

**THE EFFECT OF MACRO-ECONOMIC VARIABLES ON GROWTH IN
REAL ESTATE INVESTMENT IN KENYA**

BY

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DECLARATION

I, the undersigned, declare that this research project is my original work and has not been submitted to any other college, institution or university other than the University of Nairobi for academic credit.

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To the LORD God Almighty, for Who You are to me.

DEDICATION

To Abigael.

You have been my inspiration to think bigger.

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LIST OF ABBREVIATIONS

CBK	Central Bank of Kenya
CPI	Consumer Price Index
NHC	National Housing Corporation
KNBS	Kenya National Bureau of Statistics
GDP	Gross Domestic Product
OECD	Organization for Economic Cooperation and Development
REIT	Real Estate Investment Trust
SPSS	Statistical Package for Social Sciences

ABSTRACT

The Real Estate industry has increasingly attracted the attention of investors in the recent past. With such increase, it has been expected that the industry will significantly grow and thus fulfill its role in provision of substantive returns as well as the basic need of housing in Kenya. This has not been the case and thus this study sought to establish the effect of macro-economic variables on growth in real estate investment in Kenya given they are key in the growth of the industry. The study followed a descriptive research design. The study used secondary data on annual real estate investments growth as computed from the HassConsult. The study obtained the secondary data on the selected macro-economic variables including average annual Exchange Rate (Ksh/USD) (%), average annual growth in Diaspora Remittances (%), average annual growth in Money Supply (M3) (%), average annual Inflation Rate (%), average annual GDP growth (%). The data on macro-economic variables was obtained from Central Bank of Kenya (CBK) and Kenya National Bureau of Statistics (KNBS). The data sets covered the period between 2000-2013. The data was summarized or/and analyzed using excel spread sheets and statistical package for social sciences. The findings were 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 to determine the relationship, strength of the relationship and the statistical significance of the model. Notably, at least one or more of the selected macro-economic variables and the real estate growth declined over the periods; 2002-2005, 2007-2010, and 2011-2013. These periods were just before, during or/and the years immediate to national elections. It is therefore worthy noting that the politics around and during the electioneering period have an adverse effect on most macro-economic variables, which in turn adversely affects real estate investments growth 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 Money Supply, Inflations, and GDP Growth since R and R-Square was 0.872 and 0.761 respectively and because their corresponding coefficients were positive. These results were supported by both P-Value and F-test statistics. However, P-Values corresponding to each of the macro-economic variables indicate that the variables were insignificant on their own in influence real estate growth. The study concludes that there is a strong positive relationship between the macro-economic variables and real estate investment growth. Also, the study concludes that growth in; exchange rate, diaspora remittances, money in circulation, 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 growth. It is therefore recommended that policy makers and planners plan in advance to be able to Manage Exchange rates and inflation rates. Proper and peaceful political environment should be encouraged at all election periods to cut on the adverse effects of bad political environment to the economy.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Real estate investment plays the crucial role of providing employment opportunities, offering shelter to households, enhancing income distribution and poverty alleviation (Masika, 2010). Real estate industry in Kenya continues to fail to fulfil this fundamental role due to a number of unique factors that affect the sector. In the recent past, Kenya has witnessed an upsurge in real estate investment owing to increased quest for Kenyans to own homes coupled by an increased demand for residential homes due to increased rural urban migration, as well as demand for office space as more small and medium enterprises come into being (Nzalu, 2010).

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. 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 macro-economic variables is usually a difficult endeavor.

This paper examines the effect of interest rates, GDP/income, inflation, diaspora remittances - which affects the balance of payments and employment, economic growth hence affecting the various markets in the economy including the real estate market

(Barkham, 2012). Notably, the fluctuating rates of interest do fluctuate the interest charged by lending institutions on loans – cost of capital for investment. Also, the level of national output/income affects various aspects of the economy including investments. Also, an increase diaspora remittance represents an injection of capital for investment. On the other hand, an employment rate represents a capital addition in the economy which may be spent or invested. This study examines the effect of the selected macro-economic factors on real estate investments in Kenya.

1.1.1 Macro-Economic Variables

Macro-economic variables refer to factors that are pertinent to the broad economy at the regional or national level and affect a large population rather than a few select individuals. Macroeconomic factors such as economic output, unemployment, inflation, savings and investment are key indicators of economic performance and are closely monitored by governments, businesses and consumers (Khalid et al., 2012).

Fischer (1993) posits that the interplay or relationship between various macroeconomic factors is the subject of a great deal of study in the field of macroeconomics. While macroeconomics deals with the economy as a whole, microeconomics is concerned with the study of individual agents such as consumers and businesses and their economic decision-making.

The macro-economic factors are; real GDP, the unemployment rate, the inflation rate, the interest rate, the level of the stock market, and the exchange rate (Khalid et al., 2012).

The five common macro-economic factors; rate of inflation – affects prices for inputs and outputs in the short run and interest rates over the longer run in an economy, rates of

interest – affects cost of capital which is the interest expenses hence property values, rate of unemployment – affects available income and hence disposable income for investments since this is an important source of internal equity capital, rate of growth in GDP – affects the domestic demand for national outputs, and rate of foreign exchange – affects the value of the currency relative to international currency hence affecting property values where different currencies are involved as well as the export demand for outputs.

1.1.2 Real Estate Investment

According to Cummings (2010), real estate investing involves the purchase, ownership, management, rental and/or sale of real estate for profit. Investment in real estate is undertaken for its ability to provide returns in form of capital, income and intangible benefits (Baum & Crosby 1988). However returns in commercial real estate are maximized 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.

As Lynn (2007) notes, 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 (Thalmann, 2006). Real estate markets in most countries are not as organized 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 (Renigier-Bilozor, 2011).

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 (Nzalu, 2012). Real estate investors typically use a variety of appraisal techniques to determine the value of properties prior to purchase.

Real estate investment is measured through various approaches. One of the evident approaches is through indices mainly used in stock exchange market. Indices are frequently used as a benchmark against which to measure the performance of shares and fixed interest stock (Barkham, 2012). They are applied in the property industry but in a limited scope as compared to stock markets mainly because of difficulties associated with the free availability of data. Owing to the subjectiveness of property valuations, property index should ideally include a large sample, be independent of any of the institutional

investors, and should separate income, capital performance and total performance for each category of property.

The market value can also be used to measure property performance in the market. The value placed on a property is a major determinant of its performance. The value may be either market value or fundamental value. The fundamental value is the value placed on the property by the owner and is not necessarily market related (Thalmann, 2006). On the other hand, market value is the value which the market at large places on the property.

Ideally, property indices are produced by industry players such as established investment firms or government valuing agencies. In real estate sector, indices are produced by real estate investment firms. For example, HassConsult Real Estate Ltd comes up with real estate valuation indices. Specifically, the Hass composite Sales Index is a measure of asking property sales price, based on a Mixed Adjusted Methodology. This study use the Hass Composite Sales Index which will be retrieved from the Hass Property Index reports.

1.1.3 Effect of Macro-Economic Variables on Real Estate Investments

Like any other sector of investment, real estate is affected by diverse factors including; fluctuations in exchange rate, interest rate, inflation rate, money supply, national output etc. O'Sullivan & Sheffrin (2003) indicate that an exchange rate between two currencies is the rate at which one currency will be exchanged for another. The Post Keynesian theory assumes that currency prices are determined in the market for financial capital and that trade flows do not tend toward balance. It is further assumed that income effects are more important in determining the current account than are price effects.

GDP (Gross domestic Product) is defined by OECD as "an aggregate measure of production equal to the sum of the gross values added of all resident institutional units engaged in production" (OECD, 2002). In Keynes's theory of determination of equilibrium real GDP, employment, and prices are affected the aggregate income and expenditure. According to Keynes, spending affects GDP. To this end national income affects the level of investment.

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). If Keynes's theory is conceded, 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, hence affecting the real estate market positively (Barkham, 2012). Therefore, velocity could change in response to changes in money supply.

Barkham (2012) posits that diaspora remittances are the funds entering a country from foreign markets as gifts or support of friends and members of one's family. Through the theory of price, the demand of property by investors in the diaspora can increase the prices of the property in the market receiving the remittances. Huge remittances from abroad can cause a surge in money supply hence price of goods.

As Lynn (2007) notes, 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 (Thalmann, 2006). 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 (Renigier-Biłozor, 2011).

1.1.4 Real Estate Investments in Kenya

According to Muchoki (2013) 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. Also, real estate business in Kenya is fair well in the market because with growing population in Kenya, the demand for houses is on the rise. A Kenyan with the money to buy a house can prefer to buy a house and make use of the money used to pay rent for investment somewhere else 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.

According to Wallace (2013) population shifts and demographic changes in the population have an impact on the real estate market in Kenya as an increase in population causes demand, which further increases prices. In assessing the challenges affecting real estate development, Muchoki (2013) identified that poor planning was one of the challenges. Poor planning is partly contributed by lack of updated demographic reports.

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. Real Estate Investment Trust - REIT' is a security that sells like a stock on the major exchanges and invests in real estate directly, either through properties or mortgages. When interest rates increase, the yield on an REIT becomes less attractive and it pushes their value down. Otwoma (2013) identified that property prices displayed a high inverse relationship with interest rates in the period December 2000 to May 2003 and November 2011 to June 2013 when interest rates were high. This inverse relationship reverses in the period June 2003 to October 2011, a period when interest rates were relatively low and stable.

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 and the prices of goods, amongst others. In a research conducted by Muthee (2012), the results indicate that there is a relationship between the variables (GDP growth, inflation, and unemployment) revealing that a quarterly change in housing prices yields a quarterly change in GDP. The data

collected and analysed indicates that property is a strong asset class which has been under exploited in portfolios.

1.2 Research Problem

The growth of real estate investment in any context is highly affected by a myriad of economic factors. The growth in real estate could be measured as the collective total investments (costs of investing in real estate) or the price index (the asking prices). In this sense, then different factors can cause growth. For example, the housing bubble is associable with; excessive desire for home ownership in an economy, buying for speculation rather than shelter, low interest rates, viewing residential real estate as a safe harbor, and bad lending practices. To this extent, variables that influence the above variables such as inflation, GDP, Money supply, including international remittances are bound to affect the growth of real estate and other sectors in the economy.

As of 2012, the National Housing Corporation (NHC), the Vision 2030 estimates that the country requires 200,000 new units of housing per year, but the industry could only avail 35,000 units each year. A report from the Kenya National Bureau of Statistics (KNBS) shows that real estate investment has greatly contributed the growth of Kenya's Gross Domestic Product. Kenya National Bureau of Statistics report (2012) shows that, in 2008, real estate contributed 107, 323, 000 shillings to the country's GDP. However, real estate prices in Kenya have been growing almost every year.

Masika (2010) posits that demand for housing units continues to outstrip the supply. Makena (2012) postulates that level of money supply can influence the level of real estate

investments as well as real estate property prices. According to Otwoma (2013) property prices display a high inverse relationship with interest rates especially when interest rates are high. He adds that this inverse relationship reverses when interest rates are relatively low and stable. In his study, Muthee (2012) established a relationship between the variables (GDP growth, inflation, and unemployment) and a quarterly change in housing prices yields.

In his study, Nzalu (2012) concluded that GDP, interest rates and inflation rates do greatly determine the real estate investments in Kenya. Elsewhere, Renigier-Bilozor & Wisniewski (2012) established total consumption expenditure, net income; unemployment and population growths are influential factors to the real estate investment. Also Golob, Bastic & Psuder (2012) affirmed the findings of Renigier-Bilozor & Wisniewski (2012).

It is notable that while different researchers do agree that GDP, interest rates, inflation, unemployment, demographics, amongst others do affect the level of real estate investments, they do not conclude on the direction of the relationship or the strength of the relationship. Furthermore, findings from different authors are not consistent. The question of this study is; what is the effect of macro-economic Variables on real estate investments in Kenya?

1.3 Objective of the Study

To determine the effect of macro-economic variables on real estate investment growth in Kenya

1.4 Value of the Study

The study is of the following practical value: the study provides useful information to policy makers, market players and finance academicians on the extent to which macro-economic factors affect real estate development in the country. The outcome of this study provides insight to policy makers and real estate players as to whether macro-economic factors can be used as a useful tool in ensuring housing affordability in Kenya.

The study adds value to theoretical discussion by testing the relationship of macro-economic factors and investment under an environment where demand outweighs supply. The findings of the study are useful resource base to students pursuing Finance and to researchers exploring the area of real estate. The study provides useful data for comparative study purposes in future researches on this topic.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter provides literatures from past researchers and scholars on the effects of real estate investment. The chapter examines the concepts and theories on the topic with major focus on macro-economic variables; Exchange rate, inflation rate, money supply, real output – Real Gross Domestic Product and diaspora remittances. By considering literatures from diverse past authors, the chapter forms the theoretical and the conceptual framework of the study on the factors affecting real estate investment.

2.2 Theoretical Review

Theoretical review refers to the theoretical foundation of a study. A theoretical research has its findings based on existing theories and hypothesis; there is no practical application in the research, while an empirical research has its findings based on the verification through experiments, experiences and observations. This study is founded on both theory and empirical literatures.

2.2.1 McKinnon and Shaw Theory

According to McKinnon (1973) and Shaw (1973), increase in demand for investment but not the actual investment can occur, if real interest rates are kept below the market equilibrium. Low interest rates are insufficient to generate savings; it can even reduce savings especially if substitution effects dominate the income effect for households. On the other hand, low rates raise the expected profitability of investment projects by raising

the net present value of future earnings from the project. The theory rests on the assumptions that saving is an increasing function of real rate of interest on deposits and real rate of growth in output and that investment is a decreasing function of the real loan rate of interest and an increasing function of the growth rate.

The theory posits that the nominal interest rate should be administratively fixed. They advance that emerging economies are fragmented; hence there is a greater likelihood of having investments that are less productive. Capital accumulation is discouraged by the fact that for a high inflation rate, nominal interest rates are set too low and thus real interest rates could be negative. As capital supply of banking sector is limited and banks have only specialized credit activities, people have to finance their investment projects by themselves or have to go to the informal sector where interest rates are often usurious.

2.2.2 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 in 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 affected diaspora remittances 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 housing 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.

2.2.3 Keynesian Economic Theory

Keynes (1936) is in the view that in the short run, especially during recessions, economic output is strongly influenced by aggregate demand (total spending in the economy). In the Keynesian view, aggregate demand does not necessarily equal the productive capacity of the economy; instead, it is influenced by a host of factors and sometimes behaves erratically, affecting production, employment, and inflation. Keynesian economists often argue that private sector decisions sometimes lead to inefficient macroeconomic outcomes which require active policy responses by the public sector, in particular, monetary policy actions by the central bank and fiscal policy actions by the government, in order to stabilize output over the business cycle.

Policies focus on the short-term needs and how economic policies can make instant corrections to a nation's economy. Also, the government is seen as the only force to end financial and economic downturns through monetary or fiscal policies, and providing

aggregate demand to increase the level of economic output, facilitated through a stable financial system that can spur continued economic stability. Keynes (1936) later supported an alternative structure that includes direct government control of investment and advanced that financial deepening can occur due to an expansion in government expenditure. Since higher interest rates lower private investment, an increase in government expenditure promotes investments and reduces private investments concurrently.

2.3 Determinants of Real Estate Investment

As Klimczak (2010) professes, on the capital market, one of important criteria for investment decision is the issue of selecting sources, possibilities and methods of raising the value of the investment object. Familiarity with sources of value as well as factors of which determine the value and impact upon the attractiveness of a capital market segment in question, allows capital owners to make effective and rational investment decisions. Issues concerning economic and physical properties of the estate that constitute its value are of great importance for prospective investors on the real estate market.

2.3.1 Exchange Rate

According to O'Sullivan & Sheffrin (2003), exchange rate is the value of one currency for the purpose of conversion to another. It is the price of a nation's currency in terms of another currency. An exchange rate thus has two components, the domestic currency and a foreign currency, and can be quoted either directly or indirectly. In a direct quotation, the price of a unit of foreign currency is expressed in terms of the domestic currency

(Mongeri, 2011). In an indirect quotation, the price of a unit of domestic currency is expressed in terms of the foreign currency. An exchange rate that does not have the domestic currency as one of the two currency components is known as a cross currency, or cross rate.

Exchange rate movements significantly affect the real estate market owing to its information content to the investors. When there are high fluctuations in the exchange rates, the exchange rates movement, there would be high movements of market return volatility. Some studies have concluded that there is a strong relationship between exchange rate movement and interest rates volatility (Otwoma, 2012), while others have not. Most exchange rates use the US dollar as the base currency and other currencies as the counter currency. However, there are a few exceptions to this rule, such as the euro and Commonwealth currencies like the British pound, Australian dollar and New Zealand dollar (Mongeri, 2011).

2.3.2 Inflation Rate

Inflation occurs when the prices of goods and services increase over time (Kimani & Mutuku, 2013). Inflation cannot be measured by an increase in the cost of one product or service, or even several products or services. Rather, inflation is a general increase in the overall price level of the goods and services in the economy. It is measured as an annual percentage increase. As inflation rises, every currency an investor own buys a smaller percentage of a good or service.

The effects of inflation on the economy are diverse and can be both positive and negative. The negative effects are however most pronounced and comprise a decrease in the real

value of money as well as other monetary variables over time (Blanchard, 2000). As a result, uncertainty over future inflation rates may discourage investment and savings, and if inflation levels rise quickly, there may be shortages of properties as realtors begin to hoard out of anxiety that prices may increase in the future (Kimani & Mutuku, 2013).

2.3.3 Money Supply

As indicated earlier, Cummings (2010) presents money supply or money stock is the total amount of monetary assets available in an economy at a specific time. There are several standard measures of the money supply, including the monetary base, M1, and M2. The monetary base is defined as the sum of currency in circulation and reserve balances (deposits held by banks and other depository institutions in their accounts at the Federal Reserve).

According to Agénor & Alper (2012) Economists analyze the money supply and develop policies revolving around it through controlling interest rates and increasing or decreasing the amount of money flowing in the economy. Money supply data is collected, recorded and published periodically, typically by the country's government or central bank. Public and private sector analysis is performed because of the money supply's possible impacts on price level, inflation and the business cycle (Agénor & Alper, 2012).

2.3.4 Real Output

Real Gross Domestic Product (real GDP) is a macroeconomic measure of the value of economic output adjusted for price changes (i.e., inflation or deflation) (OECD, 2012).

This adjustment transforms the money-value measure, nominal GDP, into an index for quantity of total output. The result of an economic process that has used inputs to produce a product or service that is available for sale or use somewhere else. Net output, sometimes called netput is a quantity, in the context of production that is positive if the quantity is output by the production process and negative if it is an input to the production process.

In macroeconomics, the question of why national output fluctuates is a very critical one. And though no one answer has been come up with, there are some factors which economists agree on which makes output go up and down (Moss, 2007). If one takes growth into consideration, then most economists will agree that there are three basic sources for economic growth i.e. increases in labour, increase in capital and increase in efficiency of the factors of production. Just like increases in inputs of factors of production can cause output to go up, just like that, anything that causes labour, capital or efficiency to go down will cause a decline in output or at least a decline in its rate of growth (Moss, 2007).

2.3.5 Diaspora Remittances

Diaspora remittances refer to remittances of money sent by a person in a foreign land to his or her home country. Due to the huge sums involved, remittances are now being recognized as an important contributor to the country's growth and development (CBK, 2014). The Central Bank of Kenya conducts a survey on remittance inflows every month through the formal channels that include commercial banks and other authorized international remittance service providers in Kenya. Remittances to Kenya increased by

3.8 per cent to USD 117.1 million in July 2014 compared with USD 112.8 million in July 2013 and were 0.6 per cent above the inflows recorded in June 2014. The improvement in June 2014 was reflected in inflows from Rest of the World.

The CBK report 2014 shows that remittances in the year to July 2014 remained resilient with the cumulative flow USD 1,361 million 11.70 percent higher than USD 1,219 million in the year to July 2013. The 12 month average flow during the year to July 2014 sustained an upward trend and peaked at USD 113.4 million from USD 101.6 million in the year to June 2013.

A huge part of Diaspora remittances has been going into the Real Estate Sector (Mbataru, 2014). Many Kenyans living abroad are investing in Real Estate through relatives and friends for reasons of ownership or investment. This has significantly created growth in the Real Estate sector.

2.4 Empirical Review

Theoretical (or conceptual) 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.

2.4.1 Foreign Empirical Evidence

In a journal titled *International Real Estate Review*, Apergis (2011) contributed a study on *Housing Prices and Macroeconomic Factors: Prospects within the European Monetary Union*. The study analysed 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

residential property markets. Residential property markets are connected, despite the fact that they are situated in different parts of Europe. The economic and financial crisis of 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.

In assessing the determinants of real estate investment, Klimczak (2010) identifies that familiarity with sources of value as well as factors of which determine the value and impact upon the attractiveness of a capital market segment in question, allows capital owners to make effective and rational investment decisions. Issues concerning economic and physical properties of the estate that constitute its value, are of great importance for prospective investors on the real estate market.

2.4.2 Local Empirical Evidence

In determining the relationship between economic growth and real estate prices in Kenya, Muthee (2012) identified that there is a relationship between the variables (real estate prices and real estate investment) revealing that a quarterly change in housing prices yields a quarterly change in GDP. The data collected and analysed indicates that property is a strong

asset class which has been under exploited portfolios. It was also identified that GDP growth, inflation and unemployment show significant correlation with composite property returns.

In the research conducted by Nzalu (2012), it was identified that GDP is the most significant contributor to the growth in real estate. In addition GDP growth, interest rate variation and growth in inflation were found to be statistically significant determinant of real estate growth. 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.

Makena (2012) sought to investigate the determinants of residential real estate prices in Nairobi. In this study a quantitative approach was followed. The study used secondary data which were largely quantitative and descriptive in nature. The study found that the level of money in supply information can give economists and financial analysts a better understanding of the real estate market and its influence on real estate prices. To the financial analysts, it is important to realize the need to sensitize their clients to do more investment in real estate in municipality areas like Nairobi because there is need for more residential real estates. Further, they need to let financial institutions realize that real estate investment in such metropolitan and municipalities is not exhausted in financing so that they can open up possibilities for their client who would like to venture in the same.

In assessing the determinants of real estate prices in Kenya, Karoki (2013) identified that there are significant negative relationship between residential real estate prices and

interest rates, and positive relationships with 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. The trend also indicates an overall increase in property prices with time hence the real estate market in Kenya is expected to continue to grow. Even without significant changes in the variables, the effect of time is that house prices increase. This also indicates that the real estate market is significantly stable.

2.5 Summary of Literature Review

Both local and foreign authors have studied on the determinants of real estate investments. The findings from the empirical literatures are inconclusive. Internationally, Renigier-Bilozor & Wisniewski (2012) identified that the economic and financial situation of European countries affects residential property markets. Residential property markets are connected, despite the fact that they are situated in different parts of Europe. further, The economic and financial crisis of countries has variable influence on prices of real estate. Golob, Bastic & Psunder (2012) using Slovenia as a case study, idnetified 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. Klimczak (2010) identifies that familiarity with sources of value as well as factors of which determine the value and impact upon the attractiveness of a capital market segment in question, allows capital owners to make effective and rational investment decision.

Locally, Muthee (2012) identified that there is a relationship between the variables (real estate prices and real estate investment) revealing that a quarterly change in housing prices yields a quarterly change in GDP. Further, Nzalu (2012) identified that GDP is the most significant contributor to the growth in real estate. In addition GDP growth, interest rate variation and growth in inflation were found to be statistically significant determinant of real estate growth. In attempting to Makena investigate thhe determinants if residential real estate prices in Nairobi. Makena (2012) found that the level of money in supply information can give economists and financial analysts a better understanding of the real estate market and its influence on real estate prices. To the financial analysts, it is important to realize the need to sensitize their clients to do more investment in real estate in municipality areas like Nairobi because there is need for more residential real estates. Karoki (2013) identified that there is a significant negative relationship between residential real estate prices and interest rates, and positive relationships with 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.

Evidently, different authors have established that GDP, money supply and interest rates are among the factors that determine the level of and value of the real estate investments as per the different researchers. However, the diverse researchers have not concluded on the direction of causation or the strength of the relationship that exists between the selected macro-economic variables and real estate investments. Furthermore, the findings by different authors have been inconclusive.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter discusses the methodology used to conduct the study. The chapter explains the methods used to collect secondary data necessary for the study. It discusses the research design used, the target population and data collection methods. Data analysis has also been discussed in detail with the researcher explaining the models and statistical tools that will be used to analyse the data.

3.2 Researcher Design

According to Gall et al. (2006) research design is a detailed outline on how the research was undertaken. It specifies the methods and procedures used to collect and analyse the data. The study sought to investigate the macro-economic factors affecting real estate investment. Descriptive research design details the method that quantitatively synthesizes the empirical evidence of a specific field of research to describe the relationship between variables.

Flick (2009) notes that Descriptive research design is widely accepted in the field of finance and economics since it is proving to be very useful in policy evaluations. According to Groves (2004) descriptive technique gives accurate information of persons, events or situations. Descriptive research design was used to describe the relationship between the selected macro-economic factors and real estate investment.

3.3 Data Collection

As Flick (2009) notes, data collection is the process of gathering and measuring information in order to be able to answer questions that prompted the undertaking of the research. Secondary data will be obtained from HassConsult Report. Secondary data refers information that has been collected by other individuals (Cooper & Schindler, 2006).

For the purpose of this study, the researcher obtained secondary data for all the variables which includes exchange rate, money supply, inflation rate, and real output and diaspora remittances from Central Bank of Kenya (CBK) for the period 2000-2013. The dependent variable real estate investment - Hass Composite Sales Index, is the secondary data that was obtained from HassConsult Report of between 2000 and 2013. These reports are readily available in the company's website.

3.4 Data Analysis

According to Mugenda & Mugenda (2003) data must be cleaned, coded and properly analysed in order to obtain meaningful information. Secondary data from HassConsult will be organized in spreadsheets for the purpose of analysis. The data was analysed using Statistical Package for Social Sciences (SPSS) in order to obtain various statistics, percentages, frequency distribution, means and standard deviation. The findings have then been presented in form of charts and tables. This information was used to complete the study report and answer the study question.

3.4.1 Analytical model

The unit of analysis was secondary data obtained from CBK, KNBS and reports available on the internet. The variables involved included diaspora remittances, exchange rate, money supply, inflation rate and real output.

The study analytical model is 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 – Growth of Real estate Investments measured using the percentage change of Hass Composite Annual Average Sales Index

X₁ - Inflation rate, measured as percentage change in the average annual – the CPI

X₂ - Money Supply Growth, measured as percentage change of the average yearly monetary base (M3)

X₃ - Real Output (Real GDP) Growth, measured as percentage change in annual Real Output; the Real Gross Domestic Product (real GDP) a macroeconomic measure of the value of economic output adjusted for price changes (inflation or deflation)

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

β – Beta coefficient of variable i that measure the amount of the change in Y associated with a unit change in X.

While μ_i – is the error term that is assumed to be associated with the Variables

3.4.2 Test of Significance

The study sought to establish the effect of macroeconomic factors in real estate investment in Kenya. The researcher used inferential statistics such as The Pearson Product Moment - correlation coefficient R^2 and the coefficient of determination R of the data set.

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 growth in real estate investment in Kenya

4.2 Data Analysis and Presentation

The obtained data spanned the period between years 2000 to 2013. 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 Growth

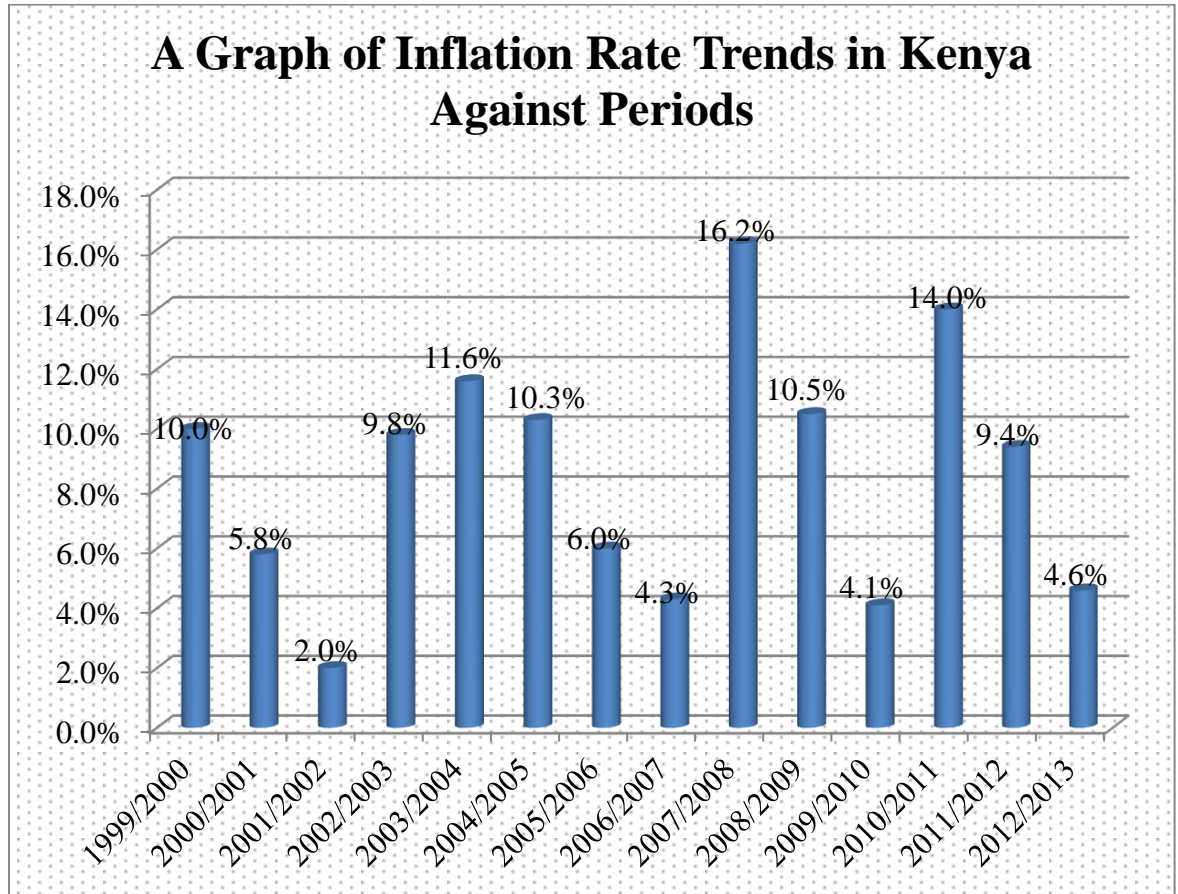
Source: HassConsult

The study results revealed that real estate investments 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 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 4.2: Inflation Rate Fluctuations



Source: Central Bank of Kenya

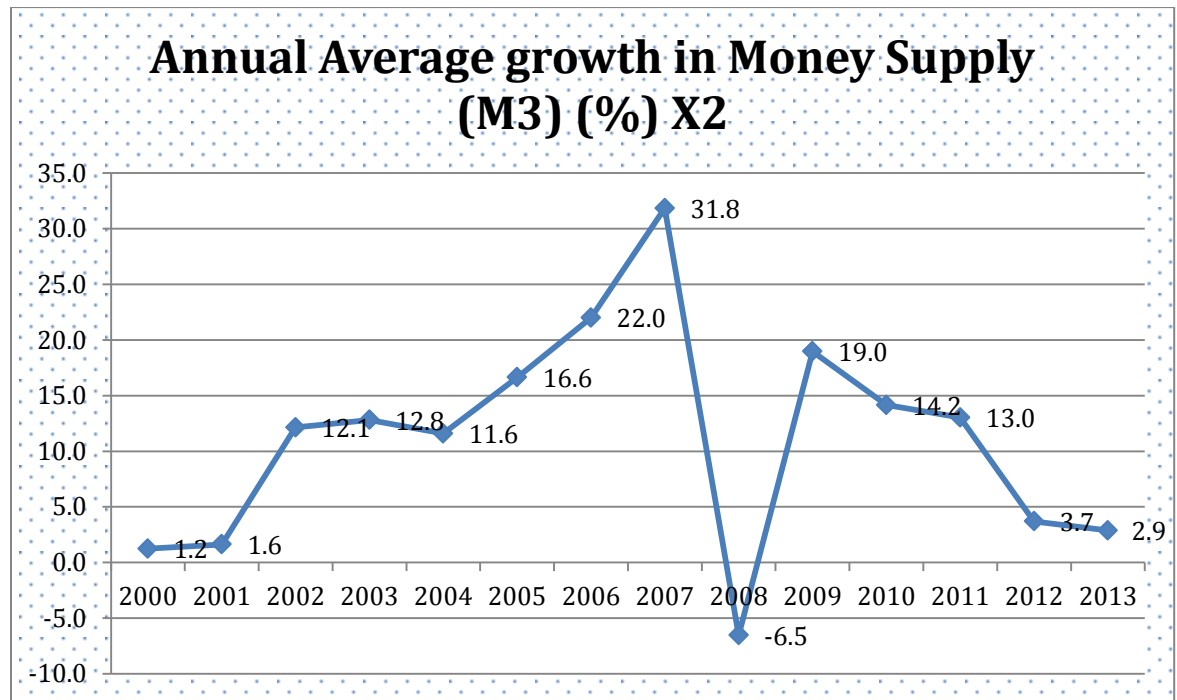
The inflation rate averaged between 10% during the period 1999/2000. It drop to 5.8% and then to 2% during the periods 2000/2001 and 2001/2002 respectively. Then, the inflation increased to average at 9.8% and to 11.6% during the period 2002/2003 and 2003/2004. The rate dropped again from 10.3% to 4.3% 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.

4.2.3 Growth in Money Supply

The study sought to establish the trend of the growth of the money supply. The results of the findings are shown in figure 4.3 below.

Figure 4.3: Growth in Money Supply



Source: Central Bank of Kenya

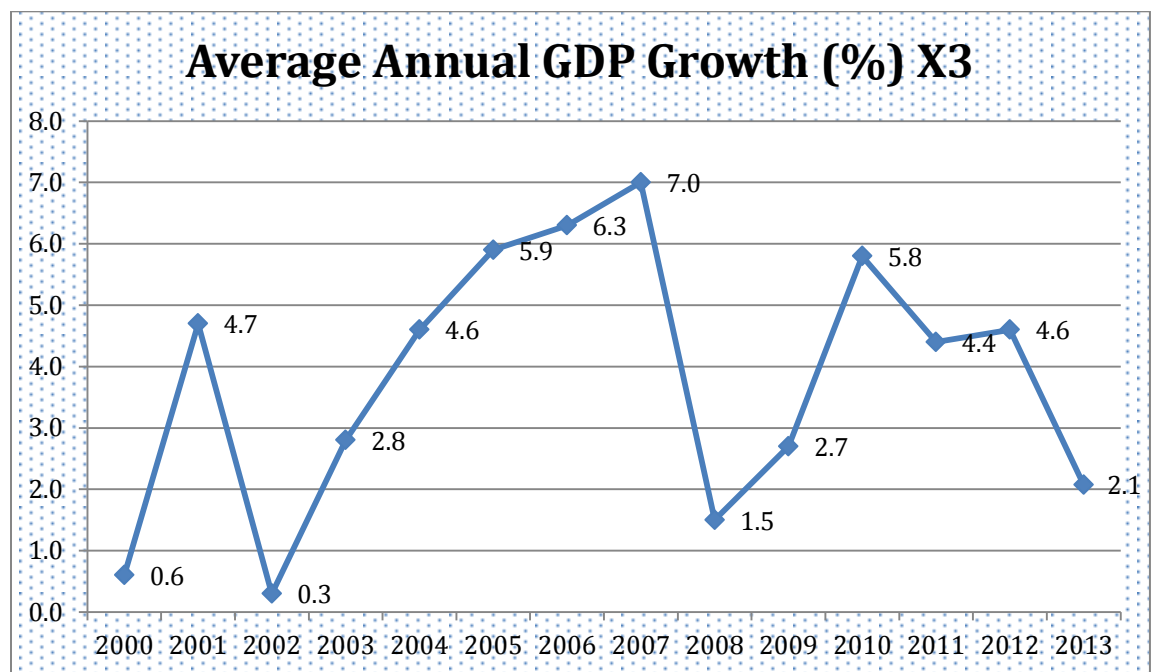
The study results established that average annual inflation fluctuated throughout the period. On average, the central bank increased the money supply in several years. The money in circulation rose highly in the year 2007 (increased by 31.8%) while it was

reduced greatly, hence the money instead was decreased by 6.5% as shown in figure 4.3 above.

4.2.4 Real GDP Growth

The study examined the trend of the growth in real Gross Domestic Product. The results and data are shown in figure 4.4 below and in appendix 1.

Figure 4.4: Real GDP Growth



Source: Kenyan National Bureau of Statistics

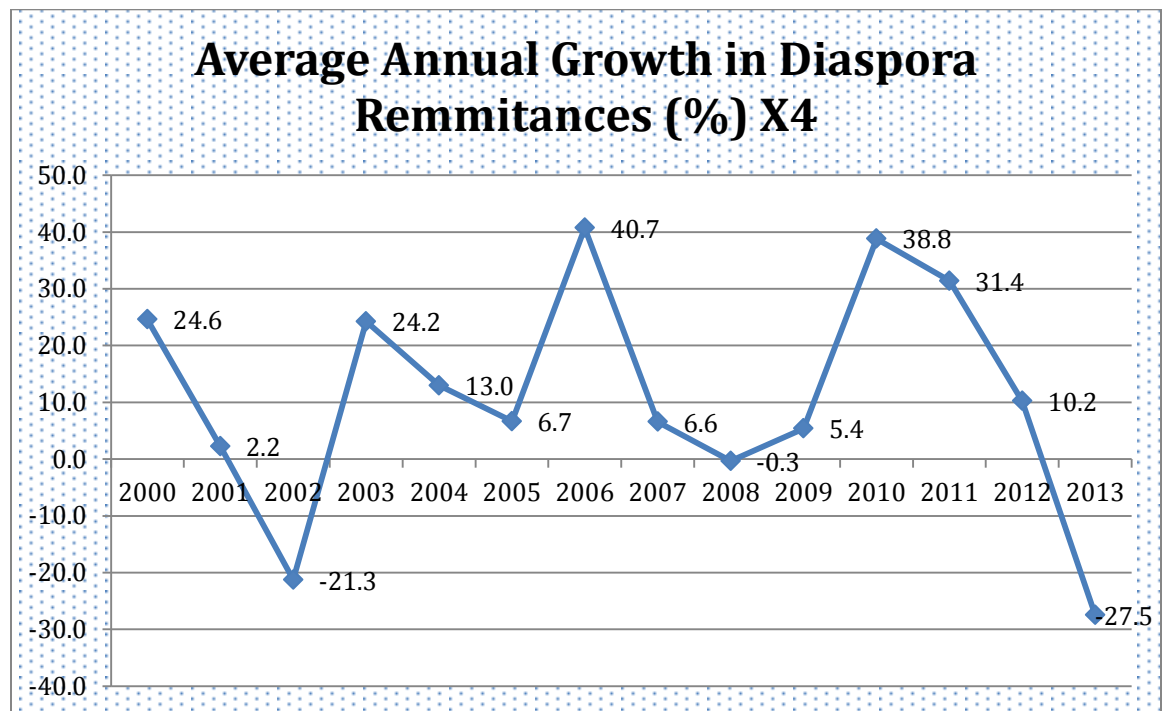
The study results established that average annual GDP has at least grown each year since the year 2000 to 2013 as shown above. However, the growth has been inconsistent as the percentage growth changed each year. The three years which witnessed least growths included 2000, 2002 and 2008 with 0.6%, 0.3% 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 4.4 above.

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

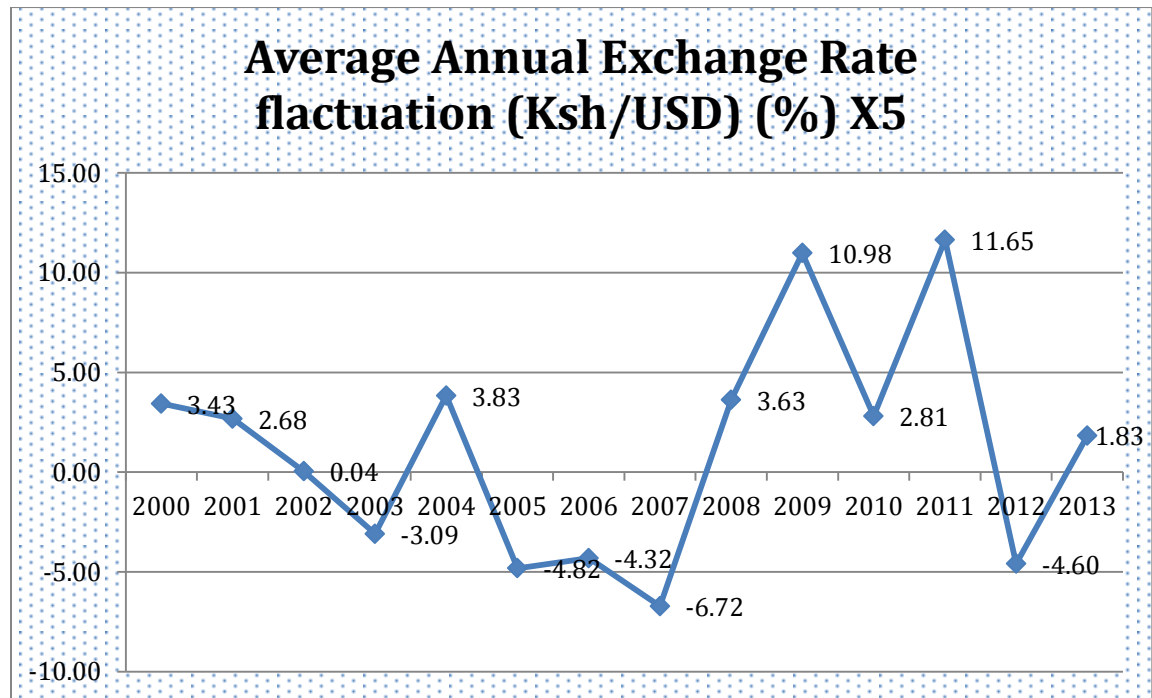
The study results established that the total annual diaspora remittances grew and declined in different years over the study period. Years such as 2000, 2003, 2006, and 2010 experienced relatively high growths of 24.6%, 24.2%, 40.7%, and 38.8% as shown by the graph peak points shown above. Also, years 2002, 2008, and 2013 experienced least

growths in remittances to the extent that the growth was negative with values of -21.3%, -0.6% and -27.5% 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 year 2013 as shown in figure 4.6 above.

4.3 Regression Analysis

The researcher regressed the dependent variable growth in real estate investments against 5 predictor variables; average annual inflation, average annual growth in money supply, 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 α 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.

4.3.1 Model Summary Statistics

The study obtained the model summary statistics as shown in table 4.1 below.

Table 4.1: Model Summary Statistics

Model Summary ^b					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Sig. F Change
1	.872 ^a	.761	.590	3.749	.038
a. Predictors: (Constant), Average Annual Exchange Rate fluctuations (Ksh/USD) (%), Average Annual Growth in Diaspora Remittances (%), Average Annual Growth in Money Supply (M3) (%), Average Annual Inflation Rate (%), Average Annual GDP Growth (%).					
b. Dependent Variable: Average Annual Growth in Real Estate Investments (%)					

Source: Research Findings

In order to explain the percentage of variation in the dependent variable (Average Annual Growth in Real Estate Investments) 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 Money Supply (M3) (%), 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 investments 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 growth as shown by the coefficient of determination (R) equal to 0.872.

4.3.2 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 ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	313.181	5	62.636	4.458	.038 ^b
	Residual	98.363	7	14.052		
	Total	411.544	12			

a. Dependent Variable: Average Annual Growth in Real Estate Investments (%)
 b. Predictors: (Constant), Average Annual Exchange Rate fluctuations (Ksh/USD) (%), Average Annual Growth in Diaspora Remittances (%), Average Annual Growth in Money Supply (M3) (%), 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.

4.3.3 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	Coefficients ^a				
	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1. (Constant)	13.980	4.281		3.266	.014
2. Average Annual Inflation Rate (X ₁)	.188	.316	.137	.596	.570
3. Average Annual Growth in Money Supply (M3) (X ₂)	.472	.144	.797	3.269	.059
4. Average Annual GDP Growth (X ₃)	2.901	.855	1.004	3.393	.062
5. Average Annual Growth in Diaspora Remittances (X ₄)	.040	.076	.140	.522	.618
6. Average Annual Exchange Rate fluctuations (Ksh/USD) (X ₅)	.192	.225	.190	.852	.422

Source: Research Findings

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

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

From the regression model obtained above, holding all the other factors constant, growth in real estate investment would be 13.98. A unit change in each of the predictor variables would cause a change in the real estate investment growth 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 investment growth. Further, the corresponding p-values for each of the selected variables; Annual Inflation Rate, Annual Growth in Money Supply (M3), 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 growth in real estate investments declined each year through 2002-2005. Also notable, the growth 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. 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 2011-2013. 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 growth 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 investments growth 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 Money Supply, 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 investment growth and the predictor variables can be expressed using the following regression equation: $Y = 13.98 + 0.188X_1 + 0.472X_2 + 2.901X_3 + 0.040X_4 + 0.192X_5 + \mu$. Since the coefficients corresponding to various predictor variables were positive, the study established a positive relationship between real estate investment growth 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 Investments growth 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 growth in real estate investment in Kenya. The study followed a descriptive research design and used secondary data on annual real estate investments 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 growth in Money Supply (M3) (%), 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 between 2000-2013.

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 growth in real estate investments 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 2011-2013. 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 growth 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 investments growth 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 Money Supply, Inflations, 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 ie 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 investment growth and the 5 selected macro-economic variables (Exchange Rate fluctuations, Growth in Diaspora Remittances, Growth in Money Supply, 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 investment growth. Also, the coefficients corresponding to selected macro-economic variables; Exchange Rate fluctuations, Growth in Diaspora Remittances, Growth in Money Supply, 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 investment growth. Also, the study concludes that growth in; exchange rate, diaspora remittances, money in circulation, 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 growth.

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, Makena (2012) found that the level of money in supply 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 investments 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 investment 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, Kenya 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 investments in the regional markets. This can provide important information that can be used for comparison purposes.

REFERENCES

- Agénor, P. R., & Alper, K. (2012). Monetary Shocks and Central Bank Liquidity with Credit Market Imperfections. *The Quarterly Journal of Economics*, 64(3), 563-591.
- Apergis, N. (2011). *Housing Prices and Macroeconomic Factors: Prospects within the European Monetary Union*, *International Real Estate Review*, 6(1) 63-74
- Barkham, R. (2012). *Real Estate and Globalisation*. Hoboken, N.J: Wiley-Blackwell.
- Blanchard, Olivier (2000). *Macroeconomics*, 2nd ed. Englewood Cliffs, N.J: Prentice Hall.
- Cooper, D.R. & Schindler, R.S. (2006). *Business Research Methods*. New York: McGraw-Hill Irwin.
- Cummings, J. (2010). *The McGraw-Hill 36-hour course: Real estate investing*. New York: McGraw-Hill.
- Fischer, S. (1993). The Role of Macroeconomic Factors in Growth, *Journal of Monetary Economics*, 32(3) 485-512
- Flick, U. (2009). *An Introduction to Qualitative Research*. New York: Sage Publications Ltd.
- Gall, M.D., Gall, J. P. & Borge, W. R. (2006). *Educational Research: An Introduction*, 8th Ed. New York; Pearson.

- Golob, K., Bastic, M. & Psunder, I. (2012). Analysis of the Impact Factors of the Real Estate Market: Case Slovenia. *Engineering Economics*, 23 (4): 257-367.
- Keynes, J. M. (1936). *Treatise on Money and the General Theory of Employment, Interest and Money 1927 to 1939*. Maynardkeynes.org.
- Khalid, Z., Iqtidar, A. S., Muhammad, M., K., Mehboob, A., (2012) "Macroeconomic factors determining FDI impact on Pakistan's growth", *South Asian Journal of Global Business Research*, 1 (1), 79 – 95.
- Kimani, D. K., & Mutuku, C. M. (2013). Inflation Dynamics on the Overall Stock Market Performance: The Case of Nairobi Securities Exchange in Kenya. *Economics and Finance Review*, 2(11), 1-11.
- Klimczak, K. (2010). Determinants of Real Estate Investment. *Economics and Sociology*, 3(2), 58-66.
- Lynn (2007) The Tectonic Forces of Global Real Estate: Implication for global investment and Portfolio Managers, in: *Journal of Real estate portfolio Management*, 13(1), 87-92.
- Makena, J. S. (2012). Determinants of Residential Real Estate Prices in Nairobi. Unpublished MBA Project. University of Nairobi.
- Masika, A. M. (2010). Factors Influencing Real Estate Property Prices. A Survey of Real Estates in Meru Municipality, Kenya. Kenya Methodist University, Meru.

- Mbataru, P. (2014) *Why Kenya's property market will not tumble any time soon*. Daily Nation; January 30, 2014.
- Monger, O. (2011). *The Impact of Foreign Exchange Rates and Foreign Exchange Reserves on the Performance of Nairobi Stock Exchange Share Index*. Nairobi: University of Nairobi.
- Moss, D. (2007). *A Concise Guide to Macroeconomics : What Managers, Executives, and Students Need to Know*. Boston, Mass: Harvard Business School Press.
- Muchoki, D.N. (2013). Investigation into The Challenges Facing Real Estate Development In Kenya (A Case Study Of Kenol Town, Murang'a County). Unpublished MBA Project. University of Nairobi.
- Mugenda, . A. & Mugenda , A. . O., 2003. *Quantitative and Qualitative Approaches*. Nairobi Kenya: African Center for Technological Studies.
- Muthee, M.K. (2012). Relationship Between Economic Growth and Real Estate Prices in Kenya. Unpublished MBA Project. University of Nairobi.
- Mwangi, W.G. (2013). Market Analysis And Residential Development In Nairobi (A Case Study Of Ruai Location, Nairobi). Unpublished MBA Project. University of Nairobi.
- Nzalu, F.M. (2012). An Assessment of the Factors Affecting the Growth in Real Estate Investment in Kenya, Unpublished MBA Project, University of Nairobi.

- OECD (2002). *Gross Domestic Product*. Available at <http://stats.oecd.org/glossary/detail.asp?ID=1163> [Accessed 20th September, 2014].
- O'Sullivan, A. & Sheffrin, S.M. (2003). *Economics: Principles in action*. Upper Saddle River, N. J.: Pearson Prentice Hall.
- Otwoma, F.B.K. (2013). The effect of interest rates on property prices in the Kenyan real estate market. Unpublished MBA Project. University of Nairobi.
- Rebigier-Bilozor, M. & Wisniewski, R. (2012). The impact of macroeconomic factors on residential property prices indices in Europe. *XLI Incontro di Studio del Ce.S.E.T.*: 149-166.
- Renigier-Biłozor M. (2011). Analysis of real estate markets with the use of the rough set theory, *Journal of the Polish real estate scientific society* . 19(3).
- Rodenholm, R., & Dominique, B. (2013). *Macroeconomic effects on securitized real estate markets. A comparative study of Sweden and Switzerland*. KTC Actetur
- Thalmann, P. (2006) *Triggers for housing development*, Ecole Polytechnique Federale de Lausanne, station 16 CH 1015.
- Wiśniewski R. (2011). Modeling of residential property prices index using committees of artificial neural networks for PIGS, the European-G8, and Poland. *Economic Modelling* (sent to the publisher).
- Wallace, J. (2013). Impact of Population Shifts and Demographic changes on the Real Estate Market in Kenya. Nairobi, Strathmore University.

APPENDICES

Appendix 1: Data for the Study

Year	Average Annual Growth in Real Estate Investments (%)	Average Annual Inflation Rate (%)	Average Annual Growth in Money Supply (M3) (%)	Average Annual GDP Growth (%)	Average Annual Growth in Diaspora Remittances (%)	Average Annual Exchange Rate fluctuations (Ksh/USD) (%)
2000		10.00	1.24	0.60	24.62	3.43
2001	1.85	5.80	1.63	4.70	2.25	2.68
2002	19.91	2.00	12.14	0.30	-21.27	0.04
2003	9.45	9.80	12.82	2.80	24.25	-3.09
2004	6.39	11.60	11.59	4.60	12.96	3.83
2005	4.61	10.30	16.65	5.90	6.66	-4.82
2006	8.48	6.00	22.00	6.30	40.74	-4.32
2007	11.29	4.30	31.84	7.00	6.55	-6.72
2008	15.67	16.20	-6.54	1.50	-0.34	3.63
2009	20.90	10.50	18.97	2.70	5.38	10.98
2010	9.27	4.10	14.15	5.80	38.82	2.81
2011	11.90	14.00	13.03	4.40	31.39	11.65
2012	4.58	9.40	3.69	4.60	10.22	-4.60
2013	5.99	4.60	2.88	2.08	-27.47	1.83

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

Appendix 2: Actual Prices of Real Estate Units sold

YEAR	Value of real estate for sale asking prices (Ksh)
2000	7,168,007.05
2001	7,300,852.00
2002	8,754,747.85
2003	9,582,503.69
2004	10,194,404.50
2005	10,664,861.99
2006	11,569,152.65
2007	12,875,039.22
2008	14,892,006.66
2009	18,003,710.00
2010	19,672,606.09
2011	22,014,617.08
2012	23,022,291.57
2013	24,401,312.29

Source: HassConsult

Appendix 3: Money Supply in the Kenyan economy- M3

Year	M3- in '000,000 USD
2000	4,608.7
2001	4,683.7
2002	5,252.3
2003	5,926
2004	6,612
2005	7,713
2006	9,410
2007	12,407
2008	11,595
2009	13,795
2010	15,747
2011	17,799
2012	18,456
2013	18,987

Source: Central Bank of Kenya and online IMF Data