest for Kenyans to own homes, rural urban migration, increased diaspora remittances among others. As a result, property prices in the urban areas have taken an upward trend. The expansion of Mombasa road and the construction of Thika super highway have also contributed to the rise of property prices in the adjacent areas. It's therefore important to assess the factors that contribute to investment growth so as to sustain its the growth in future.

Real estate is property consisting of land and the building on it along with its natural resources such as crops minerals or water immovable property of its nature an interest vested thus an item of real property building or housing in general. Real estate investing involves the purchase, ownership, management, rental land or sale of real estate for profit. Kenyan real estate property covers all property categories including single and multi-family residential dwellings, commercial and agricultural land, office space, go-dawns and warehouses, retail outlets and shopping complexes (Masika, 2010). Real estate is an asset form with limited liquidity relative to other investment, it is also capital intensive (although capital may be gained through mortgage leverage) and is highly cash flow dependent. If the factors affecting the growth in the investment are not well understood and managed by an investor, real estate becomes a risky investment.

The primary cause of investment failure for real estate is that the investor goes into negative cash flow for a period of time that is not sustainable, often forcing them to resell the property at a loss or go into insolvency. A similar practice known as flipping is another reason for failure as the nature of the investment is often associated with short term profit with less effort. Real estate markets in most countries are not as organised or efficient as market for other more liquid investment instruments. The individual's properties are unique to themselves and not directly interchangeable, which presents a major challenge to an investor seeking to evaluate prices and

investment opportunities. For this reason, locating properties in which to invest can involve substantial work and competition among investors and to purchase individual properties may be highly variable depending on knowledge of availability. Information asymmetries are common place in real estate markets. This however, increases transaction risks, but also provide many opportunities for investors to obtain properties at bargain prices. Real estate investors typically use a variety of appraisal techniques to determine the value of properties prior to purchase.

Investment in real estate is undertaken for its ability to provide returns inform of capital, income and intangible benefits (Baum & Crosby 1988). However returns in commercial real estate are maximised when there is full occupancy, prompt and total rent collection ,full market rent , good physical condition of building, minimal irrecoverable outgoings and low rate of tenant turn over. Studies by Ziening & McIntosh (1999) and Tonto, Wheaton & Southard (1998) have shown that the greater volatility in return in commercial real estate is not an appraisal problem but a structural problem of the property markets and real estate property as an investment vehicle. The most typical sources of investment properties include: market listing (through multiple listing service or commercial information exchange), real estate agents, wholesale (such as banks real estate owned department and public agencies), public auction (foreclosure sales ,estate sales), and private sales.

1.2 Statement of The Problem

Real Estate comprises lands plus anything permanently fixed to it, including buildings and other items attached to the structure. Examples of real estate include undeveloped land, houses, town homes, office, building, retails store and factories (Brown and Matysiak, 2000). According to Syagga (1987) the principal types of real estate property includes-: rural land use (which consists of farmland, forestry and mineral land), urban land which consists of (commercial, industrial and residential properties) and special type of property such as (petrol stations, recreational facilities, hotels and restaurants, halls and places of assembly and institutional property). The real estate market and industry covers land and improvements, their selling and rental prices, the economic rent of land and returns on buildings and other improvements, and the construction industry. The investment represents a significant portion of people's wealth, and this is especially true for

many real estate investors in Kenya. However commercial real estate in Kenya has been faced with shrinking occupation demand and there exists disparities between expected and actual income which may be either positive or negative (Murigu 2005). Real estate prices in Kenya has doubled, even tripled in the past few years (Majtenyi, 2010) and the government wants to know the cause. Demand for housing units continues to outstrip the supply (Masika, 2010). The size and scale of the real estate market makes it an attractive and lucrative sector for many investors. Nuri, E. & Frank Nothat,(2002) in a study found that the population of Kenya has steadily increased, resulting in an urban population in Nairobi of a record of 3 million people, whereby all these people need shelter, hence the real estate industry is tremendously doing well and contributing to the economy's growth. Real estate investments and prices are good measures for reflecting expected real estate demand, and serve as good predictors of economic growth (Knight Frank, 2011). A survey conducted by Hass Consultants in association with CFC Stanbic bank in the year 2010 revealed that the Kenyan real estate sector has been vibrant for the past decade between the years 2000 to 2010. For instance the report also indicated that capital gains from Kenyan properties far outstrips gains from US and UK properties. This has eventually made the Kenya real estate market to be the winner in the international property investment amidst the indebtedness in the Western Countries (Mwithiga, 2010).

According to a report by the National Housing Corporation (NHC), the Vision 2030 estimates that the country requires 200,000 new units of housing but only 35,000 units have been produced to date. That means we have a deficit of 165,000 housing units. Similarly, a report from the Kenya National Bureau of Statistics (KNBS) indicates that real estate investment has contributed a lot to the growth of Kenya's Gross Domestic Product. For instance data from Kenya National Bureau of Statistics report (2012) shows that, in 2008, real estate contributed 107, 323, 000 shillings to the country's GDP. In the subsequent year, 2009, the value of GDP attributable to real estate reduced slightly to 116,657,000 Kenyan Shillings. In addition the value of GDP further rose in 2010 to 123,173,000 shillings and consequently the contribution to GDP from real estate rose further in 2011 to 134, 746, 000 Kenyan shillings. Real estate and renting business services play a crucial role in the Kenyan economy (statistical abstract 2011). For instance the investment grew at 3.5% in 2007 and rose slightly to 3.7% in 2008.

However, the growth declined sharply to 3.0% in 2009 due reduction in capital investment and the poor performance of the economy as a result of the post-election violence that led to destruction of property and in the 2007 General elections. The growth picked up in the preceding years at 3.2% and 3.6% respectively in 2010 and 2011 respectively as investment climate became conducive and by the of the end of the third quarter of 2012 the investment was growing at 3.8% depicting an increasing trend. There has been a great appreciation of property prices and volatility across the different property markets in Kenya since the year 2006.

According to Hass property consultants, in the first property index in Kenya, the prices for high end residential properties has doubled between 2005 and 2009 (Hass property index, 2009). The current rental yields that are the return on capital tied up in property is however much lower than mortgage interest. The Hass consultant property index data for the first quarter in 2011 indicated that rental yield are down to 5.62 per cent per from a high of 7.3 percent per year in 2007. The Hass survey further revealed that property prices have risen to 55 per cent since the 2007 while rental yields have appreciated with only 18 per cent. The main concern is that real estate contribution to the economy of Kenya (as measured in relation to the economic growth) has faced a declining trend for the past years. For instance in 2008, it contributed to 5.1% of total GDP, and in 2009 it reduced to 4.9% of GDP. Subsequently it slightly fell to 4.8% in 2010 and further declined to 4.5% in 2011. There is need therefore establish and assess the factors that contribute to the growth of the investment so as to sustain the investment growth in future.

1.3 Research Questions

(i) What is the impact of GDP on the growth in Real Estate Investment ?

(ii) What is the contribution of interest rates to the growth in Real Estate Investment ?

(iii) To what extend do changes in inflation rate affect the growth in Real Estate Investment ?

(iv) What is the impact of population growth on Real Estate Investment ?

1.4 Objectives of the study

The general objective of the study is to determine the factors influencing investment in the real estate in Kenya.

1.4.1 Specific Objectives

The study specific objectives are;

(i) To examine the impact of GDP on the growth in real estate investment in Kenya.

(ii) To determine the contribution of interest rates on the growth in real estate investment in Kenya.

(iii)To determine the extent to which inflation rates affect the growth in real estate investment.

(iv) To examine the impact of population growth on the growth in real estate investment.

1.5 Study Hypothesis

It is hypothesized that the GDP growth is the main contributing factor to the growth in real estate investment in Kenya.

1.6 Significance of the study

The results and findings from this study will form a basis for policy formulations on ways of controlling for the determinants of real estate so as to sustain the investment growth in future.

1.7 Scope of the study

The study investigated the factor affecting growth in real estate in Kenya with emphasis on the assessment of the various contributions of factors such as GDP growth, inflation rates, population growth rates and rate of interest. The study area involved private and public developers in real estate property. Data for the study was on time series covering real estate renting business. The study covered a period of twelve years between 1998 to 2012.

1.8 Organization of the study

The study was organized into five chapters, chapters one to five. Chapter one discussed the background of the research, statement of the problem, objectives of the research, study hypothesis, research questions, significance of the study and scope of the study. The next chapter, chapter two, was on literature review where related literature from various scholars was reviewed and an overview based on the literature given. The third chapter was on research methodology, which comprised sample design, research design, and the means of data collection

and data analysis. Chapter four was on data presentation and analysis. Data in this chapter was presented in form of tables, charts and graphs to depict the data trend in variable over the years between 1998 to 2012. Data was also analyzed where the model was estimated, interpreted and specified. The last chapter, chapter five, was on summary of the findings, study limitation and recommendations for the research.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter presents a critical review of the research work that was done by various scholars in the field of property management and more specifically the Real Estate investment. For instance the increasing interest in the real estate investment in recent years has naturally caught the interest of many academicians. Many people tend to think real estate properties are only purchased for appreciation (increase in value) or for the production of income. However, any purchase of interest in real property can be regarded as being for investment purposes. For instance there is the case of one purchasing an interest in property, which is to be let to someone to provide the benefit of income and there is the purchase for occupation that is also an investment; the benefit being the annual value of occupation. A businessman for instance, may choose whether to buy property for own business or to rent to someone and invest the capital elsewhere. Review of literature shows that the growth in real estate investment is influenced by factors mainly related to the performance of the economy.

2.1 Performance of Real Estate

Real Estate investors have long been aware of the challenges of translating the returns of property investment into reliable time- series data (Fisher & Boltzmann, 2005). This has been overcome by developing statistical risk and return inputs to allocation models through the construction of indices that reflect broad trends in diversified portfolio of investable properties. These include:- time weighted rate of return, time, internal rate of return and simulation procedure. Studies by Hammers & Chen, (2005) measure real estate performance by analyzing return on asset. Similarly, Fisher, (2005), using the internal rate of return (IRR) to stimulated portfolios comprised of commercial properties, U.S stocks and U.S. bonds. Ooi & Liow, (2004) using systematic risk incorporated in the traditional Capital Asset Pricing Model (CAPM) to explain real estate returns. For instance Fisher, (2005), observed that stock and bond portions of the portfolio are re-balanced to accommodate the positive and negative cash flows required by real estate investing. This simulated IRR approach helps to examine the cross sectional

distribution of real estate returns over the time period. He further argued that inflation protection is one of the main reasons that institutions invest in real estate. In addition, Kohnstamm (1995) argued that apart from risk, inflation and rate of return as measures of real estate performance, rental income has been the most preferred measure by investors.

2.1.1 Macro economic variables

Case, Goetzmann, and Rouwenhorst (2000) explored returns in global property markets, and found the returns heavily related to fundamental economic variables such as GDP, inflation and economic growth, while Ling and Naranjo (1997, 1998) identified growth in consumption, real interest rate, the term structure of interest rate, and unexpected inflation as systematic determinants of real estate returns. In addition studies by Hekman (1985) highlighted GDP as being the most important influence on return levels, whereas unemployment rate was found not to have any significant impact. The insignificance of employment was backed up by Dobson and Goddard (1992) findings, coinciding with the De Wit and Van Djik (2007) conclusions. The most extensive research of real estate and the macro economy is in terms of real estate's hedging capabilities against inflation. Hartzell et al. (1987), Wurtzebach et al. (1991) and Bond and Seiler (1998) proved that real estate provides an inflation hedge across property sectors, and the findings was confirmed by Liu, Hartzell, and Hoesli (1997) as well as Huang and Hudson-Wilson (2007) that found United States real estate market having good hedging abilities.

2.1.2 Economic Activity

From previous found review it has been that the growth in real estate in a country is among others depended on the changes in economic activity and prosperity of a region or country. According to the model of DiPascal and Wheaton (1992), a productive economy does positively affect the demand for real estate assets. Similarly, Chin, Dent and Roberts (2006) conclude from survey data that a sound economic structure and an expected strong and stable economy are perceived to be the most significant factors in the ability of a region to attract foreign real estate investments. Besides, Hoskins, Higgins and Cardew (2004) found that GDP growth, inflation and unemployment show significant relations with composite property returns.

In addition other researchers such as Chen and Hobbs (2003) found that the size of a country's economy positively affects investment activity, as larger economies are usually more capable of withstanding external economic turmoil and are therefore more stable than smaller economies. Results of studies from Van Doorn, (2003) revealed that GDP per capita is commonly used in strategic real estate asset allocation for the determination of a country's economic level of development. Other researchers such as Connor and Liang (2000) argued that over the long term, the impact of technology on real estate has been overwhelmingly positive as advancement in technology affect positively the investment climate. Similarly technological advancement have resulted to increased productivity and wealth, demand for all types of real estate has also increased. The latter even analyzed the property sectors individually and found that office and residential by far outperformed retail and industrial regarding inflation hedge. It is however noticeable that Stevenson et al (1997) found no signs of selection ability among investment managers, while there is evidence of superior market timing ability i.e. managers are capable of actively using the macroeconomic environment in order to achieve Macroeconomic Determinants of Real Estate Returns superior returns.

2.2 Rental Income

Rental income is a return gained after using a property for a particular period of times for example a house, land, building etc. In Korea, the most popular type of rental income is called "chonsei." Under a chonsei arrangement, the tenant leaves a lump-sum deposit to the landlord at the beginning of the lease contract in lieu of monthly rents (Kyung –Hwan, 1990). At the end of lease, the entire deposit is returned to the tenant. The landlord invests the deposit and keeps the return for the investment. Chonsei is an ingenious but financially inefficient system. It essentially forces the landlords to serve as a financial intermediary at their own risk, even though they may not have the required skills or information. Tenants may not be able to assemble a large amount of money to make the deposit for the dwelling unit they desitry5dtgere and settle for a smaller unit, i.e., lower their housing consumption. Rental income is usually determined by a number of variables over time for example the Gross Domestic Product (GDP), output, Employment for financial and business services, unemployment, interest rates and operating expenses in office space (Matysiak and Tsolacos, 2003).

In retail sector, expenditure, retail sales and the GDP seem to be the most successful demand side indicators. In industrial market, the GDP and manufacturing output seem to be the most significant variables. In general demand and supply and the economic variables will determine the rental income in real estate.

2.3 Real Estate Investment Opportunities

Han (1996) concludes from his survey that real estate investment opportunities, demographic attributes, and the market structure are important selection criteria for investment decisions. The accessibility of institutional real estate via different ownership ratios is a critical factor in real estate investment due to the close relationship between market entry probability, liquidity risk, and transparency of markets. Similarly, Ling and Gordon (2003) study estimated the availability of higher quality not owner-occupied commercial real estate in a theoretical model. Kurzrock (2007) finds via cross-sectional regression that a high degree of agglomeration has a positive impact on property performance. Obviously, accelerating urbanization, which determines the structure, potential and quality of the real estate environment, plays an important investment decision. This was especially valid for the US, where urban areas are spreading across major regions, pushing upland and building values, and making real estate assets increasingly valuable. Lynn (2007) notes, that improvement in communication and transportation infrastructure facilitates the migration to cities and drives the pace of urbanization, which will support new development. Furthermore, the financial and business service sectors reflect a growing level of sophistication in the service economy and thus, the demand for commercial real estate.

2.4 Tests for determinants of real estate bubbles

Most studies on determinants of real estate bubbles focus on demand side factors namely credit growth and GDP growth (Collyns and Senhadji, 2003). Capital inflows into a country inevitably channel itself into asset markets through the formation of easy credit and are suspected to contribute significantly to real estate bubbles. Wong (2001) documented growth in Thailand's housing market, which was fuelled in the 1990s by the liberalization of capital inflows as a result of the passage of the Bangkok International Banking Facilities in 1992. This provided opportunities for domestic financial institutions to borrow from foreign sources at low rates and

in turn disseminate the money to local housing developers. This led to two types of bubbles in Thailand namely a real estate bubble which led to a run up of real estate prices and an overcapacity bubble, which resulted in faster completion of housing and commercial projects than what the real estate market could absorb. The final outcome led to the collapse of the real estate market in Thailand just before the 1997 Asian financial crises. Rents, which are typically seen as demand driven, depend on real GDP (which acts as a proxy for aggregates level of income per capita and population size). Rising real GDP will increase the wealth of the population as a whole contributing to an increase in discretionary incomes. This income can be channeled into asset markets, namely real estate. The real estate sector which is governed by long construction lags thus will see rising real estate prices and also rentals. There is also some basis that the stock market also impacts the real estate market. Bardhan, Datta, Edelstein, and Lum (2003) have documented significant positive impact of stock equity wealth on the number of new private housing units in Singapore.

This suggests that an increase in the stock market would increase the wealth of investors who eventually cash out and reinvest their profits into real estate. Thus, the wealth effect in the stock market spills over to the real estate market. Interest rates play an integral part in real estate as most purchases of real estate property tend to be acquired on a mortgage basis. In a declining interest rate environment, the cost of servicing a loan becomes smaller. This typically allows households to take a bigger mortgage within their current income budgetary constraints. This ultimately boosts the demand for and price of residential real estate. Using vector auto regression methodology, Tsatsaronis and Zhu (2004) found that interest rates especially short-term interest rates explain almost 10.8 per cent of the variation in house prices. It is postulated from their model that a negative one percentage point change in the real short-term interest rate leads to an increase of 1.2 per cent in house prices over two years. They also found that countries which use predominantly floating-mortgage rates demonstrate higher impact of short-term rates on house prices.

2.5 Determinants of real estate values

Previous studies on real-estate values and neighborhood effects utilize aggregate census data where the unit of observation is a census tract. The quality controls on the units are also aggregative and include such variables as percentage of units in a tract classified as dilapidated and/or without private bath, percentage of houses which were more than twenty years old and median number of rooms per dwelling. Among the studies utilizing census data is the work of Richard Muth (1967, 1970) on urban structure, the relationship between low-quality housing and poverty and between housing prices and race. Also Ridker and Henning (1967) use these data in analyzing the effects of air pollution on property values. In addition Oates (1969) in his study of influence of public services and taxes used average property values for a sample of New Jersey cities. There have also been several studies using micro (disaggregative) data in which the unit of observation is a single transaction. For example, Bailey (1966) studied the effects of racial composition and population density on housing prices in Chicago. Pendleton (1962) attempted to measure the value of accessibility to job opportunities and to the central business district in Washington, D. C. Kain and Quigley (1970) examined the effects of a variety of neighborhood quality indices on housing prices in St. Louis, and Lapham (1971) used data from Dallas to test the hypothesis of racial discrimination in housing.

2.5.1 Real estate prices

Most studies point to the increase in credit growth as one of the main determinants of the run up in real estate prices. Koh et al. (2005) using an option-based model of financial intermediaries found that if the value of the underlying asset falls below the outstanding amount of a loan, the borrower may simply default on the loan putting the asset into the hands of the financial institution. This may cause the financial intermediaries to hold excessive amounts of unwanted real estate which in a bear market can only be disposed at prices which were dramatically lower than the amount it was originally collateralized for. The banking system is the dominant financial system in most East Asian countries where the equity and bond markets are fairly underdeveloped (Collyns and Senhadji, 2003). Another possible determinant of real estate price dynamics is real Gross Domestic Product (GDP) which captures both the aggregate level of income per capita and population size (Ho and Cuervo, 1999). An increase in real GDP would

increase the income of the population in the economy resulting in increased demand for real estate through higher prices of primary property and higher rentals. Real interest rate is also another possible important determinant. A reduction in real interest rates can increase the prices of real estate as it reduces the cost of borrowing. Reflecting these developments, outstanding mortgages as a share of GDP has risen dramatically, particularly among smaller European countries (IMF, 2003). In quite a few European Union (EU) countries the (negative) correlations between real housing prices and real interest rates have been especially high.

2.5.2 Pricing model

In most empirical studies, Price Model is used to identify and measure the effect of environmental valuables and building characteristics on property values. This modeling approach assumes that the monetary value of a dwelling unit depends on the attributes a particular house or apartment may possess. For instance, the market price of a dwelling may reflect its physical size and environmental characteristics, such as the number of rooms, age and location. Plaut (2003) alludes that although the price method is, undoubtedly, the most commonly used research tool for investigating the negative and positive effects of neighborhood, amenities and building characteristics on property values, some underlying assumptions of this method may, nevertheless, be questioned. According to Rosiers (2002) for instance, the hedonic price approach assumes the existence of direct links between environmental factors and building characteristics, on the one hand, and property values, on the other. However, these factors likely correlate indirectly, through the investment decisions of property owners.

2.6 Mortgage Interest Rates

This to a great extent will determine affordability alongside the maturity. A study from Uganda revealed that Interest rates range between 16% - 23% depending on the purpose of the mortgage (Kibirige, 2006). Usually owner occupier mortgages take the lower rate and it increases as one tends towards commercial mortgages. These rates are generally high and are attributable to the lack of long term local funding. Similar study in Egypt, on mortgage lending rate revealed that the mortgage rate equals to 14% with a margin of 4% over the prime lending rate (Hassanein and

Barkouky, 2008). This leaves mortgage companies with only 1.5% which will be further decreased when attempting to securitize the mortgage loan and provide other guarantees.

2.7 Drivers of house prices.

According to Debelle (2004), investigation relates to the importance of inflation as a driver of housing prices. On average, across countries, inflation accounts for more than half of the total variation in house prices. In the short run, the size of the impact is even larger. Debelle alludes that 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. This strong influence of inflation is more important when one considers that house prices are measured in real terms. There are two potential explanations for this finding. The first relates to the dual function of residential real estate as consumption good and investment vehicle. As such, it is often used by households as the main hedge against the risk that inflation might erode their wealth. The fact that the purchase of property is typically financed with nominal debt makes it more attractive in this respect. A high degree of inflation persistence also suggests that the effects of innovations in inflation on house prices are likely to be felt over longer horizons.

Higher uncertainty levels about future expected returns on investments in bonds and equities associated with high inflation also contribute to the attractiveness of real estate as a vehicle for long-term savings. The second explanation is linked to the impact of inflation on the cost of mortgage financing and generally suggests that higher inflation would have a negative impact on house prices. If financing decisions are more sensitive to the nominal yield curve than to real rates, one would expect housing demand, and thus real house prices, to respond to changes in inflation and to expected inflation. In addition, inflation may also be a proxy for the prevailing financing conditions, which have an impact on the demand for real estate. High inflation and high nominal interest rates backload the repayment of the mortgage principal and increase the real value of repayment in the early part of the repayment period of the loan, thus dampening the demand for housing. In Kenya, the housing sector has been characterized by inadequacy of affordable and descent housing, low level of urban home ownership, extensive and inappropriate dwelling units, including slums and squatter settlements.

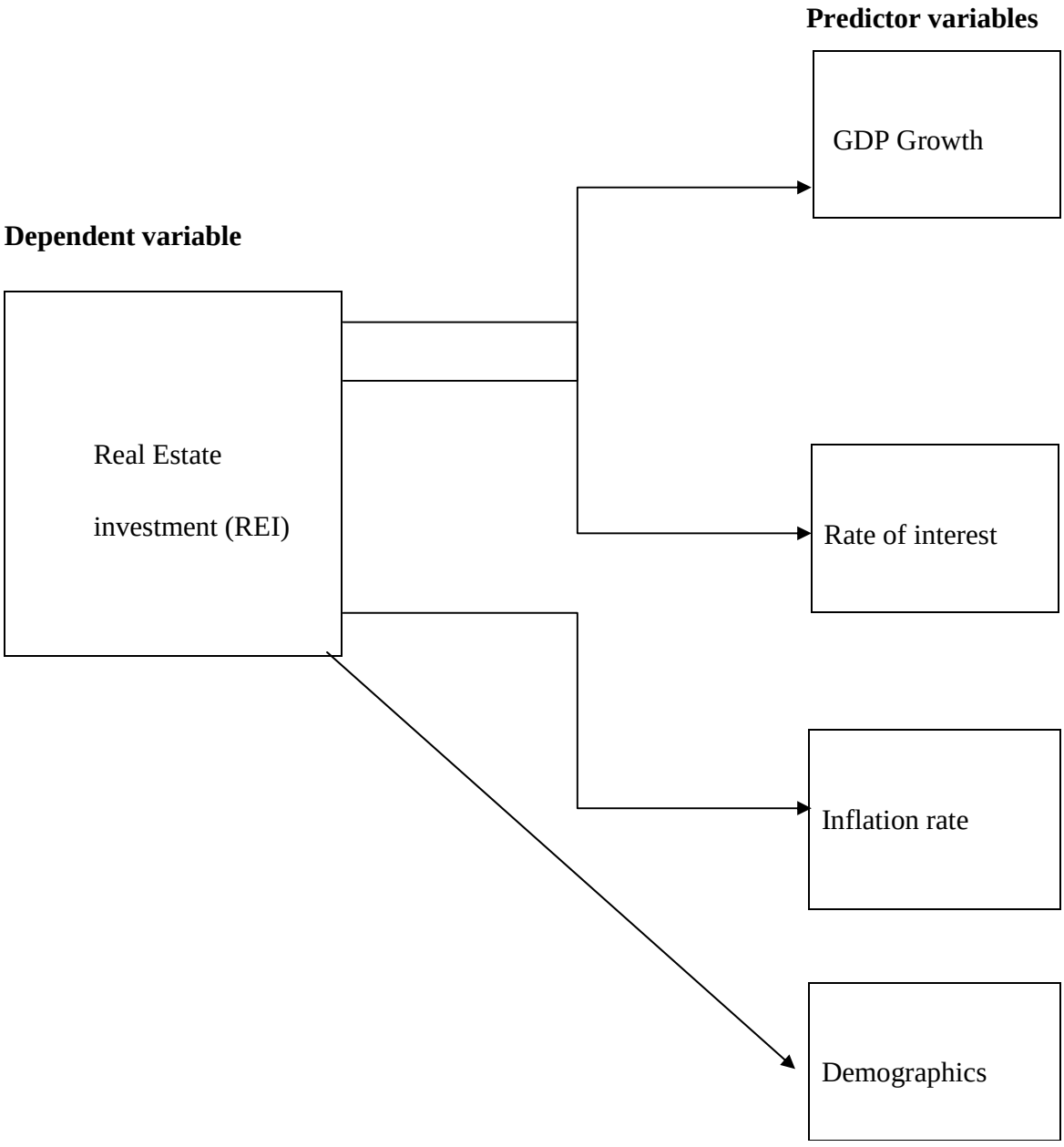
2.8 The Role of the Private Sector

Private sector housing is defined as any production which is not connected at all with the actions of the state, neither directly constructed by the state nor financially sponsored by the state, where production is not expected to have a social element (Golland, 1996). Ambrose and Barlow (1987) have argued that three factors are important in influencing the level of new house building. These are direct capital investment by the state for public housing, state support for production and consumption and changes in the profitability of house builders in the private sector. The private sector can play an important role in housing provision, provided that the state offers sufficient and appropriate incentives to the sector (Mitullah, 2003). In Kenya, the private sector, both formal and informal, remains the largest producer of housing units in the country. Initiatives by the private sector can be both large-scale and deep in impact, contrary to the government initiatives which may be large-scale but usually limited in impact (Otiso, 2003).

The clear motivation that underlies the private sector is profit (or potential profitability) with profit-maximizing options being, in the context of housing, producing and selling more of the product; reducing the cost of production through lower raw material and wage costs (cost per unit or quantity) and finally, increasing the price of the product or service (Hancock, 1998). The private sector is capable of providing living needs to large segments of the urban community if they operate within a well-conceived competitive environment where there is a possibility of charging consumers and making a profit, absence of daunting obstacles such as technology and scale of investment and the presence of competent governments with the capacity to enforce standards, contract fulfilment and service provision (Otiso, 2003). Ball (1996) suggests that the trigger of development activity is an analysis of market opportunities by developers who see demand for new housing, anticipate adequate return on investment, gear their resources towards purchase of land and housing production and then sell these housing units with a view to maximizing profits. Profitability in housing is advocated to be based on three variables: House prices, land prices and building costs, where: Profit = House Prices – {Land Prices + Building Costs} (Golland, 1996).

Macoloo (1994) defines the key components of housing to be land, finance, building materials and construction technologies, these relating to the costs in the profit model above. In a survey of developers, Thalmann (2006) however purports that few market developers actively monitor the market for business and profit opportunities but instead respond to market triggers, such as availability of land. As such, the supply of housing may not respond only to market signals and incentives.

Figure 2.1: Conceptual Framework



Factors Affecting Growth in Real Estate Investment in Kenya

Factors that Influence Real Estate real estate include demographic factors, rate of interest, inflation rate, performance of the economy among others. Demographics are the data that describes the composition of a population, such as age, race, gender, income, migration patterns and population growth. These statistics are an often overlooked but are significant factors that affect how real estate is priced and what types of properties are in demand. Major shifts in the demographics of a nation can have a large impact on real estate trends for several decades. There are numerous ways this type of demographic shift can affect the real estate market, but for an investor, some key questions to ask might be: i) how would this affect the demand for second homes in popular vacation areas as more people start to retire?

ii) How would this affect the demand for larger homes if incomes are smaller and the children have all moved out? These and other questions can help investors narrow down the type and location of potentially desirable real estate investments long before the trend has started. Interest rates also have a major impact on the real estate markets. Changes in interest rates can greatly influence a person's ability to purchase a residential property. That is because as the interest rates fall, the cost to obtain a mortgage to buy a home decreases, which creates a higher demand for real estate, which pushes prices up. Conversely, as interest rates rise, the cost to obtain a mortgage increases, thus lowering demand and prices of real estate. However, when looking at the impact of interest rates on an equity investment such as a real estate investment trust (REIT), rather than on residential real estate, the relationship can be thought of as similar to a bond's relationship with interest rates.

When interest rates decline, the value of a bond goes up because its coupon rate becomes more desirable, and when interest rates increase, the value of bonds decrease. Similarly, when the interest rate decreases in the market, REITs' high yields become more attractive and their value goes up. When interest rates increase, the yield on an REIT becomes less attractive and it pushes their value down. Another key factor that affects the value of real estate is the overall health of the economy. This is generally measured by economic indicators such as the Gross Domestic Product, employment data, manufacturing activity, the prices of goods, etc. Broadly speaking,

when the economy is sluggish, so is real estate. However, the cyclicality of the economy can have varying effects on different types of real estate. For example, if an REIT has a larger percentage of its investments in hotels, they would typically be more affected by an economic downturn than an REIT that had invested in office buildings. Hotels are a form of property that is very sensitive to economic activity due to the type of lease structure inherent in the business. Renting a hotel room can be thought of as a form of short-term lease that can be easily avoided by hotel customers should the economy be doing poorly. On the other hand, office tenants generally have longer-term leases that can't be changed in the middle of an economic downturn. Thus, although you should be aware of the part of the cycle the economy is in, you should also be cognizant of the real estate property's sensitivity to the economic cycle.

2.9 Overview of the literature

From the foregoing literature it quite evident that the investment in real estate in Kenya is influenced by many factors most of which are based on the economic performance of the country. For instance a number studies revealed that the investment growth depends on the economic activity prosperity. It is argued that a productive economy positively affects the demand for real estate. Besides the growth in the gross domestic product, growth in inflation rate and unemployment significantly affect the growth in real estate. The size of the country's economy is perceived to affect the investment growth in that large economy attracts the investment faster as compared to small economies. In addition other research work have found that the mortgage interest rate, term structure of interest rate, the rate of return and rental income determine the affordability, as well as the growth in consumption and determined the level of the investment growth. From the review it is difficult to predict whether the real estate market activity in a country with a high investor protection level is more affected by the liquidity of the national stock market or by regulatory limitations.

Similarly, the influence of some factors such as socio-cultural and political instabilities or legal issues cannot be quantified as they are qualitative in nature and can only be captured in terms of proxies. This imposes a challenge to determine possible proxies for the drivers of real estate investment activity, and likewise aim to keep the country coverage at a maximum. Studies by Ambrose and Barlow (1987) further identified three factors as important in influencing the level

of new house building namely; direct capital investment by the state for public housing, state support for production and consumption and changes in the profitability of house builders in the private sector. In addition, Golland 1996, also shows that private investors are motivated to invest in house development due to the profit realised. For instance he argues that Profitability in housing is based on three variables: House prices, land prices and building costs, where: Profit = House Prices – {Land Prices + Building Costs}. In addition Macoloo (1994) defines the key components of housing to be land, finance, building materials and construction technologies, these relating to the costs in the profit model above. From the above review it is my view that the major factors that affect the investment growth include the gross domestic product, the rate of interest, and the inflation rate. However there is need for empirical test through data analysis to ascertain their individual contribution and their statistical significance.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

Research methodology is a way to systematically solve the research problem. It indicates the various steps that are generally adopted by a researcher in studying his research problem along with the logic behind them (Kothari, 2004). The aim of the chapter is therefore to provide arguments for the approaches that the researcher adopted in gathering and in the treatment of the data in order to answer the research questions and objectives. In this regard, this chapter discusses the following aspects: the research design, the sampling strategies, the data collection process, the instruments used for data gathering, as well as, data analysis methods which helps in coming up with a meaningful conclusion.

3.1 Sample design

The sample comprised of real estate and renting businesses where data for fifteen most recent years was used. Data for annual time series on variables namely; interest rate, inflation rate, population growth and GDP obtained for the years between 1998 to year 2012 were used for analysis.

Population

Mugenda & Mugenda (2003) described population as the entire group of individuals or items under consideration in any field of inquiry and have a common attribute. The population in this study was the real estate developers while the target population included private and public property developers. Data for analysis was based on the real estate and renting businesses as sourced from the various Kenya Statistical Abstracts Issues.

3.2 Research Design

Research design refers to the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in the procedure (Babbie, 2002).A quantitative research design was deemed the most appropriate for the analysis of the determinants of real estate investment for it allowed quantification of the influences that each independent variable had on real estate investment (dependent variable). This study adopted both quantitative and descriptive type of research design where stratified sampling technique was used.

3.3 Data Collection Methods

The method of data collection used was both primary and secondary methods. Primary data was collected from the property developers both Governments owned and private owned, financial institutions dealing in Real estate property. Secondary data was obtained from Government of Kenya publications such as the Annual Budget and Financial estimates, Central Bank of Kenya Annual report, Kenya Economic Survey and statistical abstracts by the Ministry of Planning national development and vision 2030, journals, published and unpublished research work, dissertations among others.

3.4 Data Analysis

Data analysis was done using Computer software, Microsoft excel and SPSS. The data collected was edited for accuracy, consistency and completeness. The data was then coded and cross – tabulated to enable the responses to be statistically analyzed. Descriptive and inferential statistics were used to analyze data by way of means, mode, median,(measures of central tendency) and standard deviation, variances, range (Measures of dispersion). The data collected was then presented in form of tables, charts and graphs. The research made use of the Statistical Package for the Social Sciences (SPSS) to estimate the result of the regression/correlation between the variables. Multivariate correlation and regression analysis was used to evaluate the degree of relationship among the variables. Multiple regression was used to analyse the relationship between the independent and dependent variables to predict the score of the dependent variable from the independent variable. The research model to be estimated was an econometric model, multiple regression model of the form;

RE = f (GDP,int ,infl,Pop)

Where RE = Real estate investment (dependent variable)

GDP = Gross domestic product (independent variable)

Int = Rate of interest (independent variable)

Infl= Rate of inflation (independent variable)

Pop=Population growth rate (independent variable)

CHAPTER 4

4.0 DATA PRESENTATION AND ANALYSIS

4.1 DATA PRESENTATION

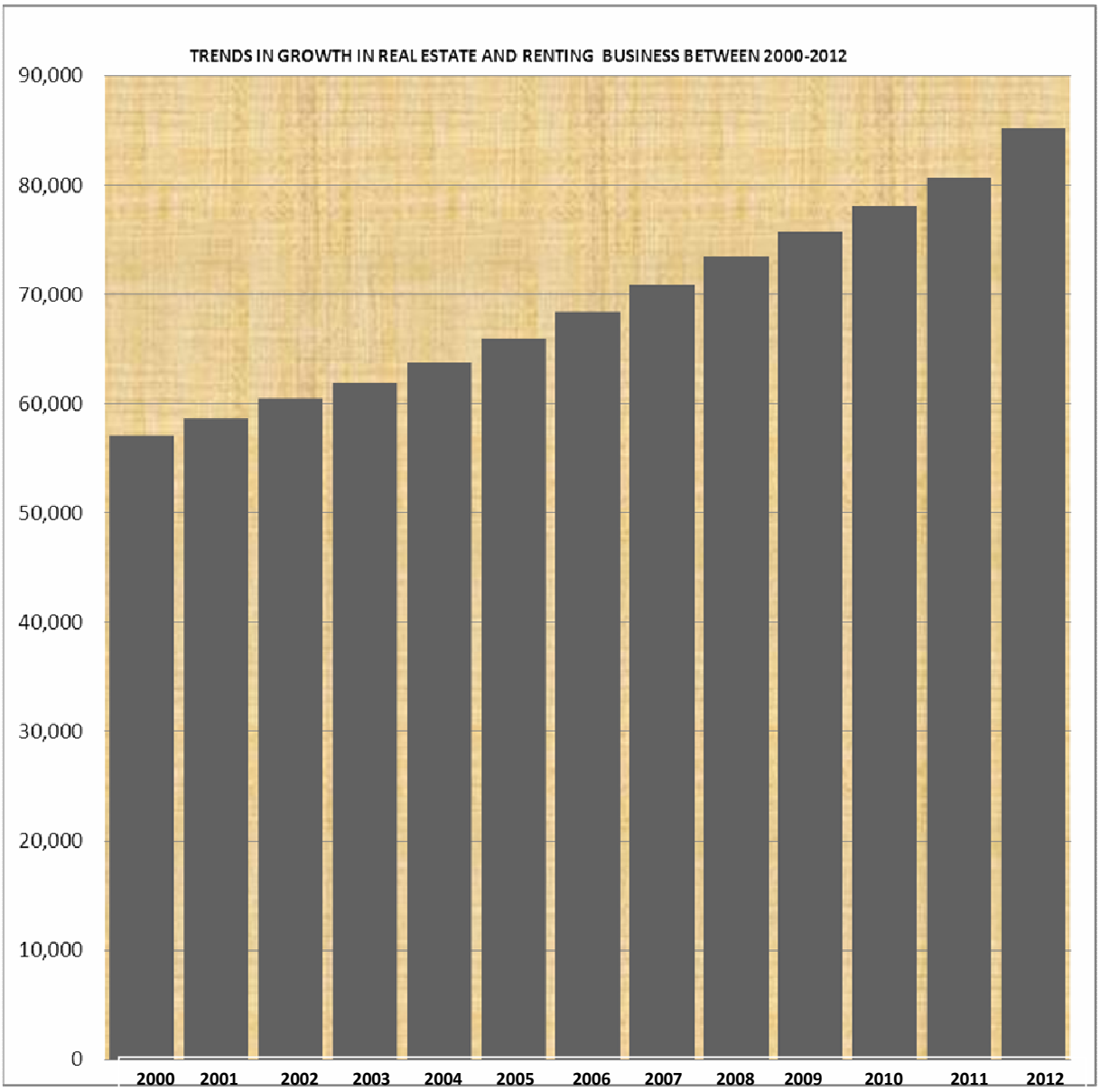
In this chapter data will be tabulated and presented in form of charts and graphs. The results will be analyzed in form of descriptive statistics (measures of central tendency), inferential statistics (measures of dispersion) and interpreted accordingly.

Table 4.1: Trend in growth in real estate in Kenya between 2000-2012

YEAR	REAL ESTATE AND RENTING BUSINESSES
2000	57,091
2001	58,667
2002	60,452
2003	61,864
2004	63,740
2005	65,882
2006	68,447
2007	70,860
2008	73,461
2009	75,674
2010	78,089
2011	80606
2012	85,171

Source: Statistical Abstract, Kenya National Bureau of statistics (2012)

Figure 4.1: Trends in growth in real estate and renting businesses in Kenya between 2000-2012

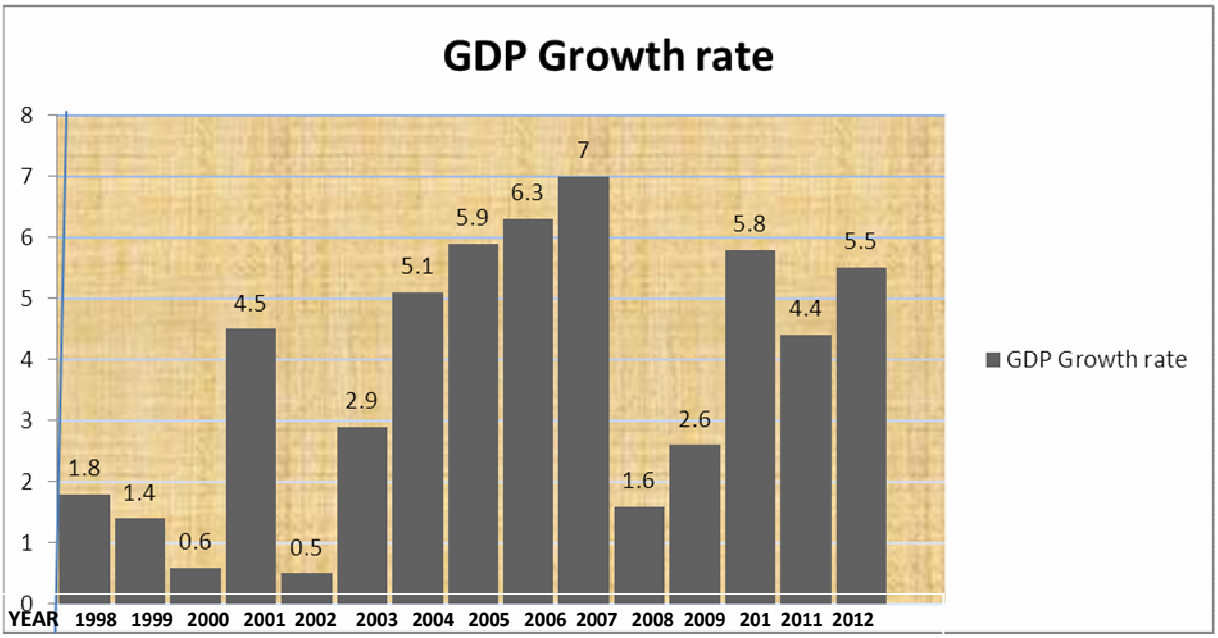


Source: Statistical Abstract 2012

Real estate and renting business services play a crucial role in the Kenyan economy (Statistical Abstract 2011). As it can be observed from figure 4.1 real estate and renting business has been following an upward trend since the year 2000. For instance the investment stood at 70,860 a growth of 3.5% in 2007 and rose slightly to 73,461 representing a growth of 7% in 2008.

However, the growth declined sharply to 3.0% in 2009 due reduction in capital investment and the poor performance of the economy as a result of the post-election violence that led to destruction of property and in the 2007 General elections. Despite the decrease in the growth in 2009 the number of businesses rose to75,674. The growth picked up in the preceding years at 78,089 a growth of 3.2% and 80,606 a growth of 3.6% respectively in 2010 and 2011 respectively as investment climate became conducive and by the of the end of the third quarter of 2012 the investment was growing at 85,171 an equivalent growth of 3.8% depicting an increasing trend.

Figure 4.2: Real GDP growth rate between 1998-2012



Source: Statistical Abstract (2007, 2012)

Economic performance

Kenya's economy recorded a slower growth of 0.5% in 2002 compared to 4.5 % in 2001 due to the uncertainties regarding general election reflected in: low demand for imports; low demand for credit; and donors waiting for Kenya's decision. The economy is on a recovery path recording a 2.9% growth in 2003 close to the projection in 2002 (Economic Survey 2003). Almost all sectors recorded moderate growth rates as follows: Agriculture - 1.5%;

manufacturing- 1.4%; Building & Construction-2.2%; Finance, Real Estate and Business Services- 3.0%. On the basis of the new System of National Accounts (SNA'93), the GDP expanded by 4.3 % in 2004 compared to a growth of 2.9% in 2003. Robust growths were registered in: Manufacturing- 4.1%; Building & Construction-3.5%; Trade – 9.5% ; Tourism and Hotels – 15.1% and Transport and Communication- 9.7%. The Reasons for Growth was due to; increased credit to private sector, low interest rates; Stable macroeconomic environment. In addition the Real Gross Domestic Product (GDP) grew by 5.9 % in 2005 from a revised growth of 5.1% in 2004 (Economic Survey 2005).

The expansion in GDP was supported by growths in: Tourism and Hotels – 13.3%; Transport and Communication- 8.3%; Building & Construction-7.2 %; Agriculture and Forestry – 6.7% ; Wholesale & Retail Trade- 6.4% and Manufacturing- 5.0% . The Private consumption expanded by 7.1% supported by increased access to credit facilities (Economic survey 2006). Gross Domestic Product (GDP) expanded by 6.3 percent in 2006 compared to a revised growth of 5.9 percent in 2005. Key sectors supporting this growth were: - Hotels and Restaurants: 14.9 Per cent; Wholesale & Retail Trade: 10.9 Per cent; Transport and Communication: 10.8 Per cent; Manufacturing: 6.9 Per cent; Building & Construction 6.3 Per cent; Financial Intermediation: 5.5 Per cent; Agriculture and Forestry: 5.4 Per cent. The Country experienced remarkable sustained economic growth for the period 2003 – 2007 with the GDP growth rate reaching 7.0 percent in 2007, the highest growth rate over the period. However a low growth rate of 1.6% in 2008 was as a result of: Internal shocks; Post-election disruptions; Unfavorable weather conditions. In addition external factor affecting the growth negatively include; High cost of food and fuel prices; continued Political bickering; External shocks; High crude oil prices; and Global financial crisis (Economic Survey 2008).

Risks likely to shape economic growth include: High international oil prices - which could remain high for the rest of the year (due to instability in the Middle East and North Africa) Fluctuations in the exchange rate and Inadequate rainfall - which has so far been Insufficient; Rising global food prices; Political environment as the country moves close to 2012 elections. There were both positive and negative factors that affected growth in 2011.

Positive factors include; Increased credit to the private sector; Higher public investments in infrastructure e.g. roads; Higher inflows of remittances from the Diaspora. Negative factors on the other hand includes; Erratic weather conditions; Escalating oil prices Weakening of the Kenya shilling which led to widening of the current account deficit and High inflation. Rapid economic growth was hampered by poor state of infrastructure, low investment and the spillover effects poor performance of the previous year. The year 2008 has so far experienced a combination of both internal and external shocks which have seriously curtailed economic growth in Kenya.

The main shocks experienced include the post-election violence, global economic slowdown and financial crunch, unprecedented rise in fuel prices, and high food prices that emanated from food shortages. Consequently, the economy has been performing substantially below its potential over the last three quarters of the year. The economy maintained a rapid growth between 2005 - 2007 of 5.9% and 7.0%. However, the growth recorded a major decline in 2008 of 1.6%. In response, the government put up measures to stimulate growth including; restoring investor confidence, expansionary fiscal policy (e.g. economic stimulus package); and monetary policy focusing on achieving and maintaining price stability within a single digit inflation rate of 5.0%. The economy responded accordingly with an improved growth rate of 2.6 per cent in 2009 (Economic Survey 2010). The growth was mainly attributed to: Resurgence of activities in the tourism sector; Resilience in the building and construction industry; and Transport and Communication sector. The government's supported growth through an enabling environment and the economic stimulus package. However, economic performance was constrained by: - Unfavorable weather condition; the global economic recession; Sluggish internal and external demand.

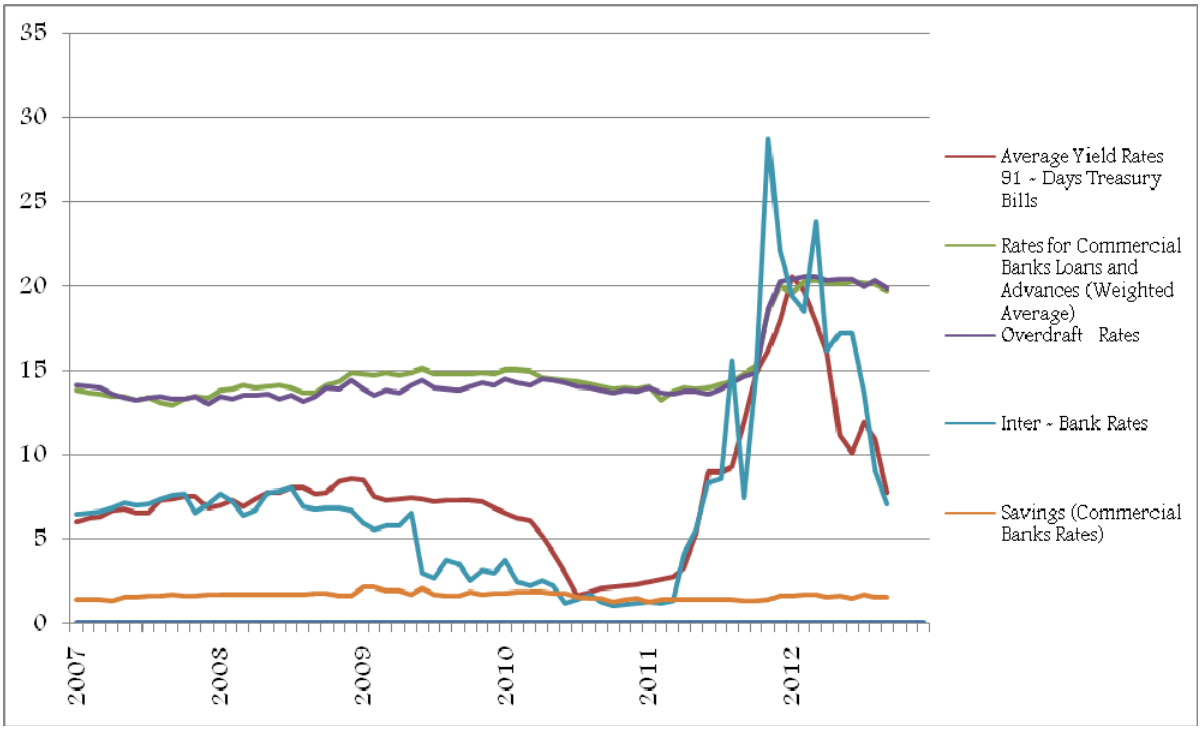
Table 4.2: Some of the leading sectors that recorded improved growth

Sector	2008	2009
Hotels and restaurants	-36.1%	42.8%
Construction	8.2%	14.1%
Transport and communication	3.1%	6.4%
Financial intermediation	2.7%	4.6%
Fishing	-13.2%	7.4%

Source: Economic Survey 2010

In the year 2010 the economy grew at the rate of 5.8 percent. Factors that influenced growth in 2010 were; Improved weather conditions; Low inflationary pressure; Low interest rates; Stable macroeconomic environment; increased credit to the private sector and higher investments. The Nominal GDP grew from KSh 2.5trillion (US $32, 187.6 million) in 2010 to KSh 3.0 trillion in 2011 (US $34,059.0 million). The economy (Real GDP) expanded by 4.4 per cent in 2011 compared to a revised growth of 5.8 per cent in 2010. Similarly the domestic economy is likely to maintain a positive growth but at a decelerated rate of between 4.5 and 5.5 percent in 2012. Risks likely to shape economic growth include: Delayed or insufficient rainfall; high interest rates which might constraint credit to the productive sector and may also result in loan defaults; Increase in Government expenditure on account of the implementation of the new constitution and elections; Political environment as the country moves close to the elections and high oil prices (Economic Survey 2012).

Figure 4.3: Trends in growth in interest rate between 2007- 2012



Source: Statistical Abstract 2012

Average interest rate for 91-day treasury bills dropped by 2.31 percentage points by December 2006 to stand at 5.83 per cent. The Inter- bank interest rates declined marginally by 1.45 percentage points to settle at 6.34 per cent by December 2006. Commercial banks' lending rates remained stable at an average 13.77 per cent in the year 2006 with the second half recording 13.74 per cent. Average interest rate on 91-day treasury bills decreased from 2.98 per cent recorded in June 2010 to 2.04 per cent in September 2010 but began rising in December 2010 to 2.28 per cent, 2.59 per cent in March 2011 and settling at 5.35 per cent in June 2011. Lending interest rates declined from 14.39 per cent recorded in June 2010 to 13.91 per cent in June. However, the average interbank interest rates rose significantly from 1.14 per cent to5.56 per cent over the same period. Between February and June 2011, 91 day Treasury bill (T-bill) rates rose by an unprecedented 700 basis points to touch 9%. This level of interest rates was last witnessed in May 2002 (Economic Survey 2010). Over the same period, the Kenya Shilling depreciated by close to 10%, touching Kshs. 90 to the dollar, a level last seen 17 years ago. The

large and rapid increase in interest rates will have an immediate and significantly negative impact on our economic prospects. Expansion of the economy is driven by increases in consumption, investment, exports and improvements in productivity. Low interest rates are very strongly linked to economic growth because they increase the availability of affordable credit for investment and consumption and result, therefore, in an increase in the overall rate of economic activity in a country. Banks have already begun increasing lending rates in response to the recent increase in interest rates. The low interest rate regime has been a crucial driver of economic growth and has contributed, consequently, to marked improvement in both formal and informal employment and to an enhancement in the quality of life.

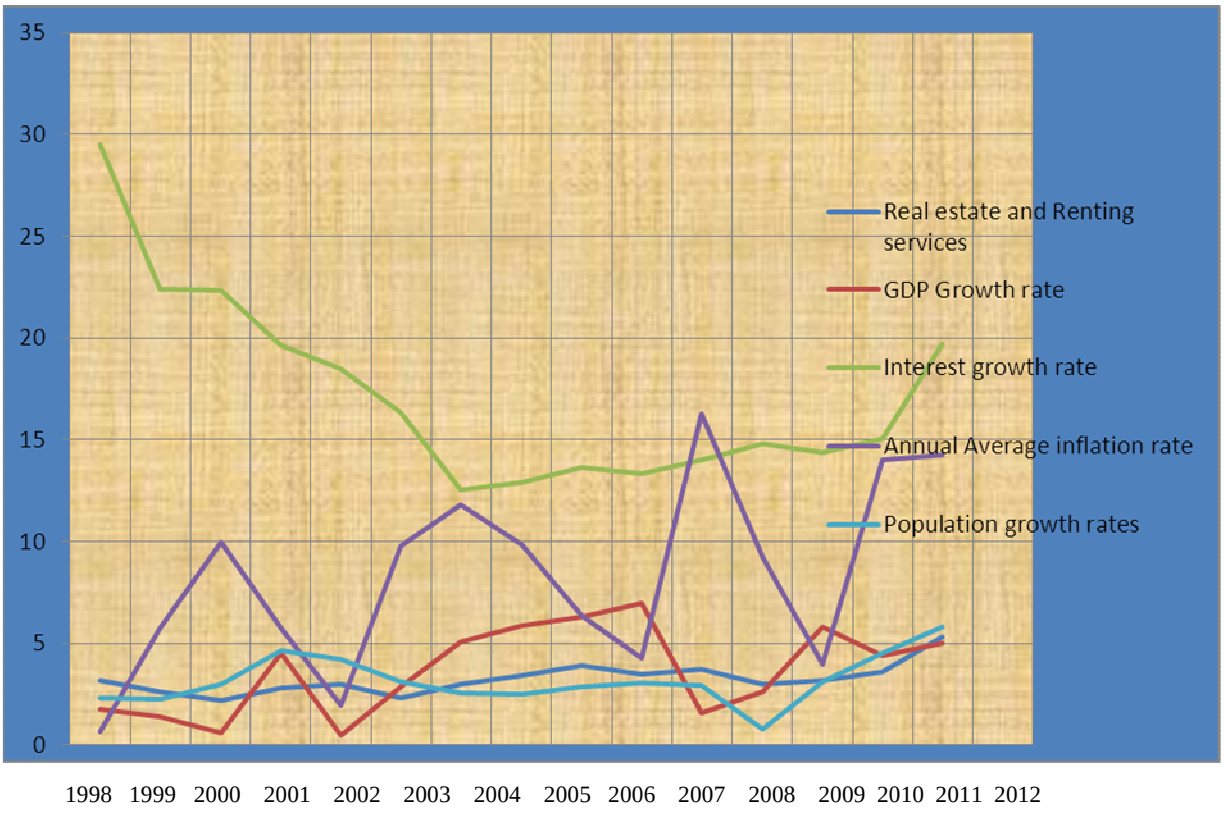
The year 2004 was the first year in very many years in which the rate of economic growth at 5.1% exceeded annual population growth, which stood at 2.54%. This was a notable development because it meant that, for the first time, income per person had increased at an average rate of 2.56% (that is the economic growth rate less the population growth rate). The economic growth rate in 2004 was preceded by a sharp decline in interest rates with the T-Bill rate falling to 1% and lending rates declining from more than 18% in 2003 to 14% in 2004. Interest rates have remained relatively low and, as a result, credit to businesses and households has increased tremendously (Economic Survey 2004). According to information available from the Central Bank of Kenya website, between June 2004 and December 2010 credit to the private sector expanded by a massive 212% to top Kshs. 888 Billion. One of the biggest beneficiaries of the credit expansion has been private households, with credit expanding by a massive 339% to Kshs. 123 Billion.

Other beneficiaries were Small and Medium Sized Enterprises, micro enterprises, informal business activities and other previously non-banked segments of the population. The Central Bank has felt compelled to increase interest rates to control inflation, which has risen from 5.4% to 12.95% in the five months to May 2011. High interest rates that prevailed during the third quarter of 2011 were on account of the Central Bank's sustenance of a tight monetary policy.
Expansion in broad money supply slowed to 13.6 per cent during the review period compared to a growth of 18.0 per cent during a similar period of 2011 (Statistical Abstract 2012). Weighted

interest rates on commercial banks loans and advances rose significantly from an average of 14.41 per cent during the third quarter of 2011 to 20.0 per cent in corresponding period of 2012. The average yield rate for the 91-day Treasury bills, which is a benchmark for the general trend of interest rates, increased from 8.097 per cent in January 2013 to 8.384 in February 2013. The inter-bank rates were 9.047 during the period Interest rates growth. The Central Bank has a statutory objective to formulate and implement a monetary policy directed at achieving and maintaining stability in the general level of prices. In March 2011, the Monetary Policy Committee increased the Central Bank Rate (CBR) by 25 basis points.

The rate of increase of the T-Bill rate has been considerably more brutal because the market is aware that the government has to borrow to finance its budget deficit and, therefore, it is demanding its pound of flesh. The Bretton Wood's institutions (the IMF and the World Bank) have also actively advocated a policy of increasing interest rates (Monthly Economic Review January 2013). In a series of recent publications they have called for tighter monetary policy in emerging markets to control what they consider to be overheating economies. Analysts and economic commentators have also argued that increasing interest rates will reverse the depreciation of the Kenya shilling against major currencies by increasing portfolio flows.

Figure 4.4: Trends in growth in real estate, GDP, Interest rates, inflation rates and population growth between 1998-2012



Source: Statistical Abstract (2007, 2012) , Selected Economic Indicators (2000-2011)

The Figure 4.3 above compares real estate growth with the selected factors that influence the growth. The lending rate affect the ability of investors to borrow money and as the rate rose there was decline in the growth in real estate. For instance in 2001 the lending rate by commercial banks stood at 19.67% and to fell 18.51% the following year and as a result the growth in real estate rose from 2.8% in 2001 to 3% in 2002 (Economic Survey 2003). Similarly interest rates fell from 14.80% in 2009 to 14.40% in 2010 and as result the real estate and renting services rose from 3% in 2009 to 3.2% in 2010. On the other the economic growth as measured by the GDP growth experienced the highest growth in 2007 growing at the rate of 7% but fell sharply to 1.6% on 2008 as result of the post-election violence. However the growth picked up to 5.8% in 2010 and is projected to grow at 5.5% in 2012.

During period between 2007 to 2012 the real estate rose from 3.5% in 2007 to 3.7% in 2008 but fell slightly 3.6 % in and by the end of the third quarter the investment was growing at 4% (Economic Survey 2012). The high rate of population growth put pressure on the existing stock of housing and this made demand for housing to outstrip the housing supply result to the establishment of informal settlement. For instance population growth in 2005 stood at 2.5% and increased slightly to 2.85% and 3.05% in the subsequent years of 2006 and 2007 respectively. The growth further picked up to 3.11% in 2010 and is projected to grow at 5 % in 2012. The main factors attributing to the upward trend were due to increased birth rate and reduced mortality rates. Overall inflation rate declined from 11.6% in 2004 to 10.3% in 2005. Similarly the Underlying inflation however, increased from 6.8% in 2004 to7.4% in 2005 mainly due to high international oil prices and electricity costs. The average annual inflation rate went up from 10.3 percent in 2005 to 14.5 per cent in 2006 mainly due to increased international oil prices and the drought that was experienced in the 1st quarter of the year under review. Underlying inflation, which excludes food commodities declined from 7.4 per cent in 2005 to 5.5 per cent in2006. The average annual inflation rate rose from 9.8% in 2007 to26.2% in 2008. This was the highest rise in inflation since1994 when it reached 28.8%. Underlying inflation rose from 5.7% in2007 to 11.1% in 2008.

The rise in inflation was caused by the high food and fuel prices witnessed during the period under review. Inflation eased from 16.2% in2008 to 9.2% in 2009. This was occasioned by reduction in fuel and food prices (Statistical Abstract 2010). Inflation was contained within the Government's target of 5.0 per cent in2010. The average annual inflation was 4.1 percent in 2010 down from a high of 10.5 percent recorded in 2009. The decline in the inflation rate was mainly on account of:-Favorable weather which led to low food prices emanating from improved agricultural production, Competition between the mobile telephone operators which resulted in reduction in calling rate. Annual inflation increased to 14.0 per cent in 2011 from 4.1 per cent in 2010. The Inflation rate averaged at 6.4 per cent during the review period from a high 16.5 per cent experienced during the third quarter of 2011 and the rise in inflation was mainly on account of:- Sharp increase in oil prices,

Inadequate rainfall in the first half of the year, which pushed prices of staple foods upwards and Weakening of Kenya shilling against major currencies (Economic Survey 2012).

4.2 DATA ANALYSIS

Data analysis entailed the model estimation and specification and assessment of the theoretical model so as to test whether it conforms to the expected economic theory. Test statistics involving the t distribution on the effect individual explanatory variables, the F statistics on the overall effect of the regression equation i.e the Analysis of Variances (ANOVA). In addition test on violation of the classical linear regression assumptions was undertaken. Such test included the tests of multi collinearity, test for presence of serial correlation between error terms (autocorrelation) and test for the presence of heteroscadacity. Hypothesis testing was carried out to answer the research questions.

4.2.1 Model Estimation

The econometric model which was a multiple regression was of the form:

$Y= \alpha+b_1X_1+b_2X_2+b_3X_3+b_4X_{4+}\mu_t$

Where Y = the dependent variables α=the autonomous variable

b_1,b_2,b_3, b_4=the regression coefficient under estimation U_t =the error term

Table 4.3 Variables Entered/ Removed (b)

Model	Variables Entered	Variables Removed	Method
1	Population growth rates, GDP growth rate, Annual Average Inflation rate, interest growth rate(a)	.	Enter

a All requested variables entered.

b Dependent Variable: real estate and renting services

source;?

Table 4.4 : Coefficients(a)

Model		Un standardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	13.372	.045		6.846	.047
	GDP growth rate	4.117	.022	5.144	4.251	.039
	Interest growth rate	-1.615	.078	2.452	-2.987	.015
	Annual Average Inflation rate	-2.848	.044	3.572	-5.981	.042
	Population growth rates	-.416	.177	.746	-1.218	.251

a Dependent Variable: real estate and renting services

Source: Economic Surveys 2000 - 2012

The multiple regression was translated to incorporate the real variables under investigation as follows:

Re= f(GDP, Int,infl,Pop)

$RE=\alpha +X_1GDP +X_2int+X_3infl+X_4Pop +Ut$

Where α=the autonomous component

Int = interest rate

GDP=Gross domestic product growth rate

Infl = inflation rate

Pop = population growth

RE= 13.372 + 4.117 GDP - 1.615int - 2.848infl -0.416Pop.

se (0.045) (0.022) (0 .078) (0.044) (0.177)

t 6.84 6.425 2.987 5.981 1.218

4.2.2 Model interpretation

From the model above it can be observed that13.392% percent in growth in real estate is independent of the changes in GDP, variation in interest rates, changes in inflation rates and

growth in population. This is the autonomous investment. In addition, a one percent change in the GDP growth result to 4.117% change in growth in real estate holding constant the changes in interest rates, inflation rates and population growth. The relationship is direct and the change is more than proportion. Similarly, one percent change in interest rate results to 1.615% changes in real estate growth holding constant the changes in GDP, inflation rates and population growth. The relationship is inverse with a more than proportion change. In addition one percent change in inflation rates results to 2.848% changes in real estate growth holding constant the changes in interest rates, GDP and population growth. The relationship is inverse and the change is more than proportion. More over a one percent change in population growth rate results to a 0.416% changes in real estate growth holding constant the changes in interest rates, GDP and inflation rates. The relationship is inverse and the change is less than proportion.

Table 4.5: Correlation Coefficients

		Real estate and renting services	GDP growth rate	Interest growth rate	Annual Average Inflation rate	Population growth rates
Real estate and renting services	Pearson Correlation	1	.826	-.756	-.0.781	-.288
	Sig. (2-tailed)		.040	.061	.056	.467
	N	15	15	15	15	15
GDP growth rate	Pearson Correlation	.826	1	-.642	.421	.416
	Sig. (2-tailed)	.040		.010	.858	.574
	N	15	15	15	15	15
Interest growth rate	Pearson Correlation	-.756	-.642	1	-.309	.721
	Sig. (2-tailed)	.061	.010		.262	.036
	N	15	15	15	15	15
Annual Average Inflation rate	Pearson Correlation	-.781	.421	-.309	1	-.340
	Sig. (2-tailed)	.056	.858	.262		.476
	N	15	15	15	15	15
Population growth rates	Pearson Correlation	-.288	.416	.721	-.340	1
	Sig. (2-tailed)	.067	.574	.456	.476	
	N	15	15	15	15	15

Source: Economic Surveys 2000 – 2012

The correlation results between real estate and interest rate showed that there was a negative correlation coefficient of -0.756 as expected. The results are statistically significant at the 0.05 significance level. The results still depict a strong negative relation between real estate investment and interest rates. These findings are in line with the study's expectations as well as literature. Lending rates by commercial bank have been high for the past decade, thereby limiting investors from accessing credit. As asserted by Ling and Naranjo (1997, 1998) as interest rates increase, the cost of accessing loans to investors increase, thereby constraining the growth in investment, especially real estate investment. Only highly rewarding investments which can attract returns that can enable the servicing of loans may be financed even at high interest rates, though the general trend would point to a declining real estate investment function. The study also found a high degree of association and a significant (at the 0.05 level) negative relationship between real estate investment and the inflation level. This is very consistent with the study's expectations as outlined in Chapter Two. A coefficient of-0.78 depicts a very strong negative association between real estate investment and the inflation level.

Thus as inflation falls, real estate investment would increase and vice-versa. The findings -0.78 inflation slope co efficient) thus cements arguments put forward by (Rossier (2002) and Debelle (2004),). The authors concurred that, rising inflation raises the cost of acquiring capital thus lowering the country's capital formation, hence negatively affecting investment. In addition results showed that, there was a high positive relationship between real estate investment and the GDP growth with a correlation coefficient of 0.826 and was significant at 5% level. These results are in support of the study hypothesis. This is also to the expectations of theory which proposed a positive relationship between real estate investment and the GDP level (Hoskins, Higgins and Cardew (2004)). Correlation results, however, depicts a weak inverse relationship between real estate investment and population growth with a value of coefficient -0.288 showing at the 0.05 level of significance. The findings are in support to the theory that there exists a negative relationship between real estate investment and population growth.

Table 4.6: Model Specification

Variable	Correlation	Regression	Theory Expectation
GDP growth rate	+	+	+
Interest growth rate	–	–	–
Annual Average Inflation rate	–	–	–
Population growth rates	–	–	–

Source: Selected Economic Indicators (2000-2012)

According to theory, GDP growth positively affects growth in real estate investment, regression results are in line with this expectation, and this is also asserted by the correlation results. Regression and correlation results for GDP; inflation rates and interest rates and population growth rates are in line with theory expectation. Most of the results from correlation analysis do support the study expectations and depict a strong association between the dependent variable and independent variables except for population growth results which depict a very weak association. From the results above it can be noted that the relationship between GDP and real estate is a positive one where as the relationship between interest rates and real estate is a negative one. Besides there exist a negative relationship between real estate and change in inflation rates and population growth. In addition, the adjusted multiple coefficient of determination of 0.706 indicates the high joint impact of the explanatory variables. It means that 70.6% of changes in real estate are explained by the changes in GDP, interest rates, population growth and variation in interest rate whereas 29.4% of changes in real estate are explained by other factors such as government policies, location, and exchange rate among others. This can be confirmed by the high figure of F value of 25.80 which implies a high joint explanatory ability. Similarly the low figure for d statistics of 1.623 indicates absence of serial auto correlation. In addition the low figure of the variance inflation factor of 3.401 indicates the absences of multi-collinearity. The model is therefore correctly specified.

Table 4.7: Test of basic violation of econometric assumption

Durbin-Watson d-statistic

Model Summary (b)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.861(a)	.749	0.706	1.247	1.623

Source: Economic Surveys 2000 – 2012

Total R-Square = x Durbin-Watson = y For absence of autocorrelation $x < y$

As the d statistic of 1.623 > 0.706 i.e $y > R^2$ it implies no sign of a spurious regression and the d-statistic also lies within the 5% Durbin-Watson critical value indicating no significant autocorrelation.

Multi collinearity Test

Problem may arise when two or more predictor variables are correlated. Greene (2003) argues that the prediction is not affected, but interpretation of, and conclusions based on, the size of the regression coefficients, their standard errors, or the associated z-tests, may be misleading because of the potentially confounding effects of multi collinearity. In the presence of multi collinearity, mason and Perreault (1991) demonstrates that the coefficient estimates may change erratically in response to small changes in the model or the data. However, the decision to finally drop an item also depends on a second step, where we apply the variance inflation factor (VIF) according to Greene (2003) and Baum (2006). The VIF detects multi collinearity by measuring the degree to which the variance has been inflated. A VIF greater than10 is thought to signal harmful multi collinearity suggested by Marquart (1970) and Baum (2006). The VIF is calculated as in Green (2003): VIF = $I/1-R^2$; VIF = 1 / 1 - 0.749 = 3.9841, Where R^2 is the unadjusted coefficient of multiple determinations of the regression variables. Unless the true coefficients of the dropped variables are zero, the model will be unspecified, resulting in biased estimates of some coefficients. Therefore the drop of items is only applied on the raw data level.

Table 4.8: Test statistical significance and hypothesis testing

ANOVA (b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	23.94	4	5.985	25.80	.0163(a)
	Residual	2.32	10	0.232		
	Total	26.26	14			

Source: Economic Surveys 2000 – 2012

a Predictors: (Constant), population growth rates, GDP growth rate, Annual Average Inflation rate, interest growth rate

b Dependent Variable: real estate and renting services

The t ratios for the constant, GDP, interest rates and inflation rates are greater than t critical of 2.306, with 11 degrees of freedom at 5% level of significance. Therefore it is can be concluded that Gross domestic product growth, interest rate changes and annual inflation growth are statistically significant determinants of real estate growth at 5% level. However the value for population growth falls far below the critical t of 2.306 implying that population growth is statistically insignificant determinants of real estate growth. To test the contribution of each explanatory variable an assessment of each individual correlation coefficient was undertaken to compare the strength of the relationship between the depended variable and the explanatory variables. The growth in GDP had the highest contribution with a correlation coefficient of 0.826 followed by inflation rate and interest rate with correlation coefficient of 0.781 and 0.751 respectively. Population growth had the least contribution with correlation coefficient of 0.288. Therefore the study hypothesis that GDP is the most significant contributor to the growth in real estate is accepted as supported by the data.

CHAPTER FIVE

5.0 FINDINGS, CONCLUSION AND RECOMMENDATIONS

Introduction

This chapter begins with a discussion of the findings in relation to study objectives where the main factors influencing the growth in real estate are discussed. Factors affecting growth in real estate included the GDP Growth, inflation growth, interest rates and Population growth. In addition the chapter summarized findings based on the data analysis. These findings were with respect to the contribution of each independent variable to the growth in real estate, summary of the statistical significance of each variable and test of explanatory ability of the independent variables. The chapter further gives policy recommendation based on how to regulate the GDP Growth, interest rates, inflation growth and population growth so that the growth in the investment can be sustained. Finally the chapter draws conclusions from the study findings and ends up by recommending areas for further research.

5.1 Summary of findings

Multiple Regression analysis had four variables namely; GDP, interest rates, inflation rates and population growth. The effect of each variable on the growth in real estate was as follows: GDP had a positive contribution to real estate investment as expected by theory. On the other hand Interest rates showed a significant negative relationship with real estate investment which was in line to the study's expectations. Similarly, Inflation growth related negatively to real estate investment as the theory postulated. In addition, though their effect was insignificant, population growth related negatively to real estate investment. The reason for an inverse relationship between population growth and real estate was due to the fact that most of the houses build are for middle and upper income earners whereas majority of the population are low income earners. The Multiple regression provided results that were fairly in line with the expectations of the study and the literature. Most of the results from correlation analysis did support the study expectations and depicted a strong association between the dependent variable and the independent variables except for population growth results which depicted a very weak association. The adjusted coefficient of multiple determinations depicted high joint explanatory

ability of the independent variables. Similarly the hypothesis testing results supported the study hypothesis that GDP growth contributed the most to the growth in real estate. Test for the violation of the basic econometric assumptions revealed the absence of serial auto correlation and the absence of multi collinearity .

Table 5.1: Means, standard deviation Descriptive Statistics

	Mean	Std. Deviation	N
Real estate and renting services	3.247	.7492	15
GDP growth rate	3.693	2.1825	15
Interest growth rate	16.8120	3.68568	15
Annual Average Inflation rate	8.2653	4.65025	15
Population growth rates	3.1767	1.20109	15

Source: Economic Surveys 2000 - 2012

From Table 5.1 above it can deduced that the annual average real estate growth was 3.247% with standard deviation of 0.7492. Similarly, GDP grew at an annual average of 3.693% with standard deviation of 2.1825. In addition the annual average lending rate was at 16.812% with a standard deviation of 3.68568. Besides, annual inflation growth was at 8.2653% with a standard deviation of 4.65025. The average annual population growth rate was at 3.1767% with standard deviation of 1.20109. The results indicated that real estate and renting business service had low annual growth. Similarly, there had been slow economic growth. However inflation, interest rate and population growth had been on a rising trend annually.

5.2 Limitation of the study

Data on major variables deemed necessary for the study such as GDP, inflation rates, and interest rates and population growth as well as real estate were not readily available. In addition the period on which the study was premised is relatively short to provide a good data set for sound conclusions to be drawn from the study. However, effort was made to get monthly economic

data from economic surveys and Statistical Abstract for the key variables, hence increasing the variability, validity and testability of the data.

5.3 Conclusion

From the results it was concluded that GDP; interest rates and inflation rates were the major determinants of real estate investment at the 0.05 level as per the SPSS fitted model. Besides GDP growth contributed the most to the growth in real estate in Kenya. Population growth had a statistically insignificant negative impact on real estate investment. GDP was positively related to real estate investment whereas interest rates and inflation rates were negatively related to the growth in real estate. Factors such as Interest rates, GDP and inflation rate had statistically significant influences on real estate investment. Policy measures geared toward improving the economic growth and curbing rising inflation rates and interest rates should be undertaken as they increased the investment levels

5.4 Recommendations

The government through the central bank regulates the interest rates and inflation growth via the monetary policy. Monetary policy is the process by which the Central Bank influences the level of money supply credit in the economy in order to minimize excessive price fluctuations, and promote economic growth. Monetary policy guards against inflation and ensures stability of prices, interest rates and exchange rates. This protects the purchasing power of the Kenya shilling and promotes savings, investment and economic growth. Through the monetary policy, the Central Bank creates conditions that allow for increased output of goods and services in the economy, thereby improving the living standards of the people. The Central Bank through the monetary policy formulates a policy to expand or contract money supply in the economy after detailed analysis and estimation of the demand for money in the economy. The following instruments are used to conduct monetary policy in Kenya:

- Reserve Requirement: commercial banks are required by law to deposit 6% of their deposits with the CBK. This is used to influence the amount of loans banks can advance the public and thus affects the supply of money.

An increase in this proportion reduces the amount of money available for commercial banks to lend while a reduction has the opposite effect. The central bank decreases the proportion of reserve requirement in order to increase the money supply in the economy.

- Open Market Operations (OMO): Central Bank buys and sells Government securities in the money market in order to achieve a desired level of money in circulation. When the Central Bank sells securities, it reduces the supply of money and when it buys securities it increases the supply of money in the market.
- Lending by the Central Bank: The Central Bank from time to time lends to commercial banks overnight when they fall short of funds thus affecting the amount of money in circulation and the amount deposited by banks at the CBK. In order to reduce interest rates the commercial bank lowers the lending rates to commercial banks which in turn reduces the lending rates to investors.
- Moral Suasion: The Central Bank persuades commercial banks to make decisions or follow certain paths to achieve a desired result like changes in the level of credit to specific sectors of the economy.

Some other measures that help to curb rising interest rates and inflation include the following:
Establishment of a well-developed financial sector, including a more integrated micro-credit sector. This can help expand access to an array of financial services (credit and insurance; saving facilities and payment instruments). This helps to finance small private firms at rates that do not cripple their operations.

Alternative Technologies: Using alternative technologies can be challenging in the Kenyan market, but if done correctly it has the potential to be an essential piece of bringing down the cost. The most important aspect to be aware of is ensuring that the look and feel of the home is similar, if not the same, as traditional techniques. When someone purchases a home, whether they are rich or poor, they want to put their savings into old-fashioned brick and mortar rather than a shiny new technology that is untested and unfamiliar. The ministry of housing disseminates information on low cost housing technology through the establishment of appropriate building technology centres in each constituency.

Avoiding speculation

This entails a careful development of strategies to avoid speculation from the outset. Some potential strategies include:

i. Developing strict criteria for buyers to qualify

ii. Ensuring owner-occupation within a short time period

iii. Limiting the number of homes that can be purchased by one individual

iv. Withholding title deed for a period of time, such as 5 years, so owners are unable tore-sell.

Develop contracts with suppliers

Given the volatile economic environment, materials prices can skyrocket and turn a healthy project completely unviable. In order to avoid this, develop fixed rate contracts with materials suppliers whenever possible. Some may even have Corporate Social Responsibility programs, so do not be afraid to market the social impact side of the project in order to negotiate better terms.

5.5 Areas for further research

Some of the areas for further research may include the following:

l. The impact of the cost of finance on the construction industry.

2. The effect of the population growth on real estate development.

.

REFERENCES

Abraham, M (2009) An Exploratory study of the factors that influence the capital structure of Real Estate firms in Kenya, Unpublished MBA, Thesis, Strathmore, University,

Ambrose, P. and Barlow. J (1987) *Housing provision and House building in Western Europe; increasing expenditure, Declining output ?* Housing policies under Fiscal austerity, pp. 111-125, London: Greenwood Press .

Babbie, E (2002) *Survey Research Methods* (2nd ed.). Belmont: Wodsworth.

Bailey (1966) Effects of race and of other demographic factors on the values of single family homes, *Journal Land Economics,* 42, May 1966.

Ball M. (1996) *Investing in new Housing:* Lessons for the future Bristol, The Policy Press.

Baum R & Crosby, N (1998) *Property investment Appraisal* London, Routledge.

Baum, Andrew E (1995) Can Foreign Real Estate Investment Be Successful ? *Journal of*

Real Estate Finance, Spring, pp. 81-89.

Bernard, Messah (2011) Factors Influencing Real Estate Property Prices, a Survey of Real Estates in Meru Municipality, Un Published MBA Thesis, Kenya School of Business & Management Studies Kenya Methodist University.

Chen and Hobb (2003) Global Real Estate Index-To capture different levels of market risk, *the: journal of Portfolio Management,* Special issue, pp. 66-76.

Chin, Wei, Dent, Peter; Roberts, Claire (2006) An Explanatory Analysis of Barriers to Investment and Market Maturity in Southeast Asian Cities. In: *Journal of Real Estate Portfolio Management,* vol. 12, no. 1, pp. 49-57.

Chomba, J M (1999) An assessment of the real estate prices in the urban areas of Kenya with special reference to commercial buildings in Nairobi, Unpublished MBA Thesis, University of Nairobi.

Collyns, C and A Senhadji (2003) *"Lending booms, real estate bubbles,* and the Asian financial crisis," in Asset Price Bubbles: The implications for monetary, regulatory, and

international policies, eds. W.C. Hunter, G.G. Kaufman, & M. Pomerleano, The MIT Press, Boston.

DiPasquale, Denise and William Wheaton (1992) The market for real estate and space: *A* conceptual frame work, in: *Journal Of the American Real Estate and Urban Economics Association,*vol.20 no.1,pp. 181-197.

Djankov, S ,LaPorta, et al R Lopez-de-Silanes, F.; Shleifer, A (2002) The regulation of entry. In: *Quarterly Journal of Economics,* vol. 117, no. 1, pp. 1-37.

Djankov, S LaPorta, et al R ; Lopez-de-Silanes, F Shleifer, A (2003) Courts. In: *Quarterly Journal of Economics,* vol. 118, no. 2, pp. 453-517.

Fisher, Jeffrey D and Webb, R Brian (1992) Current Issues in the Analysis of Commercial Real Estate. *In: Journal of the American Real Estate and Urban Economics Association,* vol. 20, no.1, pp. 211-227.

Fisher, Jeffrey D and Sirmans, C F (1993) *The Role of Commercial Real Estate in Multi-Asset Portfolio.* University of Connecticut, Centre for Real Estate and Urban Economic Studies, April, 1993.

Geoffrey, M (2011) Behavioral factors influencing investment decision in Kenya property market , Unpublished MBA Thesis, Strathmore University .

Golland A. (1996) Housing supply, profit and Housing production; the case study of United Kingdom, Netherlands and Germany, *Journal of Housing and Built environment,* vol. 11 No. 1, pages 5-30.

Golland A. (1996) *Private sector Housing Development between state and markets in a European context, the cutting edge*, Royal institution of chartered surveyors.

Hancock T. (1998) Caveat Partner ; *Reflections of partnership with the private sector*, Health Promotion international, vol. 13 No. 3.

Han, J (1996) Targeting market is popular: A survey of pension real estate investment advisors, in: *Journal of Real Estate and Finance* Vol. 13, no.1, 1996, pp. 66-75.

Hartzell, David and J Webb, R. Brian (1993) *Commercial Real Estate and Inflation During Periods of High and Low Vacancy Rates,* Working paper, Real Estate Research Institute Boston.

Hartzell, D J and Webbs J R (1998) Real Estate Risk and returns expectations ,Recent survey Results, *Journal of Real Estate Research* vol 3 No. 3 1998.

Hass Composite index,(2009), *Hass Consultants.*

Http://www.hass consult.co.ke./hass/index

Hassanein & Barkouky (2008) The Egyptian mortgage practice, *International Journal of Managing Projects in Business*, Vol 1, No 2, Emerald group publishing limited.

Hoskin and Cardew (2004) Macro Economic Variables and Real Estate Return: An international Comparison, *in: The appraisal Journal, Spring*, pp. 163-170.

Kibirige, M (2006) Mortgage Financing, How it works in Uganda, *the journal of capital markets industry*, Uganda, Volume 10, No 2, April-June, 2006.

King'oriah, George K (2004) *Fundamentals of Applied Statistics,* Jomo Kenyatta Foundation, Nairobi.

Knight Frank Kenya (1998) *Kenya property Report*, Nairobi.

Kothari, C R (1990) *Research methodology:* Methods and techniques. 2nd edition, New Delhi.

Kothari, C R (2004) *Research methodology:* Methods and techniques. New Delhi: New Age International (P) Limited Publishers.

La Porta, R Lopez-de-Silanes,et al F.; Shleifer, A ; Vishny, R (1997) Legal Determinants of

External Finance.In: *Journal of Finance,* vol. 52, no. 3, pp. 1131-1150.

La Porta, R ; Lopez-de-Silanes,et al F; Shleifer, A; Vishny, R. (1998): Law and finance. In:

Journal of Political Economy, vol. 106, no. 6, pp. 1113-1155.

La Porta, R; Lopez-de-Silanes,et al F ; Shleifer, A Vishny, R (2002) Investor Protection and

Corporate Valuation .In: *Journal of Finance,* vol. 57, no. 3, pp. 1147-1170.

Ling and Naranjo (1997) *Journal of Real Estate Finance and Economics*, Vol. 14, No. 3 Economic, Risk Factors and Commercial Real Estate Returns.

Lynn (2007) The Tectonic Forces of Global Real Estate: Implication for global investment and Portfolio Managers, in: *Journal of Real estate portfolio Management,* vol.13, no.1, pp 87-92.

Macoloo G. (1994) the changing nature of financing low income urban housing development in Kenya, *Journal of Housing studies,* vol. 9, issue 2, pages 281-289.

Matysiak and Tsolacos (2003) Identifying short term lending indicators for Real Estate Rental Performance, *Journal of Property Investment and Finance,* Vol. 2, No 3,MCB University Press limited.

Mitullah W. (2003) *Urban slums Report; The case study of Nairobi Kenya understanding slums*: Case study of the Global Report on human settlement.

Mugenda, O M & Mugenda, A G, (2003) *Research methods:* Quantitative and qualitative approaches. Nairobi: Acts Press.

Murigu, J (2005) An analysis of the decision making criteria for investing in commercial real estate in Kenya ,unpublished PhD Thesis, Department of land development ,University of Nairobi .

Nuri E S & Frank E N(2002) *The Role of Affordable Mortgages in Improving.Living Standards and Stimulating Growt*h, IMF Working Paper, 5.

Otiso K. (2003) *State voluntary and private sector partnership for slum upgrading and basic service delivery in Nairobi city* ,Kenya cities,vol. 20 ,issue 4 pp 221-229.

Ooi and Liow, (2004) *Risk Adjusted Performance of Real Estate Stocks*: Evidence from developing countries.

Republic of Kenya,(2004) Ministry of Housing,*Housing Policy Sessional paper No.3 2004*

Republic of Kenya, (2009) *Types of buildings: Central bureau of statistics:* Government printers: Nairobi

Republic Of Kenya, Kenya *National Bureau of Statistics, statistical abstract* various issues
Republic Of Kenya: Central Bank of Kenya, *Economic surveys* various issues.

R, G Ridker and J A Henning, (1967) *The determinants of residential property values with special references to air pollution*, Rev. Econ. Statistics, 44, May 1967.

Syagga**,**P M (1994) *Real Estate Valuation Handbook*, University of Nairobi Press, Nairobi.

Thalmann P. (2006) *Triggers for housing development*, Ecole Polytechnique Federale de Lausanne, station 16 CH 1015.

Van Doorn and Lisette (2003) *Investing in Europe: The way to diversify.* In: IPD Compendium of Real Estate Papers, paper presented at IPD European Property Strategies Conference, Wiesbaden.

Webb, C (2008) Measuring Social Capital and Knowledge Networks, *Journal of knowledge management*, Vol 12, No 5, Emerald group publishing limited.

Wheaton, Torto and Sivitanides, Southard (1999) *Evaluating Risk in Real Estate.*

APPENDICES

Appendix 1

Months	Cement Production and Consumption in Metric Tonnes						
	2010		2011		2012		
January	**290,805**	**264,849**	**364,432**	**364,711**	**350,615**	**272,261**	
February	**266,889**	**178,789**	**335,247**	**291,531**	**378,453**	**330,328**	
March	**300,610**	**223,450**	**355,858**	**289,361**	**397,009**	**328,259**	
April	**284,987**	**258,016**	**363035**	**319,710**	**360,540**	**308,617**	
May	**294,158**	**250,837**	**376,246**	**330,084**	**381,026**	**309,501**	
June	**312,176**	**274,073**	**365,494**	**295,465**	**396,951**	**329,366**	
July	**334,444**	**273,581**	**393,149**	**326,414**	**398,458**	**337,295**	
August	**323,478**	**284,184**	**405,546**	**342,284**	**399,873**	**339,916**	
September	**319,464**	**253,692**	**407,838**	**302,720**	**382,141**	**322,912**	
October	**351,963**	**309,066**	**361,941**	**341,277**	**421,579**	**365,769**	
November	**323,447**	**281,564**	**364,789**	**327,859**	**415,866**	**382,400**	
December	**307,385**	**252,726**	**384,853**	**339,516**	**357,212**	**310,639**	
TOTAL	**3,709,807**	**3,104,827**	**4,478,428**	**3,870,930**	**4,639,723**	**3,937,263**	

Source : Monthly Economic indicators 2012

Appendix ii

VALUE OF BUILDING PLANS APPROVED BY NAIROBI CITY COUNCIL (NCC) KSh Million

	ACTUAL			REAL **		
	RESIDENTIAL	**NON RESIDENTIAL**	**AGGREGATE**	**RESIDENTIAl**	**NON RESIDENTIAL**	**AGGREGATE**
2011						
Nov	13,804.5	4,397.1	18,201.5	235.8	71.4	303.6
Dec	12,497	5,186.7	17,684.5	213.5	84.3	295.0
2012						
Jan	3,787.5	4,783.3	8,570.8	60.4	75.6	134.3
Feb	5,078.9	4,606.1	9,685.0	81.0	72.8	151.7
Mar	3,756.9	12,616.0	16,372.9	59.9	199.5	256.5
Apr	5,319.8	12,700.9	18,020.7	84.8	200.9	282.4
May	5,589.5	4,204.2	9,793.7	89.2	200.9	282.4
Jun	5,712.7	7,349.9	13,062.6	91.1	116.2	204.7
Jul	5,928.3	11,636.1	17,564.4	94.5	184.0	275.2
Aug	6,685.0	14,775.0	21,460.0	106.6	233.7	336.2
Sep	8,497.5	12,809.7	21,307.3	135.5	202.6	333.9
Oct	6,379.1	14,506.9	20,886.0	101.7	229.4	327.3
Nov	11,546.0	3,008.0	14,554.0	184.1	47.6	228.0
Dec	6,903.7	12,273.5	18,298.4	110.1	194.1	286.7

Source: Nairobi City Council ** Actual deflated by relevant construction cost indices (2011-2012)

Appendix iii

TIME SERIES DATA ON 91 DAYS TREASURY BILL INTEREST RATES

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1998	26.28	26.33	26.74	26.98	26.38	25.48	24.67	23.74	22.47	20.59	17.66	12.56
1999	10.70	8.95	8.84	9.03	9.63	11.44	14.47	14.84	15.78	17.63	18.14	19.97
2000	20.30	14.84	11.28	12.44	11.22	10.47	9.90	9.25	10.36	10.65	11.17	12.90
2001	14.76	15.30	14.97	12.90	10.52	12.07	12.87	12.84	12.39	11.63	11.50	11.01
2002	10.85	10.61	10.14	10.01	9.04	7.34	8.63	8.34	7.60	8.07	8.30	8.38
2003	8.38	7.77	6.24	6.25	5.84	3.00	1.54	1.18	0.83	1.00	1.28	1.46
2004	1.58	1.57	1.59	2.11	2.87	2.01	1.71	2.27	2.75	3.95	5.06	8.04
2005	8.26	8.59	8.63	8.68	8.66	8.50	8.59	8.66	8.58	8.19	7.84	8.07
2006	8.23	8.02	7.60	7.02	7.01	6.60	5.89	5.96	6.45	6.83	6.41	5.73
2007	6.00	6.22	6.32	6.65	6.77	6.53	6.52	7.30	7.35	7.55	7.52	6.87
2008	6.95	7.28	6.90	7.35	7.76	7.73	8.03	8.02	7.69	7.75	8.39	8.59
2009	8.46	7.55	7.31	7.34	7.45	7.33	7.24	7.25	7.29	7.26	7.22	6.82
2010	6.56	6.21	5.98	5.17	4.21	2.98	1.60	1.83	2.04	2.12	2.21	2.28
2011	2.46	2.59	2.77	3.26	5.35	8.95	8.99	9.23	11.93	14.80	16.14	18.30
2012	20.56	19.70	17.80	16.02	11.18	10.09	11.95	10.93	7.77	8.98	9.80	8.25

SOURCE: CENTRAL BANK OF KENYA (2012)

Appendix iv

COMMERCIAL BANKS' WEIGHTED AVERAGE INTEREST RATES (%) Lending rate

Year	Jan	Feb	Mar	April	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1998	29.81	29.90	30.20	30.41	30.54	30.46	30.3	29.7	29.08	28.9	28.19	26.2
1999	23.67	22.83	21.36	20.90	20.86	20.70	21.1	21.9	22.45	23.1	24.43	25.2
2000	25.14	25.39	23.76	23.44	23.40	23.11	22.4	21.2	20.57	20.2	19.79	19.6
2001	20.27	20.13	20.19	19.56	19.20	19.26	19.7	19.5	19.44	19.8	19.44	19.5
2002	19.30	19.18	18.86	18.69	18.54	18.38	18.1	18.1	18.14	18.3	18.05	18.3
2003	19.02	18.83	18.49	18.57	18.52	15.73	15.3	14.8	14.82	14.7	14.07	13.3
2004	13.48	13.01	13.12	12.67	12.55	12.17	12.3	12.1	12.27	12.4	11.97	12.3

2005	12.12	12.35	12.84	13.12	13.11	13.09	13.1	13.0	12.83	12.9	12.93	13.2
2006	13.20	13.27	13.33	13.51	13.95	13.79	13.7	13.6	13.54	14.0	13.93	13.8
2007	13.78	13.64	13.56	13.33	13.38	13.14	13.3	13.0	12.87	13.2	13.39	13.3
2008	13.78	13.84	14.06	13.91	14.01	14.06	13.9	13.7	13.66	14.1	14.33	14.9
2009	14.78	14.67	14.87	14.71	14.85	15.09	14.8	14.8	14.74	14.8	14.85	14.7
2010	14.98	14.98	14.80	14.58	14.46	14.39	14.3	14.2	13.98	13.8	13.95	13.8
2011	14.03	13.92	13.92	13.92	13.88	13.91	14.1	14.3	14.79	15.2	18.51	20.0
2012	19.54	20.28	20.34	20.22	20.12	20.30	20.2	20.1	19.73	19.0	18.74	18.2

SOURCE: CENTRAL BANK OF KENYA (2012)