

**THE EFFECT OF MACRO-ECONOMIC VARIABLES ON  
PERFORMANCE OF REAL ESTATE INDUSTRY IN KENYA.**

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## **DECLARATION**

I declare that this research project is my original work and has not been presented for a degree in any other University.

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## **DEDICATION**

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# TABLE OF CONTENTS

<b>DECLARATION</b> .....	i
<b>ACKNOWLEDGEMENT</b> .....	iii
<b>DEDICATION</b> .....	iv
<b>LIST OF TABLES</b> .....	viii
<b>LIST OF FIGURES</b> .....	ix
<b>LIST OF ABBREVIATIONS</b> .....	x
<b>ABSTRACT</b> .....	xi
<b>CHAPTER ONE</b> .....	1
<b>INTRODUCTION</b> .....	1
1.1 Background of the Study.....	1
1.1.1 Macroeconomic Variables.....	3
1.1.2 Performance of Real Estate Industry in Kenya .....	5
1.1.3 Effects of Macroeconomic Factors on Performance of Real Estate Industry.....	7
1.1.4 Real Estate Industry in Kenya.....	9
1.2 Research Problem .....	10
1.3 Research Objective .....	12
1.4 Value of the Study .....	13
<b>CHAPTER TWO</b> .....	14
<b>LITERATURE REVIEW</b> .....	14
2.1 Introduction.....	14
2.2 Theoretical Literature Review .....	14
2.2.1 Monetarism Theory of Inflation.....	14
2.2.2 Modern Portfolio Theory .....	15
2.2.3 Quantity Theory of Money .....	16

2.3	Determinants of Real Estate Industry Performance.....	17
2.3.1	Unemployment.....	17
2.3.2	Inflation.....	18
2.3.3	Real GDP .....	19
2.3.4	Interest Rate .....	19
2.3.5	Exchange rates .....	20
2.3.6	Diaspora remittances.....	21
2.4	Empirical Literature review .....	21
2.5	Summary of the Literature Review.....	24
<b>CHAPTER THREE .....</b>		<b>26</b>
<b>METHODOLOGY .....</b>		<b>26</b>
3.1	Introduction.....	26
3.2	Research Design.....	26
3.3	Population .....	26
3.4	Data Collection Methods .....	26
3.5	Data Analysis Technique .....	27
3.6	Test of Significance .....	28
<b>CHAPTER FOUR.....</b>		<b>29</b>
<b>DATA ANALYSIS, RESULTS AND DISCUSSION.....</b>		<b>29</b>
4.1	Introduction.....	29
4.2	Data Analysis and Presentation .....	29
4.2.1	Real Estate Prices.....	29
4.2.2	Interest Rates.....	30
4.2.3	Real GDP Growth.....	31
4.2.4	Inflation Rates.....	32

4.2.5	Growth in Diaspora Remittances .....	33
4.2.6	Exchange Rate Fluctuations.....	34
4.3	Regression Analysis.....	35
4.3.1	Analysis of Variance.....	37
4.3.2	Model Coefficients.....	38
4.6	Interpretation of the Findings.....	39
	<b>CHAPTER FIVE .....</b>	<b>42</b>
	<b>SUMMARY, CONCLUSION AND RECOMMENDATIONS .....</b>	<b>42</b>
5.1	Introduction.....	42
5.2	Summary .....	42
5.3	Conclusion .....	44
5.4	Policy Recommendations.....	45
5.5	Limitations of the Study.....	46
5.6	Suggestions for Further Studies .....	46
	<b>REFERENCES.....</b>	<b>47</b>
	<b>APPENDICES.....</b>	<b>52</b>

## LIST OF TABLES

Table 4.1: Model Summary Statistics.....	36
Table 4.2: Analysis of Variance (ANOVA).....	37
Table 4.3: Model Coefficients.....	38



## **LIST OF FIGURES**

Figure 4.1: Trend of Real Estate Growth .....	29
Figure 4.2: Trend of Annual Interest Rates .....	30
Figure 4.3: Real GDP Growth .....	31
Figure 4.4: Inflation Rate Trends .....	32
Figure 4.5: Growth in Diaspora Remittances .....	33
Figure 4.6: Exchange Rate Fluctuation .....	34

## LIST OF ABBREVIATIONS

AAK	-	Architectural Association of Kenya
CAPM	-	Capital Asset Pricing Model
CBK	-	Central Bank of Kenya
GDP	-	Gross Domestic Product
IRR	-	Internal rate of return
KFPGRI	-	Knight Frank's Prime Global Rental Index
KNBS	-	Kenya National Bureau of Statistics
NHC	-	National Housing Corporation
NOI	-	Net Operating Income
REIT	-	Real Estate Investment Trust
REIT	-	Real Estate Investment Trust
U.S	-	United States

## **ABSTRACT**

The real estate industry plays a very important role in the economy. The industry has increasingly attracted the attention of investors in the recent past. Kenya's real estate industry is expected to remain strong in coming years. This has not been the case and thus this study sought to establish the effects of macroeconomic variables on the performance of real estate industry in Kenya given they are key in the growth of the country's economy. The study was carried out through a descriptive research design. The measure performance of the real estate industry was measured against the macroeconomic variables such as inflation rate, exchange rates, interest rate, Diaspora remittances and real GDP growth. Data for a period of 15 years from 2000 to 2014 was collected from publication in Hassconsult, CBK and KNBS. The study used multiple regression and correlation analysis research design. The study employed annual secondary data which was for a period of 15years 2000 to 2014. The data was analyzed using SPSS version 20. The findings are important to various investors in the real estate industry and finance students etc. Gross domestic product, inflation, Diaspora remittances, and banks lending interest rates in that respective order established to be the macroeconomic factor that had the greatest positive effect on real estate industry performance, while exchange rate of the dollar against Kenya shilling showed a negative relationship albeit to a small extent, hence, these macro economic variables should be carefully be considered by all investors in the real estate industry. Therefore this study proves credence and confirms the researchers' theory that the performance of real estate industry is affected by fundamental macroeconomic factors such as GDP, inflation, exchange rate, interest lending rates and Diaspora remittances. In summary therefore mentioned macroeconomic should closely monitored and taken to account by real estate industry managers since they have an effect on the overall performance of the industry.

# **CHAPTER ONE**

## **INTRODUCTION**

### **1.1 Background of the Study**

Real estate development is becoming a major issue emerging from the on-going devolution debate, is how housing situation will look like at the country headquarters. They are expected to be the major engines of economic growth and will attract key investments. Workers of many companies setting based in Kenya and at the counties are expected to create a high demand for housing according to Architectural Association of Kenya (AAK, 2011). The Kenyan market has been awfully lucrative especially for foreign investors because of the high profit margin of 20 to 30% which is impossible even in the US or European industry (Lueby 2010). The industry in Kenya has been a boom that has begun somewhere in the mid to late 2000 because the property market is responding to increased demand (Knight Frank, 2012).

According to Nyugen (2015), the real estate boom survived the 2008 post-election violence and global economic down turn that crippled other sectors such as tourism and Agriculture, but danger is looming. Last year's weakening of the shilling against major currencies double digit inflation and interest rates hike to a historical 30% up from 14% taking its toll on one of Kenyans most resilient sectors. This is due to interest rate which is a macroeconomic variable. Wisniewski (2011) indicates that the processes occurring in real estate are subject to different impulses, and these impulses are different depending on the financial and economic situation of a given country.

For example, different macro-economic factors vary over time and they influence economic processes, practices and outputs in an economy. Developers and buyers are struggling to meet financial cost occasion reed by high interest rates caused by aggressive tightening of monetary policy.

The study sought to determine the relationship between selected macroeconomic variables such as unemployment rate, inflation rate, level of stock market exchange rate interest rate and rate of growth of GDP on performance in real estate in Kenya. This study was therefore an attempt to present the concepts of macroeconomic variables, performance and a brief background of the real estate firms in Kenya, to counter the weakening of the shilling and high inflation. This is a major effect on performance of the industry (Mulupi, 2012).

Lynn (2007) states that since macro-economic factors often influence one another and at times very correlated, when one factor changes, ripple effect occurs and the economy is affected much more. To this end, measuring the effect of macroeconomic variables is usually a difficult endeavor. In the past decade, multilateral financial institutions, such as the international monetary fund, have to focus on factors affecting financial stability across countries. While foreign currency, equity and money market indicators have long been used to gauge financial stability the significance of real estate market and interplay with the business cycle has recently attracted greater attention in the literatim ( Ucal and Gokkent, 2007)

### **1.1.1 Macroeconomic Variables**

Macroeconomic variables are indicators or main sign posts signaling the current trends in the economy. Like all experts the government, in order to do a good job of macro managing the economy must study analysis and understand the major variables that determine the current behavior of macro economy (Bernharden, 2009). Research from Lioe et al. (2006), analyze macroeconomic influences on worldwide property market and finds that GDP, inflation and interest rate are the most relevant macroeconomic indicators to examine. These are major indicators for the real estate industry.

In today's world, we interpret macroeconomic variables quite differently within the parameters of the global economic crisis and other external economic shocks as they occur, and we cannot apply the directly-observed macroeconomic variables in crisis situations in the same way as we do in a tranquil period. Aguiar and Broner (2006), believe that emerging market predicaments may be associated with huge movements in macroeconomic fundamentals and asset prices, and so there is all the more reason for making a distinction between directly-observed macroeconomic variables and a computed series of innovations to the macroeconomic fundamentals.

Inflation will affect interest rate levels. The higher the rate of inflation, the more interest rates are likely to rise. This occurs because lenders will demand higher interest rates as compensation for the decrease in the purchasing power of the money they will be repaid in the future. (James, 2001) .There is a correlation between inflation and house prices - in fact there are correlations between inflation and any good with a limited supply.

Increasing money supply causes inflation and house prices to increase (Modigliani, 1996). A country with a consistently lower inflation rate exhibits a rising currency value, as its purchasing power increases relative to other currencies. Lenders will demand higher interest rates as compensation for the decrease in the purchasing power of the money they will be repaid in the future (McGraw, 1999).

GDP is one of the macroeconomics measures. It measures the total value of domestic production for the entire domestic economy. The aggregate integrates consumers' governments and investors' spending money within the nation, and also includes the net exports (exportations- importations). As GDP is an indicator of the health of the economy a high GDP is synonym of a favorable economic condition value and that should positively drive investments in SIIC. Consumers spend their money in renting or owning houses, investors in new constructions and governments in infrastructures. Real GDP contrary to nominal GDP allows to erase the inflation effect and to compare the measure over our time line consideration of five years. Inversely, when unfavorable economic conditions occur, that should affect investments (Chane-teng, 2008).

The rates on interbank exchanges and treasury bills have as profound an effect on the value of income-producing real estate as on any investment vehicle. The influence of interest rates on an individual's ability to purchase residential properties (by increasing or decreasing the cost of mortgage capital) is so profound; therefore many people incorrectly assume that the only deciding factor in real estate valuation is the mortgage rate (Christopher, 2001). However, mortgage rates are only one interest-related factor influencing property values.

Because interest rates also affect capital flows, the supply and demand for capital and investors' required rates of return on investment, interest rate will drive property prices in a variety of ways (Andrew, 2004). The most evident impact of interest rates on real estate values can be seen in the derivation of discount or capitalization rates. The capitalization rate can be viewed as an investor's required dividend rate, while a discount rate equals an investor's total return requirements.  $K$  usually denotes RROR, while the capitalization rate equals  $(K-g)$ , where  $g$  is the expected growth in income or the increase in capital appreciation (Hull, 1989).

Each of these rates is influenced by prevailing interest rates because they are equal to the risk free rate plus a risk premium. For most investors, the risk-free rate is the rate on U.S Treasuries; these are guaranteed by the credit of the U.S. government, so they are considered risk-free because the probability of default is so low. Because higher risk investments must achieve a commensurably higher return to compensate for the additional risk borne, when determining discount rates and capitalization rates, investors add a risk premium to the risk-free rate to determine the risk-adjusted returns necessary on each investment considered.

### **1.1.2 Performance of Real Estate Industry in Kenya**

Real estate has been one of Kenya's fastest growing sectors over the last decade followed by burgeoning middle class with higher disposable incomes. Returns on investments in the sector have easily outpaced those of equities and government securities (Mbula, 2013). According to Taylor (2009), the growth of real estate industry is important for the overall development of a country.



Most importantly, it increases the well-being of household by providing superior shelter and helping establish personal wealth that can be leveraged for creation of more wealth. The development of real estate industry is important for the overall development of a country as it contributes to employment, the development in commercial banking and ultimately to the development of capital markets.

According to a study carried out by Hass consult website (2014), house price increases were less robust by end June 2014 following a decline in asking prices for top of the market detached houses. Detached house prices fell by 0.3% in 2014 and 2.1% on a year earlier, in a price correction from more than 10% post-election surge in detached house prices. Strongest price rally remained for semidetached houses, rising 3.3% in 2014 and 6.7% on the earlier year. Rents rose during the year 2010, but house prices rose faster, seeing some further marginal falls in yields, however, overall rental yields held above a 6 percent return, remaining far ahead of treasury bill yield of between 2.0 and 2.25 per cent. The best rental yield continued to be on town and maissonette, where rents remained equivalent to 7.6 per cent of house purchase price. The yield for apartments held at 7.0 per cent and for top- end houses at 6.3 per cent.

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.

### **1.1.3 Effects of Macroeconomic Factors on Performance of Real Estate Industry.**

Real estate represents a significant portion of most people's wealth, and this is especially true for many homeowners in the United States. The average American has nearly one-third of his or her worth tied up in real estate translating to a valuation of nearly \$20 trillion for the entire market. The size and scale of the real estate market make it an attractive and lucrative sector for many investors. Like any other sector of investment, real estate is affected by diverse factors including; fluctuations in interest rate, inflation rate, real GDP, unemployment etc. (O'Sullivan & Sheffrin, 2003).

Unemployment has become a global problem because it affects both the developing and the developed countries. Kenya has had its share as the level of unemployment particularly among the youth has continued to soar every year. By the end of last year, Kenya's unemployment rates stood at 46 %.( soko directory, 2015). If we have more people unemployed, then more people need help with basic needs. That means those working will have to contribute more to those social services, and therefore pay more taxes. If people are paying more in taxes, they can afford less towards rent. As unemployment rises, companies do not increase their need for office space and may shed excess space adding to the vacancy and availability rates. It is easy to see how the fundamentals of real estate are most stressed when unemployment reaches its peak.

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 (Nguyen, 2015).

In an inflationary environment, a flight to hard assets is prudent as cash in the bank loses purchasing power each day. Commercial real estate is a great hard asset to own so demand for the asset class should increase. But with inflation comes intervention from the Fed in the form of increasing interest rates (Stammers, 2012). According to Blanchard (2000), Inflation is the sustained increase in the general price level of goods and services in an economy over a period of time. Through the cost-push theory of inflation, raising wages can fuel inflation, which will further increase the price of property. Money supply or money stock is the total amount of monetary assets available in an economy at a specific time (Cummings, 2010).

Real GDP the aggregate production, or income of the society, has a directly influential effect on the stock market according to Birz & Lott (2010), and theoretically this should also affect the real estate market as well (Lind & Persson, 2011). Here the real GDP is used to investigate the influence growth of the economy has on real estate stocks separately from fluctuations in the value of money.

#### **1.1.4 Real Estate Industry in Kenya**

Real estate is property consisting of land and the buildings on it, along with its natural resources such as crops, minerals, or water; immovable property of this nature; an interest vested in this, an item of real property; buildings or housing in general. Real estate is sometimes inaccurately spoken of as a profession, but it is essentially a business. The principal divisions of the real estate business are investment, operation and agency (Kimmons, 2010).

Research findings indicated that real estate accounts for a large share of wealth; about 33% and Gross Domestic Product (GDP) of about 11% in the United States of America. Further, stated that real estate is multifaceted. It is local and it is national. Prices may be high in summer and lower in winter. Most people in Kenya prefer to invest in real estate. Real estate business in Kenya entails buying a house, and it is one of the safest ways to invest your money in Kenya. This is mostly due to the fact that assets like a land and houses in Kenya have tended to almost always appreciate. (Muchoki, 2013)

According to Knight Frank (2014), Kenya's lucrative real estate sector has rapidly expanded to become the fourth biggest contributor to the country's wealth. The updated national accounts, set to be unveiled by the Ministry of Planning, show that the contribution of the real estate sector to Kenya's gross domestic product (GDP) has been revised 10.6 per cent which is more than double from the previous estimate of 4.9 per cent in 2013. Growth over the past 10 years saw the real estate industry dislodge the retail sector as the fourth largest contributor to the economy even as traditional sectors such as agriculture, wholesale and financial services continued to diminish.

## **1.2 Research Problem**

In the past few years' property market has been on an upward trend with many questions being raised on whether the bubble is likely to burst. According to property consultant's Knight Frank (2013), Nairobi's up market suburbs, rent rose by the highest margins, placing the city ahead of 15 other cities in Africa, Asia, Middle East and Europe. This is attributed to Nairobi being a regional hub and is attracting many transnational corporations who are driving rent up.

Some of this multi-national includes, Tullow, General Electric, Google, Nestle, Pepsi, Foton Automobiles, Bank of India and HSBC (KFPGR, 2013). For many people buying a house is their greatest investment and also probably the most important one. So when there are disturbances in this market, it may have substantial consequences for the economy as a whole, as well as for the individual.

Real estate development is becoming a major issues emerging from the on-going devolution debate, is how housing situation will look like at the country headquarters. They are expected to be the major engines of economic growth and will attract key investments. Workers of many companies setting based in Kenya and at the counties are expected to create a high demand for housing according to Architectural Association of Kenya (AAK, 2011). Macroeconomic factors have a major effect of pricing of houses and hence growth of real estate which shows performance of the industry (Warsame, 2006).

Foreign studies have been done to establish the effect of various macroeconomic variables of financial performance of real estate firms around the world (Karlsson&Nordström2007; Siqueira et al., 2011). Rodenholm&Bernardi (2007) studied the macroeconomic effects on securitized real estate markets in Sweden and Switzerland it investigated to what extent macroeconomic factors influence real estate stock prices before and after the outbreak of the financial crisis. Venkatesh, (2013) studied the key factors affecting real estate markets in Asian Context: an overview on Real Estate Bubble in Singapore. Manni&Chane-Teng (2008) did investigations on the real estate market looking into the main factors influencing the performance of the French Real Estate Investments Trusts.

In the Kenyan setting, studies done on the real estate sector include Omboi&Messah (2011) who studied factors Influencing Real Estate Property Prices a Survey of Real Estates in Meru Municipality in Kenya. Loyford & Moronge (2014) studied the Effects of economic factors on performance of real estate in Kenya. Jumbale (2012) sought to determine the relationship between house prices and real estate financing in Kenya. Obondy (2013) studied the effect of interest rates on the supply of real estate finance in Nairobi County. Mwangi (2012) studied the determinants of residential real estate prices in Nairobi. Muli (2013) did An Assessment of the Factors Affecting the Growth in Real Estate Investment in Kenya.

An understanding on macroeconomic variables affecting the financial performance of real estate industry is necessary which the previous local studies in real estate done in Kenya such as (Muli,2013) and (Jumbale,2013) have left unaddressed. The study sought to determine the key macroeconomic variables that affect performance of real estate industry in Kenya and contribute to other studies by ascertaining if the selected variables affect Kenya's property market. It sought to answer the following question: what are the effects of the macroeconomic variables on the performance of real estate industry in Kenya?

### **1.3 Research Objective**

The objective of the study was to determine the effect of macroeconomic variables on the performance of real estate industry in Kenya.

## **1.4 Value of the Study**

The findings of this research are of much interest to real estate investors as it informs them on the impacts the macroeconomic variables has on the real estate industry, to know the cheapest way to acquire a property and also highlight other important relationships that require further research. The study is important not only to investor in the real estate but also to potential buyers of real estate. It would help them understand the strategic practices and how its understanding can help different and diverse investors to arrive at a prudence decision on the right property to invest in.

This study is also be significant to other financial institutions and the government who will be able to understand the contribution of real estate in development of the country and necessary factors for acquisition of capital and challenges facing the industry in Kenya so that they can be able to plan, develop and provide housing to majority of Kenyans. The study would also help many potential home owners to determine the best method to apply in acquiring a real estate derivative, which would help them make some savings from the transactions. The results of this study would also be invaluable to researchers, scholars and investors, as it forms a basis for further research. It will also be a source of reference material for future researchers on other related topics.

This study adds value to theoretical discussion by testing the relationship of macroeconomic factors and investment under an environment where demand weighs supply. The academics and investors would use this study as a basis for discussions on the effects of economic factors on performance of real estate industry in Kenya.



## **CHAPTER TWO LITERATURE REVIEW**

### **2.1 Introduction**

This chapter provides literatures from past researchers and scholars on the effects of macroeconomic variables real estate performance. The chapter examines the concepts and theories on the topic with major focus on macro-economic variables; Inflation rate, interest rate, Real Gross Domestic Product and unemployment. By considering literatures from diverse past authors, the chapter forms the theoretical framework of the study on the factors affecting performance of real estate in Kenya.

### **2.2 Theoretical Literature Review**

In this section, monetarism theory of inflation, modern portfolio theory and quantity theory of money has been discussed in relation to the real estate market and inflation.

#### **2.2.1 Monetarism Theory of Inflation**

Friedman and Schwartz (1963) holds that only money matters and this led to the development of the monetary theory and as such monetary policy which is a more potent instrument than financial policy in an economic stabilization. According to monetarism the money supply is dominant though not exclusive determinant of both the level of output and prices in the short-run, and of the level of price in the long-run. The long-run level of output is not influenced by the money supply.

Inflation is always and everywhere and it's a monetary phenomenon that arises from a more rapid expansion in the quantity of money than in total output. The money that exists will determine the amount of money people spend in acquiring real estate. In the real estate market the price of the property is determined by the supply and demand, therefore the prices of items will go up only when the supply is lower than the demand and vice versa. According to Chin (2002), real estate markets are continuously adjusted to equilibrium where price range is adjusted according to supply. Therefore the rise of property prices in Kenya is attributed to the high demand and low supply.

### **2.2.2 Modern Portfolio Theory**

Hassan (1990) noted on the relationship between Real Estate analysis and Modern Portfolio Theory (MPT) that Real estate generally outperforms stocks and bonds in risk and return measurement. Real Estate assets provide excellent diversification potential for portfolio investors and also a good inflation hedge. Most pension funds only allocate 5% of their portfolio in real estate equity assets (Smith, 1992). This therefore proves that real estate is an under-utilized asset class.

Hishamuddin et al. (2003) found that by adding Real Estate Investment Trust (REIT) in the investment portfolio can provide higher return at the same level of risk. In other words, by including listed REIT in the investment portfolio would offer better performance. Grundy and Malkiel (1996), noted that most investors think of risk as measuring the chance that returns will be lower than expected and, specifically, that investment will produce a loss.

### **2.2.3 Quantity Theory of Money**

The concept of the quantity theory of money (QTM) began in the 16th century. As gold and silver inflows from the Americas into Europe were being minted into coins, there was a resulting rise in inflation. This led economist Henry Thornton in 1802 to assume that more money equals more inflation and that an increase in money supply does not necessarily mean an increase economic output. However, Keynes (1936) challenged the theory in the 1930s, saying that increases in money supply lead to a decrease in the velocity of circulation and that real income, the flow of money to the factors of production, increased. Therefore, velocity could change in response to changes in money supply.

Nevertheless, if this theory was to be considered, inflation and money supply, which are also determinants of real estate performance would be placed into account. Keynes (1936) identify that money supply has a significant impact on inflation rate. Further, inflation has a significant impact on interest rates, which further affects real estate prices. For most monetarists, therefore, any anti-inflationary policy will stem from the basic concept that there should be a gradual reduction in the money supply. Monetarists believe that instead of governments continually adjusting economic policies (i.e. government spending and taxes), it is better to let non-inflationary policies (i.e. gradual reduction of money supply) lead an economy to full employment.

## **2.3 Determinants of Real Estate Industry Performance**

Real estate represents a significant portion of most people's wealth, and this is especially true for many homeowners. The average Kenyan has nearly one-third of his or her net worth tied up in real estate. The size and scale of the real estate industry make it an attractive and lucrative sector for many investors. This section will look at some of the main factors that determine the real estate industry performance.

### **2.3.1 Unemployment**

Unemployment seems to have a relatively high negative correlation with the real estate market in the pre-crisis period, where a positive index development of real estate securities can be related to decreasing unemployment. News about unemployment affect the real estate market. There is throughout the sample period a significant lag in the unemployment compared to the response of the Real Estate.

Even if there is a strong negative sentiment in the securitized real estate market, it takes some time to channeling this effect to the labor market. Even if the prices in securitized real estate market recuperate in the crisis period, the skepticism and relatively high unemployment rate remains in the labor market. A negative relationship exists in the pre-crisis period, to then become almost insignificant in the crisis period (Birz & Lott 2010). However, the responsiveness of the Kenyan labor market to the real estate stock market still seems to be more accurate. Fiscal and monetary actions can be deployed in the short run to stimulate demand.

This effect is though realized in the labor market only in the medium run, resulting in lowered unemployment and higher price levels (Blanchard 2009). On the corporate level,

short term staggering demand means lower income, but labor costs remaining high. For real estate companies, contracts are normally signed for many years, making NOI not to change directly. Considering that real estate need large capital investments upfront and are mostly financed through loans (Lind 2011). Lowered interest rates can decrease financing costs. An economic downturn should therefore not necessarily affect real estate companies negatively in the short-run.

### **2.3.2 Inflation**

As explained by Flannery & Protopapadakis (2002), inflation should have a significant relationship with asset prices. What concerns the securitized real estate market specifically, it is independently shown by both Ling and Naranjo (1997) and Brooks and Tsolakos (1998) that unexpected inflation affects these assets. Ewing and Payne (2003) further show that shocks in the aggregate price level have a negative effect on asset prices.

There is a long-term co-movement between inflation and the real estate market. Theory suggests that growing output and therefore growing income levels in the society creates demand through enhanced consumption and investment, which in turn positively affects prices on goods and services (Blanchard, 2010). In the pre-crisis period, the prices of stocks substantially exceeded the general price level.

A so called Boom-bust process means that rising optimism with new business and investment opportunities after a financial crisis like the Dot-com bubble, and a general public perception of relatively low interest rates, make that real prices on assets like stocks and property increase much faster than the price level on consumption goods

(Fregert and Jonung, 2010). In the crisis period, the relationship between inflation and real estate stocks became significantly weaker and negative. It can then possibly be explained that other factors have a more major role in determining the stock prices. As previous literature confirm, it is rather that uncertainty that drive the relationship between inflation and asset prices than actual inflation.

### **2.3.3 Real GDP**

According to Birz and Lott (2010), news about real GDP does influence stock markets. For real estate markets, there is not necessarily a strong relationship (Bouchouicha and Ftiti, 2012). Unanticipated changes actually also do affect the securitized real estate market. Increased real output should result in higher innovation pace and industrial production (Ewing and Payne 2003). Companies can take advantage of a growing economy and increase revenues without considerably affecting the internal competition balance of the business sector (see Koller et al, 2010; and Porter, 1980). When the private and corporate income levels increase, it can also stimulate domestic demand for residential properties and office space etc. Countries such as Sweden and Switzerland have confronted the financial crisis with good economic conditions and therefore had a solid economic foundation to attract foreign investments. This increases the demand for real estates and the relative value of the real estate securities mutually.

### **2.3.4 Interest Rate**

The rates on interbank exchanges and treasury bills have as profound an effect on the value of income-producing real estate as on any investment vehicle. Because the influence of interest rates on an individual's ability to purchase residential properties (by increasing or decreasing the cost of mortgage capital) is so profound, many people

incorrectly assume that the only deciding factor in real estate valuation is the mortgage rate. (Christopher, Neely2001).However, mortgage rates are only one interest-related factor influencing property values. Because interest rates also affect capital flows, the supply and demand for capital and investors' required rates of return on investment, interest rate will drive property prices in a variety of ways (Andrew, 2004).

### **2.3.5 Exchange rates**

Exchange rates often fluctuate and many times in a single day. Frequent travelers are well aware of this, as how much they can afford to spend on a vacation depends on the how strong the local currency is and what it is at the point of transaction. The watching and trading of currencies have even spurred an entire business; Forex trading where people buy and sell currencies to make money. Currencies fluctuate because of supply and demand. Every seasoned investor knows that when the demand for the currency goes up and the supply - in this case, property - either decreases due to overwhelming interest or remains the same, then the value of the currency increases. However, when there are people trying to sell but not many are interested in buying, the value drops. (Chitty2015)

Exchange rate has significant impact on the real estate industry owing to its information content to the investors. It influences the external purchasing power of residents abroad for example in term of purchasing real estate. These rates have a significant impact in the prices you pay for foreign for property. When currency rates depreciate in a given country it will not affect the real estate price but a sustained depreciation of the currency eventually lead to prices becoming dearer for buyers. As a result of currency depreciation the country will have to pay more for imported goods thereby decreasing there disposable income and making houses less affordable (Gunjan 2013)

### **2.3.6 Diaspora remittances**

The North South Centre of the Council of Europe (2006) defines diaspora's remittances as ideas, practices, mind-sets, world views, values and attitudes, norms of behavior and social capital (knowledge, experience and expertise) that the diasporas mediate and either consciously or unconsciously transfer from host to home communities. Diaspora remittances are transfer of money by a foreign worker to his or her home country. Diaspora remittances are experiencing growth and due to huge sums involved, it is now being recognized as an important contributor to the recipient country's growth and development (CBK, 2013).

It is believed that the bulk of the remittances are used to buy land, develop new houses or buy ready-built houses. The remittances are also believed to have contributed to the ever-rising property prices in the country by pushing up demand, much to the detriment of low-income earners who can't afford house prices and high mortgage rates. A huge part of Diaspora remittances has been going into the Real Estate Sector (Mbataru, 2014).

## **2.4 Empirical Literature review**

Theoretical definitions give the meaning of a word in terms of the theories of a specific discipline. Empirical foundation on the other hand gives meanings of phenomenon through findings based on the verification via experiments, experiences and observations. This section provides the empirical evidence on the concepts of the study topic.

Apergis (2011) analyzed the dynamic effects of specific macroeconomic variables (i.e. housing loan rates, inflation and employment) on the price of new houses sold in Greece. An error correction vector autoregressive (ECVAR) model is used to model the impact of



the macroeconomic variables on real housing prices. Variance decompositions showed that the housing loan rate is the variable with the highest explanatory power over the variation of real housing prices, followed by inflation and employment.

Rodenholm & Dominique (2013) studied on Macroeconomic effects on securitized real estate markets which was comparative study of Sweden and Switzerland. The study investigated to what extent macroeconomic factors influence real estate stock prices before and after the outbreak of the financial crisis in 2007. The results show that the macroeconomic effects on real estate stock prices differ among small economies and are inconsistent in a pre-crisis and crisis period. Solely theoretical aspects are not sufficient to describe the varying conditions in the financial markets, which have to be scrutinized in a wider economic context. Those factors that show some regularity in the relation to the real estate markets are all share indices, term structure and real GDP per capita.

Renigier-Bilozor & Wisniewski (2012) used Italy and Poland to determine the impact of macroeconomic factors on residential property and prices indices in Europe. Quarterly time series data constituted the material for testing and empirical results. The developed models show that the economic and financial situation of European countries affects 21 residential property markets. Residential property markets are connected, despite the fact that they are situated in different parts of Europe. The economic countries has variable influence on prices of real estate.

Golob, Bastic & Psunder (2012) using Slovenia as a case study, identified that economic growth, interest rates, construction quality, speed of real estate sales and accessibility of

funding sources were significant factors in the real estate market. Although the study was derived from past researches, the researchers also included the expertise of investors, real estate owners, tenancy right holders, real estate users, administrators, managers, tenants, real estate agencies and companies, design and construction companies, as well as other individuals across Slovenia, with varying durations of work experience and varying education levels.

Muli (2012), using quantitative research design on a study of Assessment of the Factors Affecting the Growth in Real Estate Investment in Kenya, 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 population.

Kangongo (2013) sought to establish the Relationship between Inflation Rates and Real Estate Prices in Nairobi, Kenya. Simple linear regression model was used to determine the nature of the relationship. Property prices were collected from the ministry Lands, Housing and Urban development, while inflation rates data was collected from the Kenya National Bureau of statistic. The findings of this study show that there is no clear relationship between the property price and the inflation rate.

Karoki (2013) undertook a study on Determinants of real estate prices in Kenya using descriptive and multivariate regression models found out that there are significant relationships between residential real estate prices and interest rates, GDP, and level of money supply. Interest rates have the most significant effect on house prices followed by GDP and level of money supply. Thus the rise in property prices is well explained by macroeconomic variables.

Although the study established a positive relationship between residential real estate prices and inflation rates, the relationship was found to be insignificant. She noted an overall increase in property prices with time indicating that the real estate market in Kenya is expected to continue to grow hence a mark of stability. Muthee, (2012) studied the relationship between Economic growth and real estate prices in Kenya.

Tracking the Hass Housing Price Index and Kenya's GDP numbers over a period of five years, data was retrieved from different sources but aligned in equal time and periods, reviewed and subjected to regression analysis and tested for significance. The results indicated that there is a relationship between the variables revealing that a quarterly change in housing prices yields a quarterly change in GDP. The data collected and analysed indicated that property is a strong asset class which has been under exploited in portfolios. More consideration should be made by institutional investors.

## **2.5 Summary of the Literature Review**

In Kenya the real estate sector has been a driver of growth in the past five years. Inflationary effects on the construction industry are vital to the developer. The real estate investor must have a fair knowledge with regards to the changes in the economy and the

effects of these changes. This knowledge is critical in order to make good business decisions and future project planning.

The literature review established that a number of studies have been carried out on macroeconomic factors. Researches about effects of economic factors on performance of real estate have already stretched into various fields. Not only have they touched on some service industries like Banks but also stretched to almost all industries. Domestically, however the study about interest rates is still at infancy stage. Performance of real estate is actually a relatively new research area with huge potentials. Such studies in Kenya have been concentrating on interest rate fluctuation in banks (CBK, 2012, 2013). Researchers on the real estate market, which has drawn little attention hitherto, are limited in studying real estate performance.

## **CHAPTER THREE**

### **METHODOLOGY**

#### **3.1 Introduction**

This chapter focuses on data collection, processing and analysis methods. Data collection instruments and procedures are also discussed as well as the target population. Research methodology achieves this by addressing the target population to be used in the study. It deals with the description of the methods applied in carrying out the research study

#### **3.2 Research Design**

Research design is a detailed outline on how the research was undertaken. This study used descriptive survey research design. It specified the methods and procedures to be used to collect and analyze the data.

#### **3.3 Population**

The target population was the real estate industry in Kenya ranging from the large real estate developers of the small-scale, individual investors with over 42,180 registered real estate firms.

#### **3.4 Data Collection Methods**

The study on effects of macroeconomic variables on performance of real estate firm's used secondary data collected from the Kenya National bureau of statistics, Central Bank of Kenya and the Hass consult Property Index. Inflation Rates data were obtained from the Central Bank of Kenya (CBK) while data for growth of GDP was obtained from the Kenya National Bureau of Statistics (KNBS).

### 3.5 Data Analysis Technique

Data analysis consisted of quantitative measures. This was done using descriptive statistics. This was used to show the distribution in the data so collected. Multiple linear regression models were used by use of Statistical Package for Social Sciences (SPSS) in measuring each variable and this model helped in bringing out the effects of the macroeconomic variables on real estate performance.

The study analytical model was depicted by the regression model:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \mu_i$$

Where,

Y= Performance of Real Estate

X1= Interest rates; measured by the average lending rate.

X2= Real GDP Growth; measured as percentage change in annual Real Output.

X3=Inflation, measured by annual change in consumer price index.

X4 = Growth in Diaspora Remittances, measured as percentage change average annual amounts as indicated by the Central Bank of Kenya

X5= Growth in exchange rate, measured as the percentage change in average annual Kenyan currency exchange to USD

$\beta$  = Beta coefficient of variable  $i$  that measure the amount of the change in  $Y$  associated with a unit change in  $X$ .

While  $\mu_i$  –is the error term that is assumed to be associated with the Variables

Performance of real estate industry dependent variable Y was measured by growth rate of the industry. This was operationalized by measuring the percentage change of Hass Composite Annual Average Sales Index.

### **3.6 Test of Significance**

Correlation and a multiple regression analysis were carried out to test the effect of macroeconomic variables on performance of real estate in Kenya. A correlation matrix showed the interrelationships within the variables under study. This helped show any serial correlations. A multiple regression analysis was then carried out. The F-test showed the fitness of the model used in the study. The coefficients showed how each of the variables influenced performance. The results of significance were interpreted at 5% level of significance. The p-values were then interpreted for significance.

# CHAPTER FOUR

## DATA ANALYSIS, RESULTS AND DISCUSSION

### 4.1 Introduction

This chapter presents analysis and findings of the study as set out in the research objective and research methodology. The study sought to establish the effect of macro-economic variables on performance of real estate industry in Kenya.

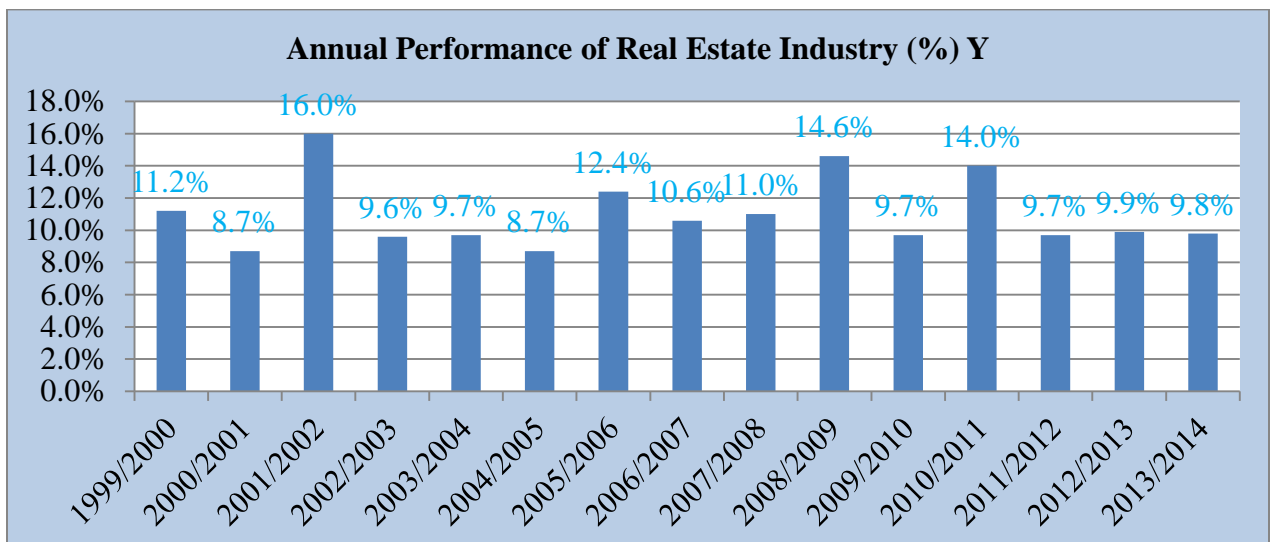
### 4.2 Data Analysis and Presentation

The obtained data spanned the period between years 2000 to 2014. The secondary data was organized in excel spread sheets and analyzed using SPSS version 20.

#### 4.2.1 Real Estate Prices

The study sought to establish the real estate growth in Kenya over the study period, and established the trend as depicted by figure 4.1 below. From the diagram, the findings reveal that real estate investments growth as fluctuated each year throughout the period.

**Figure 4.1: Trend of Real Estate Performance**



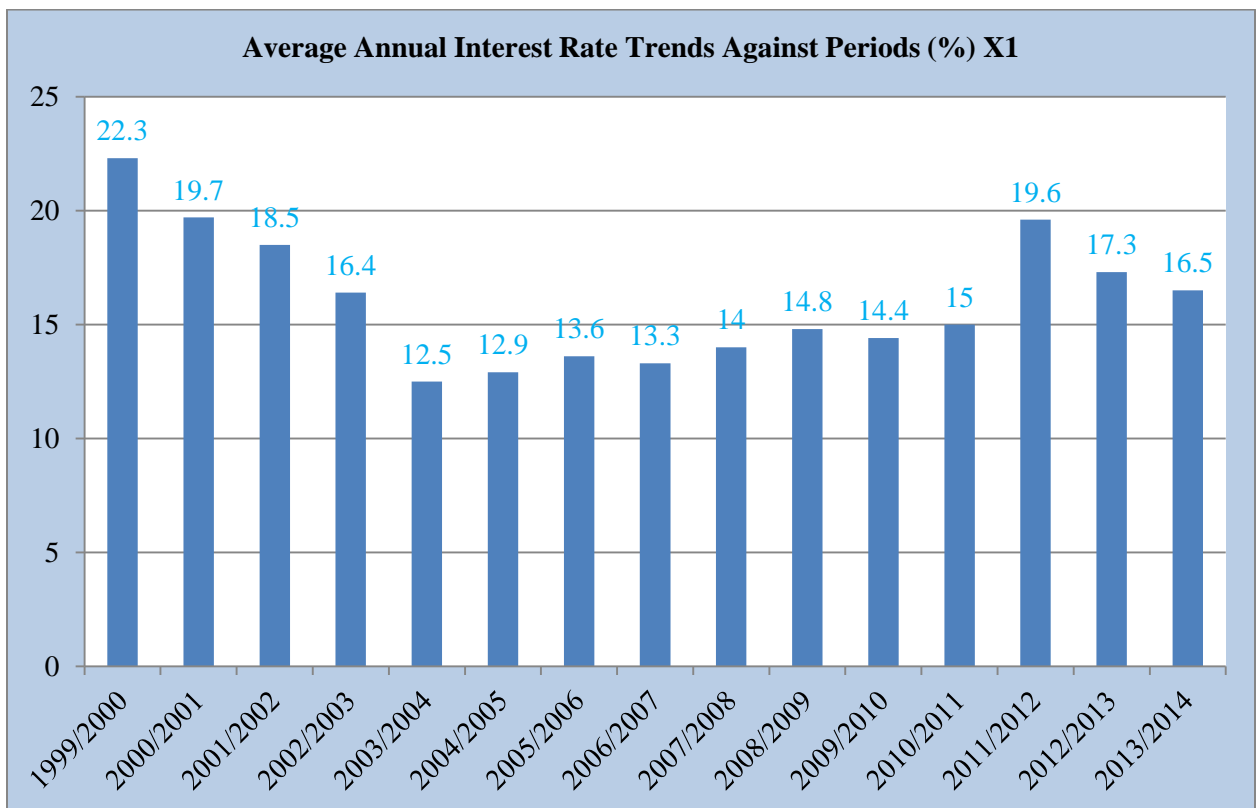


**Source:** HassConsult

The study results revealed that real estate performance has fluctuated and has had a highest peak in the years 2002 and 2009 while years; 2001, 2005 and 2012 experienced least growth.

#### 4.2.2 Interest Rates

**Figure 4.2: Trend of Annual Interest Rates**



**Source:** Central Bank of Kenya

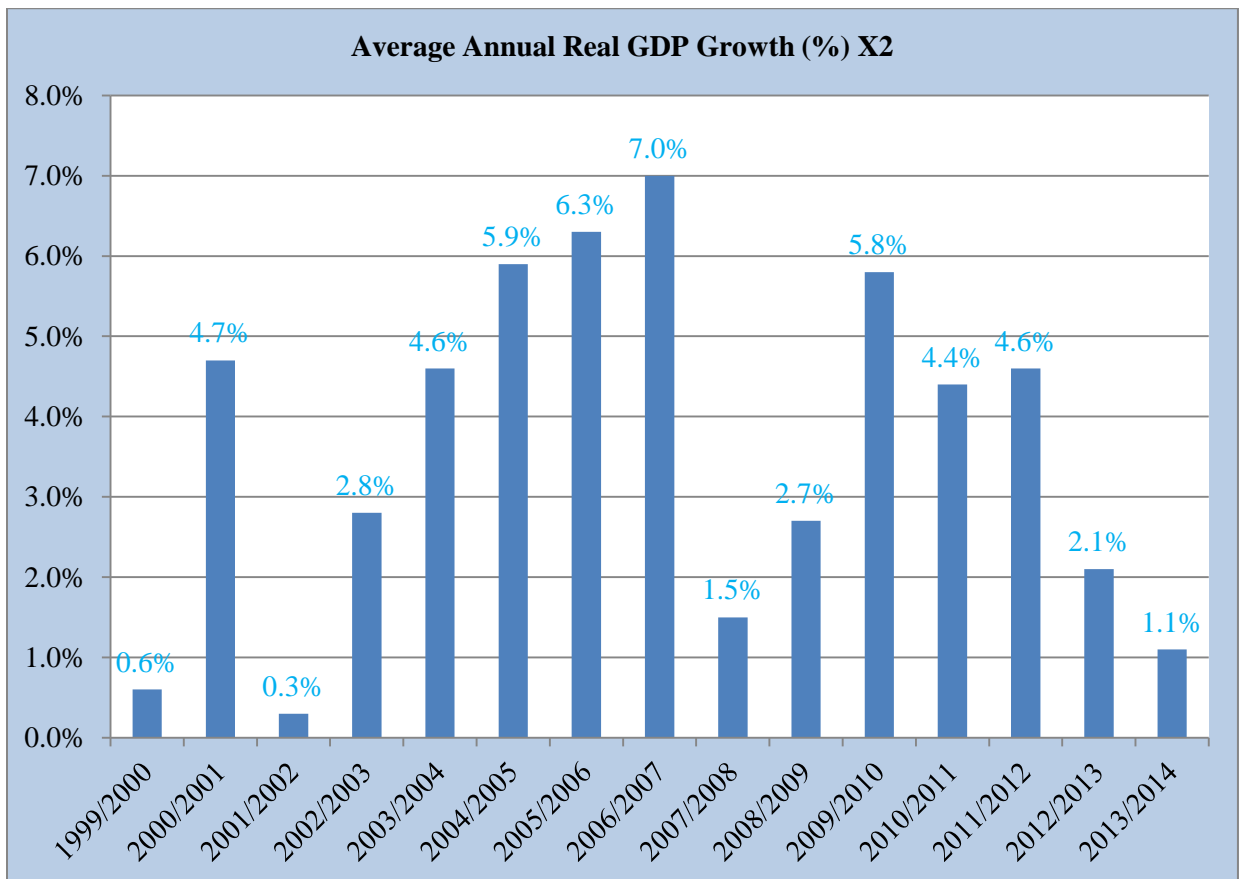
The Interest Rate was highest in the years 2000, 2001, and 2012. The high interest rates between 2000 and 2001 may have been due to the major economic slowdown experienced in Kenya and the world's major economies.

The high interest rates in the year 2012 may however be associated with CBK’s monetary policy that deliberately increased to Base Lending Rate leading to definite increase in increase in interest rates by financial intermediaries in Kenya. There was however a slight drop in interest rates between the years 2013 and 2014, probably due to optimism of investors just after the 2013 General election.

### 4.2.3 Real GDP Growth

The study examined the trend of the growth in real Gross Domestic Product. The results and data are shown in figure 4.3 below and in appendix 1.

**Figure 4.3: Real GDP Growth**



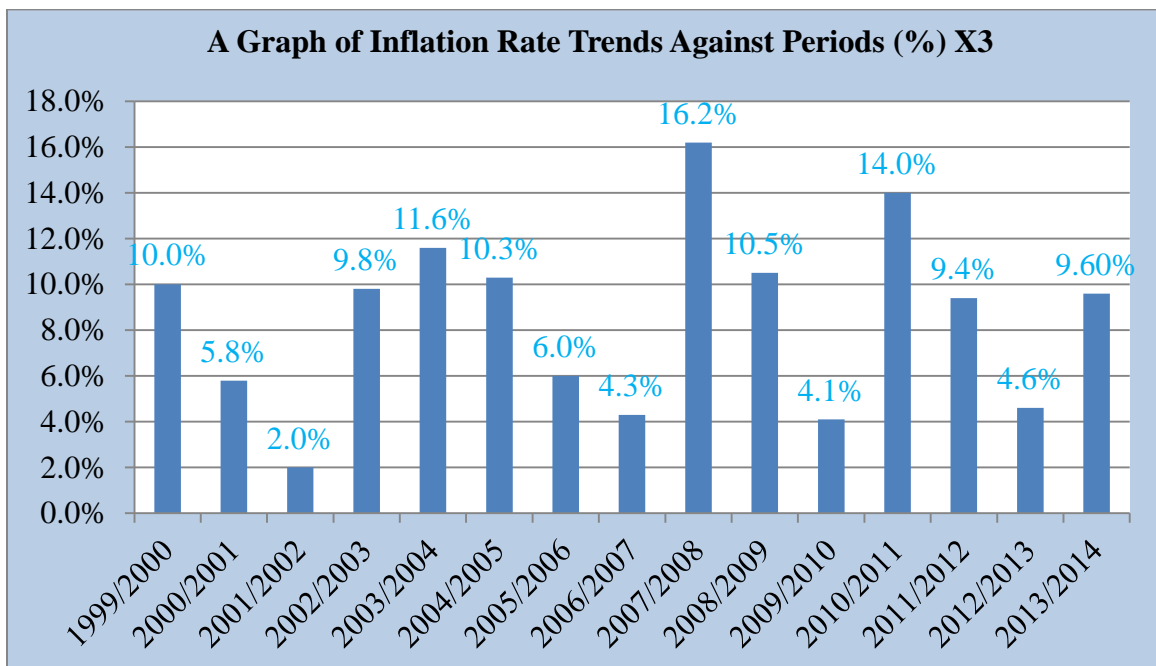
**Source:** Kenyan National Bureau of Statistics

The study results established that average annual GDP has at least grown each year since the year 2000 to 2013 as shown above. However, the growth has been inconsistent as the percentage growth changed each year. The three years which witnessed least growths included 2000, 2002 and 2008 with 0.6%, 0.3% and 1.5% respective growths as shown above. Also, the real GDP growth was highest in the year 2007 (7.0%) as shown above but, it drop to 1.5% percent within one year in 2008. However, it grew each year to reach 5.8% but has dropped since then to reach 2.1% as shown in figure 4.3 above.

#### 4.2.4 Inflation Rates

The study sought to establish the trend of inflation rates in Kenya over the study period. The data results are shown in figure 4.2 below and in appendix 1. The study results show that the average annual inflation has been fluctuating from one period to another as shown by the graph shown below.

**Figure 4.4: Inflation Rate Trends**



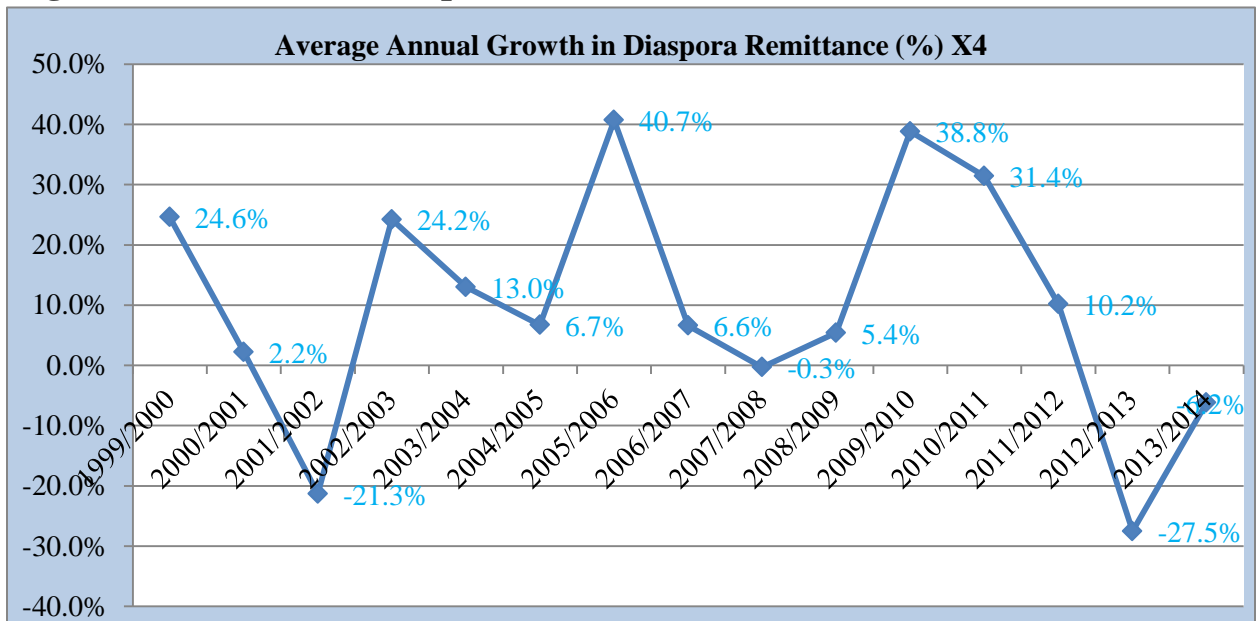
**Source:** Central Bank of Kenya

The inflation rate averaged between 10% during the period 1999/2000. It drop to 5.8% and then to 2% during the periods 2000/2001 and 2001/2002 respectively. Then, the inflation increased to average at 9.8% and to 11.6% during the period 2002/2003 and 2003/2004. The rate dropped again from 10.3% to 4.3% through the period 2004/2005 to 2006/2007 having averaged at 6.0% over the period 2005/2006. Then, the rate shot-up to 16.2% during the period 2007/2008, after which it fell to 4.1% through the period 2009/2010 having averaged at 10.5% during the period 2008/2009. Ones more, the rate shot-up to average at 14.0% during the period 2010/2011 but dropped but dropped to 9.4% and yet again to 4.6% during the periods 2011/2012 and 2012/2013 respectively.

#### 4.2.5 Growth in Diaspora Remittances

The study examined the trend of the changes in Diaspora remittances over the study period. The results are shown in figure 4.5 below.

**Figure 4.5: Growth in Diaspora Remittances**



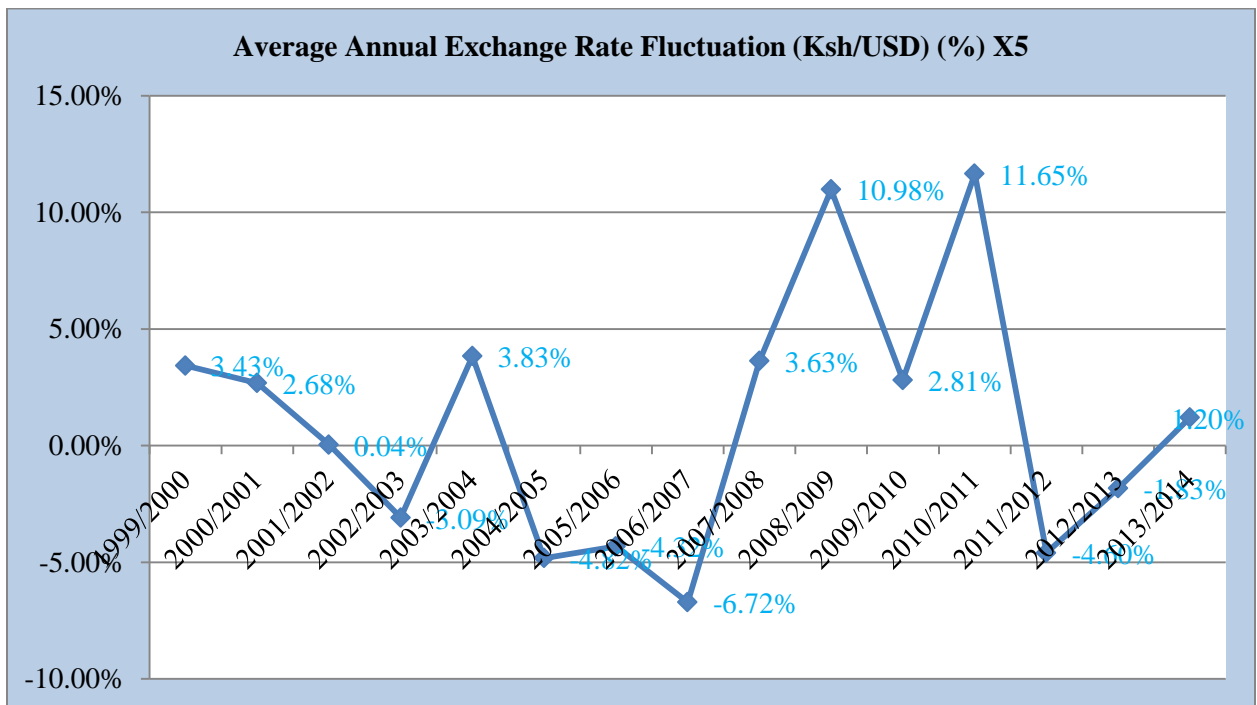
**Source:** Central Bank of Kenya

The study results established that the total annual diaspora remittances grew and declined in different years over the study period. Years such as 2000, 2003, 2006, and 2010 experienced relatively high growths of 24.6%, 24.2%, 40.7%, and 38.8% as shown by the graph peak points shown above. Also, years 2002, 2008, 2013 and 2014 experienced least growths in remittances to the extent that the growth was negative with values of -21.3%, -0.6%, -27.5% and -6.2% as depicted by troughs of the graph above.

#### 4.2.6 Exchange Rate Fluctuations

The study examined the change in the average annual exchange rate using the Ksh/USD exchange rate as USD is the world's highly used currency. The results were as shown in figure 4.6 below.

**Figure 4.6: Exchange Rate Fluctuation**



**Source:** Central Bank of Kenya

The study results established that the average annual exchange rate had fluctuated over the study period. Notably, the exchange rate decreased since year 2000 to 2003 from a growth of 3.43% to negative (-3.09%), but grew again by 3.83%, after which it fell by 4.82%, 4.32% and 6.72% in the years 2005, 2006, and 2007 respectively. However, it shot up and grew steadily by 3.63% and 10.98% during the years 2008 and 2009. The growth rate fell again but increased to 11.65% but decreased by 4.60% yet it increased again in the years 2013 and 2014 as shown in figure 4.6 above.

### **4.3 Regression Analysis**

The researcher regressed the dependent variable performance of the real estate industry against 5 predictor variables; average annual inflation, average annual growth in Interest Rates, average annual growth in real GDP, average annual growth in diaspora remittances and average annual exchange rate fluctuations.

The regression analysis was undertaken at 5% confident level. The criteria for comparing whether the predictor variables were significant in the model was done by relating the corresponding probability value obtained and  $\alpha = 0.05$ . If the probability value was less than  $\alpha$  then the predictor variable was significant; otherwise it was not. Also, F – table statistic was compared with the one obtained from the regression analysis. If the one from the table was smaller than the computed value from the regression analysis, the variable was significant in predicting/causing a change on the dependent variable. Else, the variable was insignificant in the model.

**Table 4.1: Model Summary Statistics**

Model Summary <sup>b</sup>					
Model	Sig. F Change	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.872 <sup>a</sup>	0.761	0.59	3.749	0.038
a. Predictors: (Constant), Average Annual Exchange Rate fluctuations (Ksh/USD) (%), Average Annual Growth in Diaspora Remittances (%), Average Annual Growth in Interest Rates (%), Average Annual Inflation Rate (%), Average Annual GDP Growth (%).					
b. Dependent Variable: Average Annual Performance of Real Estate Industry (%)					

**Source:** Research Findings

In order to explain the percentage of variation in the dependent variable (Average Annual Performance in Real Estate Industry) that is explained by the independent variables, the researcher used coefficient of determination obtained via regression analysis and presented in table 4.1. Coefficient of determination shows the extent to which changes in the dependent variable can be explained by the change in the independent variables or the percentage of variation in the dependent variable that is explained by all the variations in the three variables (the macro-economic variables – Average Annual Exchange Rate fluctuations (Ksh/USD) (%), Average Annual Growth in Diaspora Remittances (%), Average Annual Growth in Interest Rates (%), Average Annual Inflation Rate (%), Average Annual GDP Growth (%).

The results of the analysis shows that the change in the 5 macro-economic variables above contributed to an equivalent of 76.1% of a change in real estate industry as

depicted by the R-Square equal to 0.761. Also, the results revealed that there was a strong relationship between the macro-economic variables and the real estate performance as shown by the coefficient of determination (R) equal to 0.872.

#### 4.3.1 Analysis of Variance

The study conducted an Analysis of Variance, in order to test the significance of the model. The findings were as shown in table 4.2 below.

**Table 4.2: Analysis of Variance (ANOVA)**

ANOVA <sup>a</sup>					
Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	92827.061	5	18565.412	4.458	.038 <sup>b</sup>
Residual	233212.896	56	4164.516		
Total	326039.957	61			

a. Dependent Variable: Average Annual Growth in Real Estate Industry (%)

b. Predictors: (Constant), Average Annual Exchange Rate fluctuations (Ksh/USD) (%), Average Annual Growth in Diaspora Remittances (%) , Average Annual Growth in Interest Rates (%) , Average Annual Inflation Rate (%) , Average Annual GDP Growth (%)

**Source:** Research Findings

From the ANOVA results, the probability value of 0.038 was obtained implying that the regression model was significant in predicting the relationship between Real Estate Investments growth and the predictor variables as it was less than  $\alpha=0.05$ .



By use of the F-table, the  $F_{12;5;0:05}$  was 4.36 which is less than the F-test statistic = 4.458 determined through analysis and shown in table 4.2 above, which indicated that the model was statistically significant.

#### 4.3.2 Model Coefficients

The results of the analysis obtained the model coefficients and corresponding statistics as shown in table 4.3 below.

**Table 4.3: Model Coefficients**

Model	Un-standardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	13.98	4.281		3.266	0.014
Interest Rates (%) (X1)	0.188	0.316	0.137	0.596	0.57
Average Annual GDP Growth (X2)	0.472	0.144	0.797	3.269	0.059
Average Annual Change in Inflation Rate (X3)	2.901	0.855	1.004	3.393	0.062
Average Annual Growth in Diaspora Remittances (X4)	0.04	0.076	0.14	0.522	0.618
Average Annual Exchange Rate fluctuations (Ksh/USD) (X5)	0.192	0.225	0.19	0.852	0.422

**Source:** Research Findings

The regression analysis results indicated that the relationship between real estate industry performance and the predictor variables can be expressed using the following regression equation:

$$Y = 13.98 + 0.188X_1 + 0.472X_2 + 2.901X_3 + 0.040X_4 + 0.192X_5 + \mu_i$$

From the regression model obtained above, holding all the other factors constant, performance of real estate industry would be 13.98.

A unit change in each of the predictor variables would cause a change in the real estate industry performance by an amount corresponding to the coefficient related with each variable as indicated in the model above. Also, there exists a strong positive relationship between each of the predictor variables and real estate industry performance. Further, the corresponding p-values for each of the selected variables; Annual Inflation Rate, Annual Growth in Interest Rates, Annual GDP Growth, Annual Growth in Diaspora Remittances, Annual Exchange Rate fluctuations (Ksh/USD) were 0.570, 0.059, 0.062, 0.618, and 0.422 which were larger than 0.05.

#### **4.6 Interpretation of the Findings**

The study established that each of the individual study variables fluctuated across the study period. Notably, the study results as depicted by the graphical figure 4.1 shows that the performance of the real estate industry declined each year through 2002-2005. Also notable, the performance declined through the period 2009-2010. Also, inflation rates increased through the period 2002-2005 and shot up in the year 2008. Moreover, GDP growth declined through the period 2001-2002 and 2007-2008. Also, growth in Diaspora remittances declined through the periods 2001-2002, 2007-2003 and 2011-2014, this was due high interest rates in the home country especially 2001-2002 reflecting unstable economic situation so the migrants remit less. In 2007-2003 inflation rates were very high and also the economic condition was at its worst due to the post election violence in the country and in 2011-2014 the resident countries were experiences financial and economic crisis which contributed to the low remittances. Interest rates were also very high in this period. Also notable was that the exchange rate declined just before and shot-up immediately after the periods 2002-2003, 2006-2007, and 2011-2012.

It is worth noting that Kenya held elections during the periods 2002, 2007, and 2013 lying within the study period. It is during these periods that each of all the macro-economic variables experienced an adverse up-turn.

Furthermore, real estate performance was the least just before, during, or/and immediately after these periods. The electioneering periods have an adverse effect on most macro-economic variables, which in turn adversely affects real estate industry performance in the country.

Furthermore, the study established a strong positive relationship between the selected macro-economic variables Exchange Rate fluctuations, Growth in Diaspora Remittances, Interest Rate fluctuation, Inflation, and GDP Growth since R and R-Square was 0.872 and 0.761 respectively. Therefore, a change in growth of the selected macro-economic variables contributes 76.1% of the change in the growth of the dependent variable real estate growth.

The regression analysis results indicated that the relationship between real estate industry performance and the predictor variables can be expressed using the following regression equation:  $Y = 13.98 + 0.188X_1 + 0.472X_2 + 2.901X_3 + 0.040X_4 + 0.192X_5 + \mu_i$ . Since the coefficients corresponding to various predictor variables were positive, the study established a positive relationship between real estate industry performance and each of the macro-economic variables.

This was supported by the positive coefficient of determination and correlation coefficient. Furthermore, the ANOVA results established a p-value of 0.038 which implied that the regression model was statistically significant in predicting the relationship between Real Estate Industry Performance and the predictor variables as it

was less than  $\alpha=0.05$ . However, the variables were not statistically significant individually as depicted by corresponding p-values each of the variables which were greater than 0.05.

## **CHAPTER FIVE**

### **SUMMARY, CONCLUSION AND RECOMMENDATIONS**

#### **5.1 Introduction**

This chapter provides the summary, conclusions and recommendations in relation to the study objective.

#### **5.2 Summary**

This study sought to establish the effect of macro-economic variables on performance of real estate industry in Kenya. The study followed a descriptive research design and used secondary data on annual real estate growth as computed from the HassConsult. The study obtained the secondary data on the selected macro-economic variables namely; average annual Exchange Rate (Ksh/USD) (%), average annual growth in Diaspora Remittances (%), average annual fluctuation in Interest Rates (%), average annual Inflation Rate (%), average annual GDP growth (%) from Central Bank of Kenya (CBK) and Kenya National Bureau of Statistics (KNBS). The data sets covered the period 2000-2014.

The data was summarized or/and analyzed using excel spread sheets and statistical package for social sciences (SPSS) and findings summarized in graphs and tables. Regression analysis was conducted in order to establish various inferential statistics; R, R-Square, P-Value and F-Test statistics. The statistics were used to determine the relationship, strength of the relationship and the statistical significance of the model.

The study established that each of the individual study variables fluctuated across the study period. Notably, the study results as depicted by the graphical figure 4.1 shows that the performance of the real estate industry declined each year through 2002-2005 and declined through the period 2009-2010. Also, inflation rates increased through the period 2002-2005 and shot up in the year 2008. Further, the growth in money supply declined slightly through the periods 2002-2003, and greatly through 2007-2008. GDP growth declined through the period 2001-2002 and 2007-2008. Growth in diaspora remittances declined through the periods 2001-2002, 2007-2003 and 2011-2014. The exchange rate declined just before and shot-up immediately after the periods 2002-2003, 2006-2007, and 2011-2012.

It is worth noting that Kenya held elections during the periods 2002, 2007, and 2013 lying within the study period. It is during these periods that each of all the macro-economic variables experienced an adverse up-turn. Furthermore, real estate performance was the least just before, during, or/and immediately after these periods. It is therefore inferred that politics around and during the electioneering period have an adverse effect on most macro-economic variables, which in turn adversely affects real estate industry performance in the country.

Furthermore, the study established a strong positive relationship between the selected macro-economic variables; Exchange Rate fluctuations, Growth in Diaspora Remittances, Growth in Interest Rate, Inflation, and GDP Growth since R and R-Square was 0.872 and 0.761 respectively and because their corresponding coefficients were positive. Therefore, a change in growth of the selected macro-economic variables contributes 76.1% of the change in the growth of the dependent variable, that is, Real estate growth.

Moreover, a p-value of 0.038 was obtained (which is less than 0.05) meaning that the multiple linear regression model involving real estate industry performance and the 5 selected macro-economic variables (Exchange Rate fluctuations, Growth in Diaspora Remittances, Interest Rate fluctuations, Inflation, and GDP Growth) was statistically significant and can be assumed to describe the relationship between the variables. This was supported by the findings of F-test statistics ( $F_{12;5;0.05}$  was 4.36 which is less than the F-test statistic = 4.458 determined through analysis). However, each variable (macro-economic) was not statistically significant on its own.

### **5.3 Conclusion**

The analysis results (as shown by positive R, and R-Square) established that there is a strong positive relationship between macro-economic variables and real estate industry performance. Also, the coefficients corresponding to selected macro-economic variables; Exchange Rate fluctuations, Growth in Diaspora Remittances, Interest Rate fluctuation, Inflation, and GDP Growth were positive apart from the one on growth in GDP meaning that the growth in the selected macro-economic variables positively affects real estate investments.

Therefore, this study concludes that there is a strong positive relationship between the macro-economic variables and real estate industry performance. Also, the study concludes that growth in; exchange rate, diaspora remittances, interest rates, inflation rate, and real GDP growth do not individually influence the growth in real estate investment in the country, but the combination effect of the change of the macro-economic variables do influence real estate industry performance.

The study concurred with the findings of Muthee (2012) who established a relationship between the variables (GDP growth, inflation, and unemployment) and a quarterly change in housing prices yields. Also, Kangogo (2013) found that the interest rates do affect the real estate market and it influences real estate prices. However, the study disagreed with the views of Karoki (2013) who identified that there is a significant negative relationship between residential real estate prices and interest rates, real GDP, and the level of money supply.

#### **5.4 Policy Recommendations**

The study recommends that the Central Bank of Kenya (CBK) and other regulators should plan in advance and influence the macro-economic variables in the right direction. For instance the economy should have sufficient money supply to ensure that there is enough money to conduct trade in the economy. Further, exchange rate and inflation should be managed to ensure that property prices are stable, because if investors incur more costs they would pass over the costs to property buyers by increasing property prices.

The government should also aim to grow the country's real GDP as this would enhance the growth of real estate industry in the economy as established by the study. Also, the study established that all the selected macro-economic variables worsened just before, during or/and the immediate year following elections. The study recommends that the industry community should plan for the adverse effects of the changes before, during, and immediate years following an election. The situation was worse during the period 2007-2010. Notably, Kenyan held national elections in the year 2007 and was marred by election mal-practices followed by a post-election violence. The study further



recommends that the government should ensure that contestants do not engage in bad politicking as this may deteriorate the effect of macro-economic variables and therefore investments in real estate and possibly other sectors. Furthermore, the electoral body should tighten controls of politics and quality of election results.

### **5.5 Limitations of the Study**

The study utilized secondary data, which had already been obtained and was in the public domain, unlike the primary data which is first-hand information. Possible errors in the process of measurement or/and recording may have been impounded into the research results. Also, the researcher was overwhelmed by the study because she had to conduct the study alongside official duty at the place of work and other personal and social commitments. Moreover, the study had to be conducted within a short period, hence the researcher had to work long-hours into the night. These made the researcher exhausted at times and could possibly affect the input into the study.

### **5.6 Suggestions for Further Studies**

The study suggests that further readings should explore on the specific factors that affect each of the study variables. Also, further studies can be conducted to establish the factors that affect real estate industry in the regional markets. This can provide important information that can be used for comparison purposes.

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## APPENDICES

### Appendix 1: Data for the Study

Year	Months	Average quarterly interest rate%	Average quarterly GDP growth%	Average quarterly inflation rate%	Average quarterly exchange rates fluctuation(US\$)%	Average quarterly growth in diaspora remittances%	Average quarterly performance of real estate industry%
2000	MAR	24.76	3.1	7.7	0.196	9.10	1.9
	JUN	23.1	2.4	9.0	1.379	11.29	2.2
	SEP	21.39	0.8	11.5	0.291	-0.82	0.3
	DEC	19.89	4.0	11.6	0.7	4.0	0.6
2001	MAR	20.19	1.2	10.5	0.413	0.86	-1.3
	JUN	19.34	6.8	6.8	0.373	1.09	1.9
	SEP	19.56	3.7	3.8	0.136	-0.03	4.5
	DEC	19.57	0.7	2.3	-0.108	0.96	3.0
2002	MAR	19.11	7.6	1.2	-0.265	-5.05	2.2
	JUN	18.59	3.0	1.8	0.256	1.51	2.3
	SEP	18.20	1.6	1.9	0.062	-8-0	-1.4
	DEC	18.17	6.9	2.9	0.329	-9.0	1.7
2003	MAR	18.84	0.6	8.0	-0.493	1.05	3.8
	JUN	17.61	5.2	13.4	-1.203	8.84	-4.5
	SEP	14.90	2.0	9.0	1.853	10.0	0.4
	DEC	14.09	1.8	8.8	-0.693	5.11	7.4
2004	MAR	13.20	2.4	9.1	0.54	9.10	1.8
	JUN	12.63	4.3	6.0	0.856	1.29	-2.0
	SEP	12.22	2.0	14.4	0.606	-0.82	-0.8
	DEC	12.20	3.4	17.6	-1.168	0.86	-1.7
2005	MAR	12.65	1.6	14.3	-2.11	3.03	0
	JUN	13.10	4.3	14.2	0.826	3.50	1.0
	SEP	12.63	6.2	7.5	-1.126	--2.21	0.5
	DEC	12.22	1.5	4.4	-0.44	8.85	2.5
2006	MAR	13.3	3.7	8.4	-0.37	-2.05	3.8
	JUN	13.75	0	4.3	0.523	0.42	0.4
	SEP	13.60	2.1	4.9	-2.416	-5.36	2.0
	DEC	13.90	9.7	6.6	-1.498	6.14	2.5
2007	MAR	13.66	1.6	3.4	-0.156	14.98	3.8
	JUN	13.28	5.6	2.7	--1.32	1.51	0.4
	SEP	13.06	9.2	5.3	0.223	7.63	2.0
	DEC	13.33	2.0	5.6	-0.523	-9.83	4.8
2008	MAR	13.89	0.2	10.5	1.066	13.79	3.7
	JUN	13.99	10.2	17.4	-0.54	-4.05	1.7
	SEP	13.89	6.5	15.9	3.846	0.10	4.6
	DEC	14.47	2.6	16.6	2.53	-3.98	4.1
2009	MAR	14.77	5.5	14.1	0.933	12.41	2.3
	JUN	14.88	1.5	10.6	-1.0	-5.54	-1.4

	SEP	14.76	6.5	9.8	-0.966	5.03	-2.2
	DEC	14.79	2.0	8.0	-0.071	2.38	0.4
2010	MAR	14.92	4.2	5.5	2.073	-1.44	7.4
	JUN	14.55	1.3	3.7	1.733	0.17	-0.4
	SEP	14.15	3.9	3.3	-0.043	4.22	7.4
	DEC	13.89	3.8	3.8	-0.14	4.22	0.8
2011	MAR	13.96	3.8	7.0	1.486	5.95	3.7
	JUN	13.90	0.6	13.2	1.896	0.24	2.1
	SEP	14.41	4.4	16.5	2.666	5.73	-1.5
	DEC	17.92	2.7	19.2	-3.293	0.23	-0.5
2012	MAR	20.05	2.6	16.9	-1.44	2.67	2.1
	JUN	20.21	2.2	11.8	0.75	-0.86	1.4
	SEP	20.0	3.8	6.4	0.44	-0.38	3.3
	DEC	18.32	2.7	3.5	0.538	4.05	1.3
2013	MAR	17.7	3.7	4.1	0.063	1.03	0.1
	JUN	17.43	3.8	4.4	-0.116	2.85	1.8
	SEP	16.94	3.6	7.0	0.803	0.11	-3.8
	DEC	16.96	4.4	7.4	-0.416	0.86	-3
2014	MAR	17	4.6	5.6	0.068	1.20	1.9
	JUN	16.67	4.5	7.0	0.426	0.53	1.2
	SEP	16.40	3.9	3.8	0.456	1.30	3.0
	DEC	15.97	5.2	3.5	0.596	-1.15	9.4

**Source: HassConsult, Central Bank of Kenya and Kenya National Bureau of Statistics**