

**RELATIONSHIP BETWEEN ECONOMIC GROWTH AND REAL
ESTATE PRICES IN KENYA**

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DECLARATION

This research project is my original work and has not been submitted to any other University for academic award.

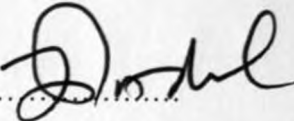
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This research project has been submitted for examination with my approval as the University supervisor.

Sign.....

Date.....

Dr. Aduda Josiah.

University Supervisor

DEDICATION

I dedicate this Research project to my beloved parents, Mr. and Mrs. Muthee, for your love and provision, encouragement and support. May God bless you.

ACKNOWLEDGEMENT

To the Almighty God, for the strength and provision, good health and confidence that He gave me throughout the Masters programme and the project.

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ABSTRACT

Real estate investments and prices are good measures for reflecting expected real estate demand, and serve as good predictors of economic growth (Knight Frank, 2011). The "real estate" market and industry will be considered here to include both land and improvements, their selling and rental prices, the economic rent of land and returns on buildings and other improvements, and the construction industry.

Economic growth leads to an increase in the middle class of a society. Hoskins, Higgins and Cardew (2004) find that GDP growth, inflation, and unemployment show significant correlations with composite property returns. Given the importance of the real estate sector, it is important and paramount to interrogate the relationship between the sector and economic growth. There are two ways to measure real estate demand and these involve an evaluation of real estate investments and real estate prices.

As demand for real estate increases, real estate prices rise and therefore real estate investors will increase their investment in real estate to meet the demand and therefore it can be said that real estate prices and real estate investments are directly proportional to real estate demand. Recently, economists propose a collateral effect of house prices that, increase in real estate prices help relax home owners borrowing constraints and increase their actual consumption since housing wealth is easy to collateralize.

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 indicate 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 indicates that property is a strong asset class which has been under exploited in portfolios. More consideration should be made by institutional investors. Real estate prices have been stable during recession and political instability.

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ABBREVIATIONS

FSR- Financial Services Regulators

GDP- Gross Domestic Product

NSE- Nairobi Securities Exchange

RVD- Rating and Valuation Department

REITS- Real Estate Investments Trusts

EDU-Education

IT AND CC-Information Technology and Communication

EST- Estate

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Economic growth is a long-run increase in the capacity of the economy to produce goods and services (Engen and Skinner, 1992). Kenya's real estate market is very efficient as changes in demand conditions in the real estate sector are reflected more accurately and quickly in real estate prices. If there is a relationship between economic growth and real estate prices, the real estate sector will be a sector to be used as a measure of economic performance.

Therefore, real estate investments and prices are good measures for reflecting expected real estate demand, and serve as good predictors of economic growth (Knight Frank, 2011). The "real estate" market and industry will be considered here to include both land and improvements, their selling and rental prices, the economic rent of land and returns on buildings and other improvements, and the construction industry.

1.1.1 The Concept Of Economic Growth

Economic growth is best defined as a long-term expansion of the productive potential of the economy (FSR, 2010). Many factors influence the rate of economic growth. Some factors, such as changes in consumer and business confidence, aggregate demand conditions in the country's trading partners, and monetary and fiscal policy, tend to have a mainly temporary effect on growth. Other factors, such as the rates of population and productivity growth, have more enduring effects, and help to determine the economy's average growth rate over long periods of time (Hass, 2011).

Economic growth leads to an increase in the middle class of a society. Hass property guide (2011) indicates that only five percent of Kenyans are home owners. Growth in the

economy expands the bracket of Kenyan's in the middle class. This then pushes the demand for housing and hence real estate prices. The much anticipated property bubble that was anticipated since the year 1994 has not happened clearly indicating that there is insatiable demand for housing and hence the relevance of evaluation of the relationship between real estate prices and economic growth.

According to DiPascal and Wheaton's model (1992), a productive economy positively affects the demand for real estate assets. Chin, Dent and Roberts (2006) conclude from survey data that a sound economic structure and an expected strong and stable economy are perceived to be the most significant factors in a region's ability to attract foreign real estate investments. Hoskins, Higgins and Cardew (2004) find that GDP growth, inflation, and unemployment show significant correlations with composite property returns.

Trend growth is one of the measures used to measure economic growth. Trend economic growth refers to the smooth path of long run national output. Measuring the trend rate of growth requires a long-run series of macroeconomic data in order to identify the different stages of the economic cycle and then calculate average growth rates from peak to peak or trough to trough. Trend growth can also be viewed as the speed measure of the economy. In other words, it is an estimate of how fast the economy can reasonably be expected to grow over a number of years without creating an unsustainable increase in inflationary pressure (Treasury Survey , 2011).

1.1.2 Real Estate Investments And Real Estate Prices

A majority of listed companies with the exception of banks are involved in real estate development and real estate investments (FSR 2010). Given the importance of the real estate sector, it is important and paramount to interrogate the relationship between the sector and economic growth. There are two ways to measure real estate demand and these involve an evaluation of real estate investments and real estate prices.

If there is a relationship between Economic growth GDP and real estate prices, then it shall be established that the real estate sector is an influential sector in economic performance, as demand for real estate increases, real estate prices rise and therefore real estate investors will increase their in real estate to meet the demand and therefore it can be said that real estate prices and real estate investments are directly proportional to real estate demand (Chui et al.2005).

1.1.3 Economic Growth And Real Estate Prices

John Stuart Mill (1848) pointed out that the ordinary progress of a society which increases in wealth is at all times to augment the incomes of the landlords independently of any troubles. The relationship between economic growth and the share of the economy controlled by landlords might be more complex than classical economists or their critics have imagined (Barker et al. 2011).

It is therefore important to note and know the relationship between real estate and the economy. In developing countries, ownership of land and real estate is more concentrated than ownership of other assets and growth in the real estate sector share in the national income has overall important implications for the overall concentration of wealth. Barker (supra) continues to state that real estate values might increase the wealth gap between homeowners and renters.

This same relationship has implications for relative returns for real estate versus other investments. In addition, rising real estate values are believed to have helped offset the effect of falling values of other assets and that changes in importance of real estate in the economy could have implications for macro economic stability (Norman. 2010)

The wealth effect is an ostensible channel through which real estate prices may affect the economy. Friedman's permanent income hypothesis suggests that people would change

their desired consumption if house prices changes affect expected life time wealth. Recently, economists propose a collateral effect of house prices that, increase in real estate prices help relax home owners borrowing constraints and increase their actual consumption since housing wealth is easy to collateralize. (Norman . 2011)

1.1.4 Real Estate Environment In Kenya

The property market has grown considerably in the last decade. Knight Frank(2011) reported robust activity in all market segments, with many projects already completed. Others such as Renaissance Capital's proposed Tatu City and Centum Investments' "diplomatic hub" are in the pipeline. To capitalize on the boon, various companies quickly created real estate departments while some NSE-listed agricultural companies began to diversify into property development, which was an attempt to ensure that the net worth reflected the value of the assets in question. The report continues to note that the growth has mainly been driven by urbanisation, a strong economy and growing middle-class, stable legal environment, significant credit expansion, and increased spending on infrastructure by government. However, the market faced difficulties in 2011 due to high inflation, a weak shilling, high cost of land, and cases of fraud.

According to the Depository Corporation Survey (2011), the real estate sector received a large portion of the credit that was released in the last few years, as lenders saw it as a safe and profitable investment. Since a lot of this credit was disbursed on the premise that higher property and land prices often posted as collateral ensure that borrowers are always in positive equity and can therefore borrow more money, which ends up being a perpetual cycle.

Real estate prices in Kenya has doubled, even tripled in the past few years (Majtenyi, 2010) and the government wants to know the cause. There is an increase in the demand for housing and which surpasses the supply (Chege . 2010). (Mwithiga, 2010) notes that real estate property market is booming in Kenya especially because of the growth in the

mortgage financing in the country and he concludes that 60% of the pension fund is going towards the property market and they are using it as mortgage security(Budget statement 2012). Real estate property negotiations and prices in Kenya are widely determined by the brokers and realtors. Kenyan real estate property covers all property categories including commercial and agricultural land, office space, go-downs and warehouses, retail outlets and shopping complexes.

The relationship between economic growth and real estate prices was assessed in this study using the Hass property index, and data collected from Central Bank of Kenya. This was tested through descriptive research design to create an indicative relationship this is because the sample data was too wide to be tested in this kind of a paper. The property index is only related to residential properties such as apartments, town houses, maisonnettes and land that is vacant but earmarked for residential development. This essentially excludes all commercial real estate properties. Further difficulty was experienced in the use of national level data where aggregation bias was indicated to be a big problem. It is however notable that there has not been a research that has been undertaken in the local arena to test this relationship and hence the results of this research contributes a great deal to the development of literature in this sector.

1.2 Statement Of The Problem

Since estate investment is a major form of investment expenditure, it is expected that it will be closely related to changes in GDP. Green (1997) uses the Granger Causality test to examine the effect of these two kinds of investment on GDP. They found that residential investment Granger causes (leads) GDP, while investments in equipment and machinery do not. Podenza (1988) also found that downturns in housing starts occur before general downturns. Both of them share the view that residential investment, like stock prices and interest rates, is a good predictor of GDP. This is because real estate is durable asset that take a long time to produce and thus investing in real estate is a forward looking exercise

Coulson and Kim's(2000) explanation of the relationship between residential investment and GDP contrasts what Green (1997) argues in his study. From his review, residential investment evidently Granger-causes consumption expenditure, which is the largest component of GDP in their model, so residential investment has a large effect on GDP itself (Coulson and Kim 2000). Although they gave an explanation why residential investment causes changes in GDP, the reasons why residential investment leads consumption expenditure were not discussed. Moreover, the focus of these two studies in the United States is mainly on residential investment, and there have seldom been studies on how real estate investments prices affect economic growth. Evidently,these studies also do not take into account how fast real estate investments can be adjusted to a drastic change in the economy and how changes in the economy and hard times affect residential prices.

Gachoka (2011) , Chege (2010) and Kigige (2011) have evaluated related aspects of the real estate industry in the Kenyan real estate industry. There are two contrasting views on the relationship between construction investments and economic growth. Gachoka (2011) holds the view that construction investments, especially residential investments, stimulate consumption and economic growth, and therefore real estate investment trusts cause enhanced economic growth. On the other hand, some believe that construction activity is a derived demand that depends on economic performance, and thus they conclude that economic growth facilitates real estate investments (Chege, 2010).

Kigige 2011, evaluated the state of real estate investments in Meru Municipality. The study evaluated the growth of the industry and was restricted to the municipality; it fell short of linking the same to economic growth, regionally or internationally. Additionally, these studies have focused on the proposed introduction of real estate investments trusts as a collective term without looking at how economic growth affects each type of real estate investments separately and the trend in growth of the economy. There has been

little empirical study on the relationship between economic growth, real estate prices, and real estate investments in Kenya. Moreover, the restricted land supply and various planning and development controls in Kenya complicate the investigation of this relationship.

1.3 Objectives of The Study

The objective of this study is to establish the relationship between economic growth and real estate prices in Kenya.

1.4 Significance of the Study

First, real estate prices especially residential prices in particular, were investigated and were found to contribute to economic growth. Therefore, movements in real estate prices can be used to forecast economic growth. Second, since real estate prices are determinants of real estate investments, policies that stabilize residential prices are also likely to stabilize economic growth. Third, any policy that suppresses or deters the real estate sector, especially the residential sector, is likely to negatively affect economic performance. Similarly, any policy that stimulates real estate prices will also stimulate the economy.

In light of the foregoing, the results of this study will be useful to Government planning departments for resource allocation monitoring. Players in the real estate sector will also find the study to be useful in terms of giving insight into their activities and how they participate in the economic growth of the country. Real estate companies will also find this study insightful in terms of aligning their participation to the national agenda and enhancing growth of the real estate sector.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter analyses the various theories that affect real estate investment and economic growth. The economic theories on growth are also analysed herein and the same linked to the theories in finance. The empirical studies in this area have also been analysed in this chapter. The concept of GDP as the key indicator of economic growth is also interrogated in this chapter.

2.2 Theoretical Studies

There are several theories that are related to this area of study. The theories make the foundation for this analysis and inform the philosophy behind the various propositions. Economic growth is an important concept when dealing with any state of the economy. All these concepts have been proposed and developed over time as seen in this study.

2.2.1 Market Portfolio Theory

As noted in this paper, institutions are slowly moving into investment in real estate to diversify their portfolio. The use of real estate as a portfolio diversifier brings in the need to evaluate the relationship between risk and return as discussed by Harry Markowitz. He postulated that risk and return relate explicitly and accounted for the variability of asset returns, which he measured using the standard deviation of a security's return. The kind of assets to get into a firm's investment even at the property level is an important indicator of how a portfolio of properties should be mixed to maximize the return and minimise the risk. Markowitz's work was important (earning a Nobel Prize in Economics) because it shifted the focus of risk

measurement from the risk of each security measured in isolation to the contribution of each security to the risk of a well-diversified portfolio. It is the risk that a security adds to a well-diversified portfolio that should be used to determine the risk-adjusted rate of return used in capital budgeting.

2.2.2 Efficient Capital Market Theory

The state of the economy is influenced by various forces and the capital market is no exception. Efficiency of this market generates fast responses to the economic factors that surround any investment including real estate investment. Furthermore, market players are increasingly focusing on the real estate industry as the safe mode of investment. Fama (1991) observed that a capital market is efficient if it adjusts rapidly to fully reflect all available information, processes information rationally in the sense that relevant information is not ignored and systematic errors are not made. Efficient capital market is a market in which new information is very quickly reflected accurately in share prices such that stock prices reflect all the information available to the market about future economic trends and company profitability security prices react instantaneously incorporating new information in such a way that there is no opportunity to market participants to consistently earn abnormal return. Malkiel (1992) noted that a capital market is said to be efficient if it fully and correctly reflects all relevant information in determining security prices. Capital market efficiency is judged by its success in incorporating and inducting information about the basic value of securities into the price of securities. The time for the adjustment for any new information is considered a critical factor: if the market adjusts more rapidly and accurately, it is considered more efficient.

2.2.3 Capital Structure Theories

The real estate industry is ruled by companies which need to evaluate their structure often. (Hass 2012) notes that the real estate industry is financed by debt primarily and so

are the purchases which make up the greater part of the loan book of many mortgage companies and banks. A traditional view in corporate finance is that firms strive to maintain an optimal capital structure that balances the costs and benefits associated with varying degree of financial leverage. The determination of an optimal capital structure has been one of the most contentious topics in the finance literature. Although a lot of studies have been done on the area of capital structure, the puzzle of how firms make capital structure decisions is unresolved (Brealy and Myers, 1988). Capital structure refers to the combination of debt and equity capital a firm uses to finance its long term operations. The value of a firm depends upon its expected earning streams and the rate used to discount this stream. The rate used to discount earning stream is the firm's required rate of return or the cost of capital. Capital structure decision can thus affect the value of the firm by changing the expected earnings or the cost of capital or both.

In their third proposition Modigliani and Miller (1958) incorporated both personal and corporate taxes and found that personal taxes lessen the advantage of corporate debt. This is because whereas corporate taxes favor debt financing since corporation can deduct interest expenses, personal taxes favor equity financing, since no gain is reported until stock is sold and long term gains are taxed at a lower rate. Use of debt financing remains advantageous, but benefits are less than under only corporate taxes. Modigliani and Miller argued that firms should still use 100% debt; he continued however, that in equilibrium the tax rates of marginal investors would adjust until there was no advantage to debt.

2.2.4 Economic Growth Theories

Robert Solow (1978) devised the “neo-classical” model of growth. The Solow model believes that a sustained increase in capital investment increases the growth rate only temporarily: because the ratio of capital to labour is expected to go up with increase in capital investment which as there is more capital available for each worker to use. The marginal product of additional units of capital is assumed to decline and thus an economy eventually moves back to a long-term growth path, with real GDP growing at the same rate as the growth of the workforce plus a factor to reflect improving productivity. Thereafter, a steady-state growth path is eventually reached when output, capital and labour are all growing at the same rate, so output per worker and capital per worker are constant. Economists who subscribe to the Solow model believe that to raise an economy’s long term trend rate of growth requires an increase in the labour supply and also a higher level of productivity of labour and capital.

Theodore Schultz (1979) an agricultural economist, produced his ideas of human capital as a way of explaining the advantages of investing in education to improve output. Schultz demonstrated that the social rate of return on investment in human capital in the US economy was larger than that based on physical capital such as new plant and machinery. Gary Becker, the 1992 Nobel Prize winner for economics, built on the ideas first put forward by Schultz, explaining that expenditure on education, training and medical care could all be considered as investment in human capital. These two economists agree that people cannot be separated from their knowledge, skills, health or values in the way they can be separated from their financial and physical assets. This emphasises the fact that in any economic sector, people and education are core concepts that will need to be considered if any growth is to be anticipated.

2.3 Empirical Studies

The real estate sector has had several researchers interested in terms of development and management. In Kenya, there is very little literature that has been churned in financial aspects of the real estate industry with regard to pricing. A country's economic performance has been shown through empirical studies to be dependent on the performance of the property market, which means that property price influence economic growth and drives inflation. The empirical studies have concentrated on GDP of countries and the relation to aspects of real estate investments and prices as enumerated below.

2.3.1 Economic Growth And Real Estate Prices

Englund and Ioannides (1997) did a comparison of the dynamics of housing prices in 15 countries. They discovered that GDP growth exhibits significant predictive power over housing prices. A confirmation of this proposition was done by Hui and Yiu's (2003) study, which used the Granger Causality Test to empirically test the market fundamental dynamics of private residential real estate prices in Hong Kong. The studies have shown that residential prices influence GDP from 1984:Q1 to 2000:Q4, but not the opposite. Hui and Yiu reason that GDP represents an overall change the economy, and is regarded as one of the market fundamentals that affect demand for private residential real estate. Also, GDP is affected by some market fundamentals. Since both price and GDP are expectation driven, they lag behind the release of information for market fundamentals. It was also settled in this study that at the same time, GDP is affected by residential prices (Hui and Yiu 2003). Another study done by Chau and Lam (2001) on speculation and property prices in Hong Kong reveals a leading indicator of housing price is nominal GDP. The model which Chau and Lam used included the real interest rate, the percentage change in the lagged housing price, the marriage rate, the stock market index, housing

supply, transaction volume, and an error correction term in order to control for other factors affecting housing prices.

Nominal GDP was used in the model to capture the effects of inflation and economic growth. Rating and Valuation Department (RVD) produced the official residential index which generated the housing price. Iacoviello (2003), in his study of consumption, integrates the effect of housing prices, and collateral constraints and finds a direct effect from housing prices to consumption using the Euler equation for consumption.

As consumption forms a large part of GDP, it is reasonable to expect that housing prices will have a leading relationship to GDP according to Coulson and Kim (2000). Although the above mentioned studies have shown that GDP leads housing price, the main focus of these studies is not to investigate the relationship between GDP and housing price. Moreover, in Lui and Yiu's (2003) paper, the housing price used is in nominal terms rather than in real terms. This nominal housing price is used to investigate its relationship to constant GDP.

2.3.2 Real Estate Investment and GDP

Green (1997) and Coulson and Kim (2000) have shown that residential investment is a leading indicator of GDP in the United States. Their result suggest that the residential sub-sector is a leading sector of the economy, and that changes in housing demand are ahead of changes in aggregate demand. Green (1997) evaluated the effect of tax policy on real estate investment and financial growth. He looked at 22 companies in the United States which companies invested heavily in the real estate market. Green proposes that this trend is due to forward looking behavior (the forward looking effect) and the potential "exogenous forces" in residential investment that lead to the economically exogenous movements (the external shock effect). These forces are the income tax treatment of residential investment and regulatory treatment of housing finance

institutions. If residential investment is given favourable tax treatment, more capital will be attracted. Green also concluded in his study that when people become wealthier, they will spend more and stimulate economic growth. This is the wealth effect.

Imperatively, an increase in residential investment will lead to economic growth. This explanation is confirmed by Coulson and Kim (2000). They find that residential investment actually Granger causes private consumption which is the largest component of GDP. Therefore, it can be said that any external shock will be reflected in the demand for real estate first, which will be reflected in residential investments in the. Given that the changes in real estate investment reflects changes in demand for real estate, the "wealth effect" implies that residential investment leads GDP, while the "external shock effect" and "forward looking effect" imply that the non-residential sector investment, will also lead GDP.

Previous studies suggested that real estate prices (in particular residential prices) are leading indicators of GDP (e.g. Chau, 2001). This is the case in Kenya, since real estate prices reflect changes in demand for real estate more quickly. Burns and Grebler (1977) hypothesized that the ratio of housing investment to GDP is linked to the stage of economic development in an inverted U-shape manner: the ratio first rises with the increase of GDP per capita when the economy is taking off but reaches a peak when the economy enters the middle-income period and then tends to decline when the economy becomes mature.

As noted earlier in this paper, Gachoka (2011), Chege (2010) and Kigige (2011) have evaluated the stimulus effect of real estate investments to the economy with Chege noting that the introduction of REITS in the Kenyan bourse will have a stimulus effect to the activity at the NSE a wider portfolio and a wealth effect to consumption. Gachoka holds the view that construction investments, especially residential investments, stimulate consumption and economic growth, and therefore real estate investment trusts cause enhanced economic growth. Kigige 2011, evaluated the state of real estate investments

in Meru Municipality. The population consisted of all 15,844 registered real estate owners in the 5 (five) selected areas of Meru municipality from which a sample of 390 real estate owners were selected by stratifying the population and then selecting the respondents by use of simple random sampling. Findings indicated that incomes alone contributed almost 70% of the variations in prices. Demand alone contributed 20% of the changes in prices of real estate. Location and Realtors were found insignificant in determining real estate prices.

The local empirical studies reviewed do not relate very well with the topic at hand since none of them has rightly evaluated the real estate prices effect on economic growth. Other studies have evaluated the effect of several related factors to economy growth including insurance penetration (Ndal, 2011), stock market development(Cheron, 2011), effect of credit (Mwalungo, 2011), Financial development (Ndwiga, 2011), foreign direct investments (Kimotho, 2010) and capital market development (Omoke, 2010).

2.4 Conclusion

There has been no study that has researched the relationship between economic growth and real estate prices. In most studies, only residential price has been investigated. There has also been no research done on the relationship between economic growth and other property prices. The short run supply of housing is also fairly inelastic because housing supply is based on current completions that will continue, and cannot be changed within a short period of time. Unlike housing supply, it is possible for housing demand to change suddenly due to external changes and hence push the housing prices up.

The real estate industry in Kenya has been growing and various factors will affect the growth and these may include the human capital, resources and knowledge that are put into the industry and in combination. Essentially this serves to justify the need for

intensive and indepth research into the subject with keen interest for development of relevant strategies to steer the economy into this growth sector. Needless to say, studies need to done in the Kenyan context to conceptualise this concept and apply it locally.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter deals with the research methodology that was adopted in the study and the analysis of data. The research entailed the designing of an appropriate research design, research population, sample design, data collection and data analysis.

3.2 Research Design

The researcher employed the descriptive research design. This is a scientific method which involves observing and describing the behavior of a subject without influencing it in any way(Shuttleworth 2008). It was most appropriate in this case especially since it was not possible to test and measure the large number of samples needed. In this regard, the researcher will employ secondary data obtained from the Hass property Index for the period between the first quarter of 2005 until the second quarter of 2010. The Hass property index is a well researched and respected property index in Kenya that analyses property trends in the residential property sector across the industry. The data prepared by the National bureau of statistics and also the Central Bank of Kenya was utilised.

3.3 Research Population

A research population determines the scope of the research and determines the variables of the study and to get the data that will be relevant. The population included all stand alone houses, town houses and apartments constituting the Hass Property Index.

3.4 Sample Design

The study was a census study of all the properties constituting the Hass Property Index and includes stand alone houses, town houses and apartments.

3.5 Data Collection

Secondary data collection technique was employed. this was done through the analysis of information by way of descriptive research design from the National Bureau of statistics, the Hass property index and data from the Central Bank of Kenya all of which is public information.

3.6 Data Analysis

The analysis of data used statistics in the attempt to evaluate and identify the relationship between economic growth and real estate prices in Kenya. A multivariate regression analysis was used. Lionel and Khalid (1995) indicate that multivariate regression analysis is used where a particular internal attribute measure may have a significant impact in a multivariate context. The model was proposed by Green (1997) and is based on the Tobit model. The model took the form:

$$y = a + b_1x_1 + b_2x_2 + e$$

Translating the variables then indicates that the formula will be applied as follows

Where: $Y = \text{GDP}$

X_1 = this represents the real estate letting prices for town houses, stand alone houses and apartments. Apartments include duplexes and triplexes. Stand alone houses include houses, bungalows, cottages and villas, and townhouses include maisonettes.

X_2 = this represents the interest rates prevailing during the period under study. The interest rates will be the Central Bank of Kenya base lending rate.

e = this is the error term

Since the data was secondary, the researcher did not collect any invalid or unreliable data. It was not necessary to conduct tests of validity and reliability.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND FINDINGS

4.1 Introduction

This study involves analysis of the relationship between economic growth and real estate prices in Kenya. The study utilizes a summary of data using descriptive statistics, the purpose of which is to enable the researcher to make statistical conclusions about the behavior of data collected.

This chapter presents the results of the analyzed data that was collected and further discusses these findings. The tables, charts and figures in this chapter are derived from the findings of the study. The researcher presents the findings in 3 sections; the first will be a presentation of the general information of the sample, the remaining two segments will seek to establish the relationship between the Gross Domestic Product (GDP) in any quarter and the two supposed predictor variables; the average house price and the CBK lending rates in the same quarter.

The instruments used in this study were derived using formulas from secondary data obtained from various credible sources. Their accuracy, validity and reliability were assumed on the authority of the publishers' credibility as trusted market information source.

4.2 Data Analysis and Presentation

4.2.1 Real Estate Prices

The table in Appendix 1 exhibits information regarding the real estate prices as collected from the Hass Property index in the form of publishing trend in house prices. It employs best statistical practice. The quarterly figure measures the mix adjusted average house price for middle and upper sections of the market only in Kenya for three types of homes (Houses, Apartments and Villas). The majority of house price information is derived

using HassConsult Sold data as at transaction date. properties sold at true prices. This data is collated monthly at the signing stage and after the price agreed has been completed. Other sources in the public domain, and drawn from more than 20 estate agencies in Nairobi and the propertyleo database, are used to verify the Hass Consult position, with a base of offer price data.

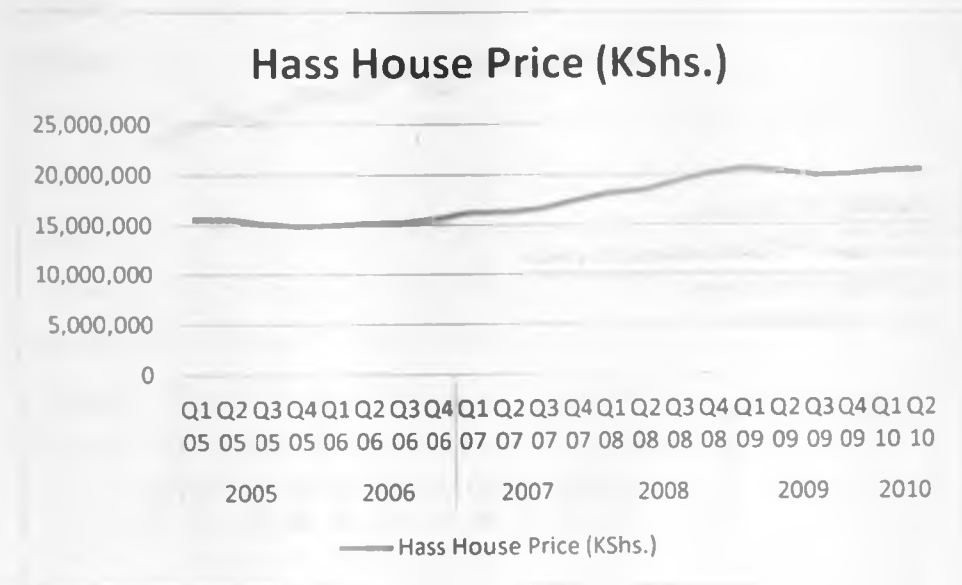


fig 4.1 Hass House price(Author 2012)

For the period of five and a half years growth of house prices increased year after the year owing to the stability of real estate investments. The period was characterised by renewed investor confidence in the Kenyan economy and general increase in disposable income by the population. In the same period there was increase in agitation by banks to improve their loan book and therefore the increase in real estate demand.

4.2.2 GDP at Market Prices and Seasonalised Adjusted

The table in Appendix 2, indicates the GDP values at market prices and the seasonally adjusted. It is observed that the data has a general upward trend across the quarters as indicated in the seasonally adjusted GDP. There is an evident decrease in GDP between the Q4 2007 and Q2 2008. This period was marked by political instability in the country following the 2007 elections. The economy was affected and hence the sharp decrease.

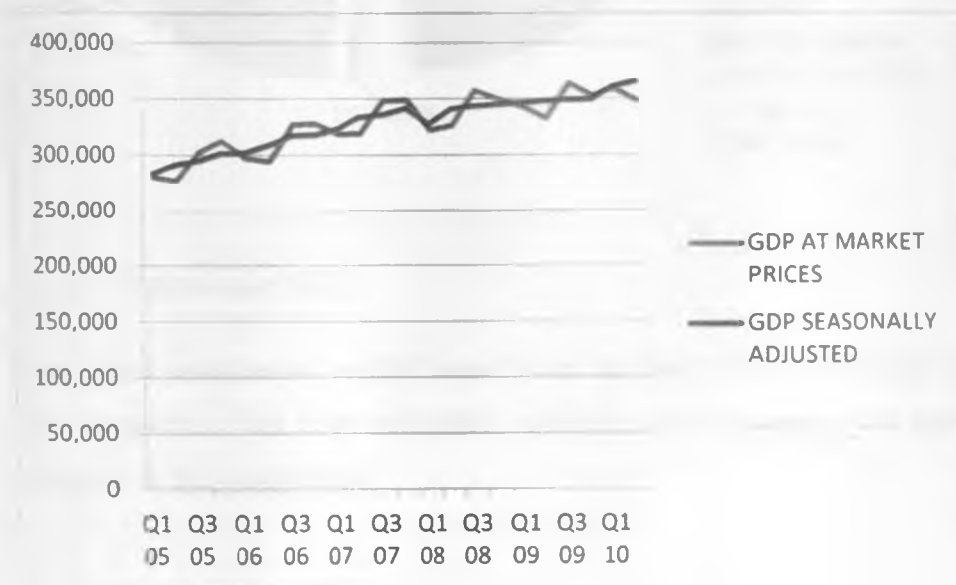


Fig. 4.2 GDP(Author 2012)

GDP is Gross domestic product. Although the trend reflects some seasons of decrease, the general observation is that over the period, the same has increased from a minimum of Kshs. 284,508 million to Kshs. 366,194 million. The investment in the real estate sector is also reflected in the rise in GDP, real estate being one of the drivers of GDP by activity. The mean for the GDP was 328,285, the maximum was 364,395, the minimum was 277,857 and the standard deviation for this set of data was 25,476 all figures in millions.

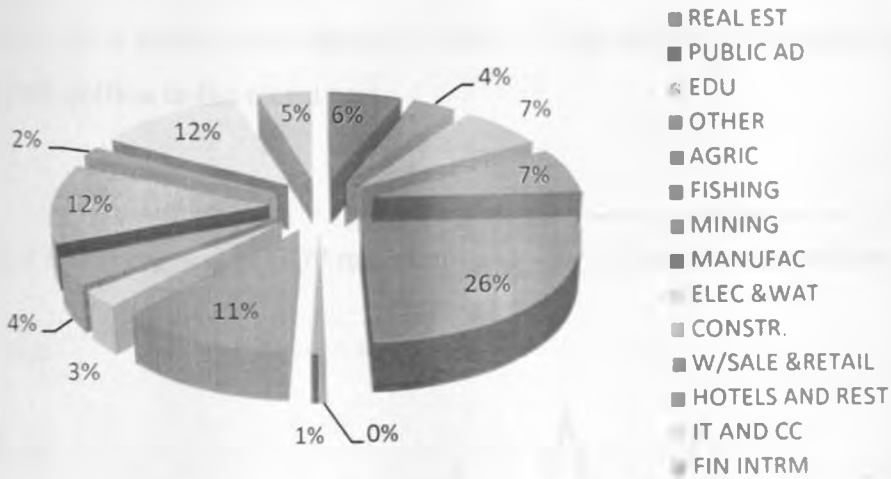


Fig 4.3 GDP(Author 2012)

Real estate contribution to GDP was 6% in the year 2010 as illustrated in the pie chart. This proportion has been relatively constant and increases at an increasing rate as indicated in the graph below.

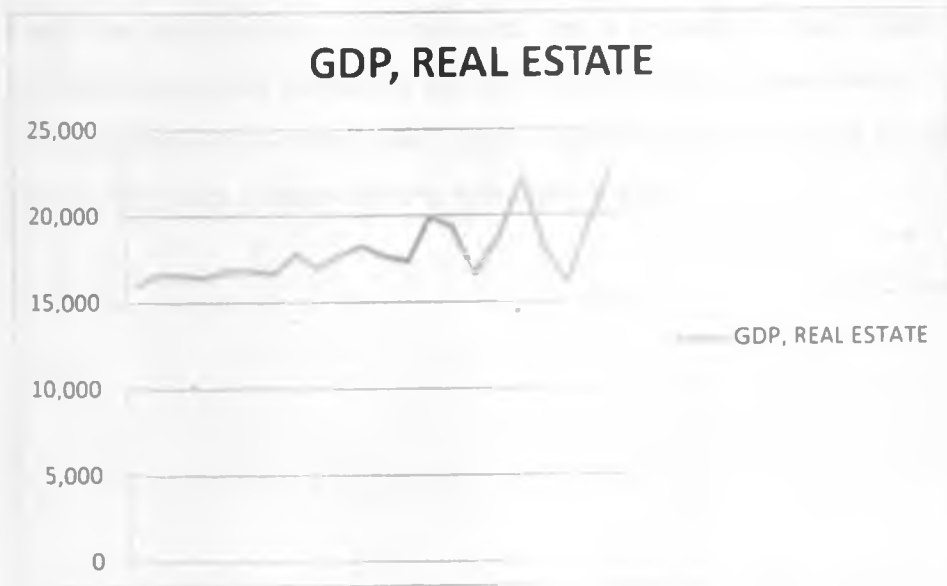
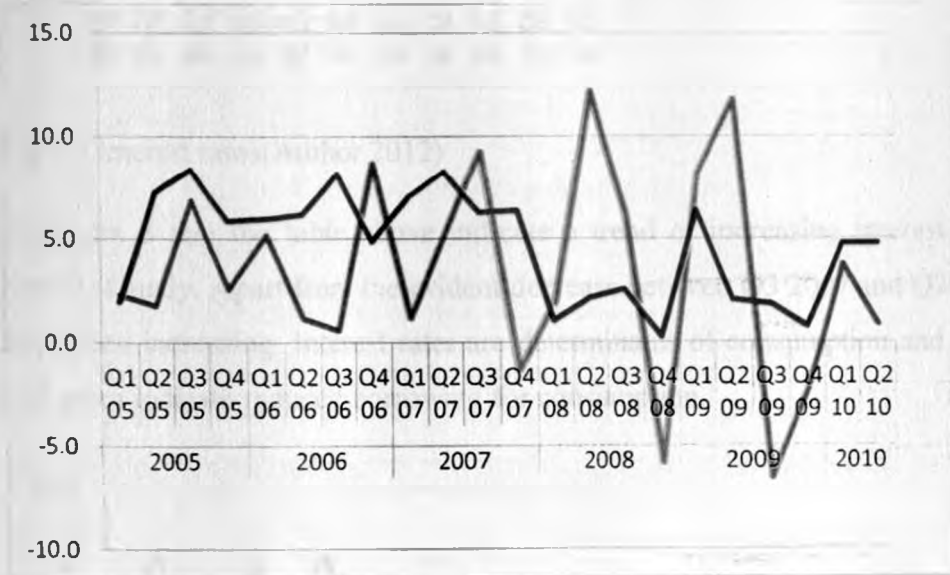


Fig 4.4 GDP real estate(Author 2012)

The GDP component per quarter of data collected is as reflected above. The same can be said to have grown from figures of below 17,000 million in the earlier quarters to above 25,000 million in the recent past.

Fig 4.5 Growth rate of GDP real estate and GDP at market price(Author 2012)



From the graph above it is indicated that a growth in Real Estate GDP is also accompanied by the increase in the GDP growth rate at market prices. The changes are not proportionate as overall GDP is also affected by various other factors like inflation, commodity prices, interest rates to mention but a few.

4.2.3 Interest Rates

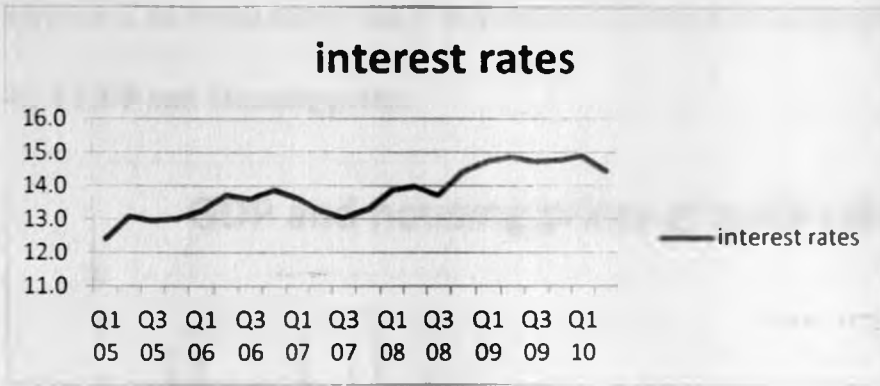


Fig 4.6 interest rates(Author 2012)

Appendix 3 and the table above indicate a trend of increasing interest rates over the period of study. Apart from the evident decrease between Q3 2007 and Q2 2008, the rates have been increasing. Interest rates are determinants of consumption and increased rates will often indicate reduced borrowing for consumption.

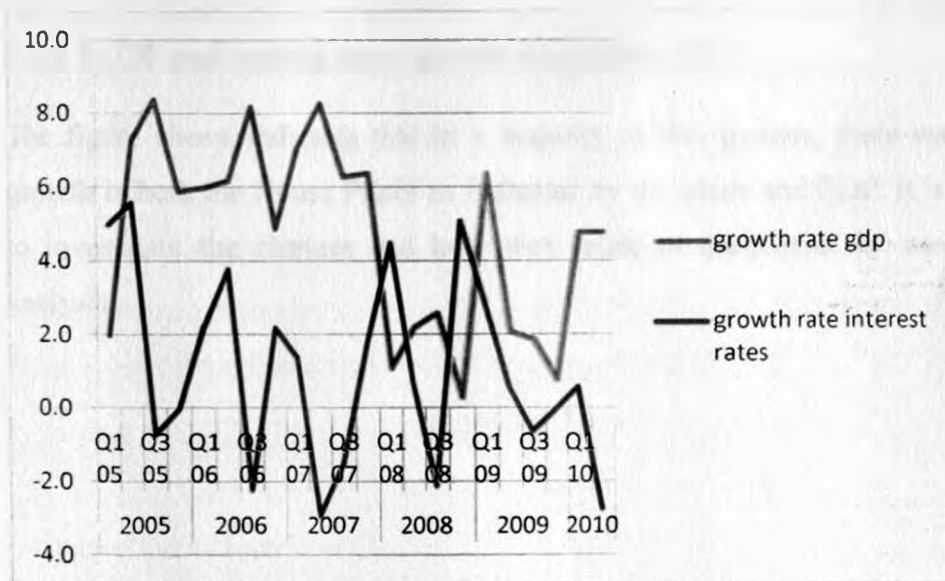


Fig 4.7 GDP and interest rates growth rates(Author 2012)

The changes in interest rates have not been consistent in the period under study with great dips in the last quarter of the year 2007 upto the second quarter of 2008 when the rates resumed high points and grew consistently. The period experienced an increasing trend in

the growth of CBK lending rates which then reflected in the bank increase of rates to the borrowers. As noted earlier, many real estate investments are collateralized.

4.2.4 GDP and Housing prices

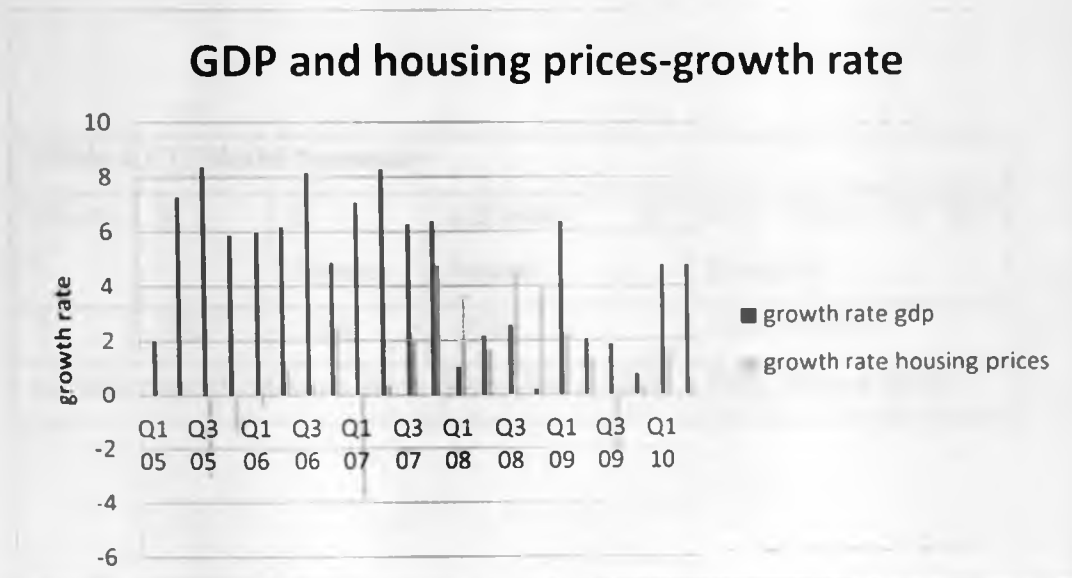


Fig 4.8 GDP and housing prices growth rate(Author 2012)

The figure above indicates that in a majority of the quarters, there was simultaneous growth in both the House Prices as indicated by the index and GDP. It is then necessary to investigate the changes and how they relate to each other by way of regression analysis.

4.3 Regression Analysis Results

4.3.1 Model Summary

The regression analysis for the data above returns the following results:

| Table 4.3.1: Model Summary | | | | |
|---|-------------------|----------|-------------------|----------------------------|
| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
| 1 | .773 ^a | .598 | .556 | 16975.97594 |
| a. Predictors: (Constant), Hass House Price (KShs.), CBK Interest Rates | | | | |

Both of the predictor variables; Hass Consult Average house price and CBK interest rates return significant coefficients to model a regression equation. The model does not reject any predictor.

The R and R-square values (0.773 and 0.598) indicate a strong relationship between the country's GDP and both the average house price and CBK interest rates. Translated, the R-square value indicates that 59% of GDP can be explained by the regression equation which is significant enough to consider using the model.

4.3.2 The ANOVA table

The purpose of analysis of variance (ANOVA) is to test differences in means (for groups or variables) for statistical significance. This is accomplished by analyzing the variance, that is, by partitioning the total variance into the component that is due to true random error (i.e., within-group SS) and the components that are due to differences between means. These latter variance components are then tested for statistical significance, and,

if significant, we reject the null hypothesis of no differences between means and accept the alternative hypothesis that the means (in the population) are different from each other.

The ANOVA table generated from running the data through a regression analysis is as shown below:

| Table 4.3.2: ANOVA^a | | | | | | |
|---|------------|----------------|----|---------------|--------|-------------------|
| Model | | Sum of Squares | df | Mean Square | F | Sig. |
| 1 | Regression | 8153909741.66 | 2 | 4076954870.83 | 14.147 | .000 ^b |
| | n | 6 | | 3 | | |
| | Residual | 5475491423.10 | 19 | 288183759.111 | | |
| | | 7 | | | | |
| | Total | 13629401164.7 | 21 | | | |
| | | 73 | | | | |
| a. Dependent Variable: GDP (in KShs. '000,000) | | | | | | |
| b. Predictors: (Constant), Hass House Price (KShs.), CBK Interest Rates | | | | | | |

The significant F value (Sig.) is small enough (Sig. $F \ll 0.005$) to consider the model for a regression equation, i.e. the three variables GDP, HP and CBK rates exhibit a certain linear relationship to necessitate consideration for a degree of relationship analysis.

4.3.3 The Regression Co-efficient Table

The coefficients table returned by running the data through analysis software (IBM SPSS 20) is as illustrated below;

Table 4.3.3: Coefficients^a

| Model | | Un-standardized Coefficients | | Standardized Coefficients | t | Sig. |
|-------|--------------------------|------------------------------|------------|---------------------------|-------|------|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 135885.55 | 88948.7 | | 1.528 | .143 |
| | | 2 | 48 | | | |
| | CBK Interest Rates | 4043.858 | 9446.88 | .117 | .428 | .673 |
| | Hass House Price (KShs.) | .008 | .003 | .672 | 2.467 | .023 |

a. Dependent Variable: GDP (in KShs. '000.000)

Using the results in the above table, our model;

$$y_i = a + b_1x_i + b_2x_{ii} + e$$

Where: Y_i = GDP at a time i

a = The GDP when both the average house price and CBK lending rates are equal to zero

X_{ii} = the average real estate letting prices for town houses, stand alone houses and apartment at a time i.

X_i = The interest rates prevailing at a time i.

e = this is the error term

The regression model equation therefore becomes;

$$\text{GDP} = 135885.552 + 4043.858(\text{CBK lending rates}) + 0.008(\text{Average house price})$$

Explanation;

CBK interest rates; a 4.043.85 increase in CBK lending rates results in unit increase in the GDP

Average House Price (HP); a 0.08 increase in HP results in a unit increase in GDP

Constant (Intercept); in any quarter GDP is KShs. 135,885.552 (multiplied by *000,000) when all other variables are equal to zero.

4.4 Summary and Interpretations of the Findings.

4.4.1 Gross Domestic Product (GDP) and Real estate prices

In the analysis of data real estate prices have a strong positive correlation on GDP .It reflects that growth unit increase in housing prices results in a unit increase in GDP. The variables are strongly correlated. Both of the predictor variables: Hass Consult Average house price and CBK interest rates return significant coefficients to model a regression equation. The model does not reject any predictor.

The R and R-square values (0.773 and 0.598) indicate a strong relationship between the country's GDP and both the average house price and CBK interest rates. Translated, the R-square value indicates that 59% of GDP can be explained by the regression equation which is significant enough to consider using the model.

The GDP results reflect the study undertaken by several researchers. Imperatively, an increase in residential investment will lead to economic growth. This explanation is confirmed by Coulson and Kim (2000). They find that residential investment actually Granger causes private consumption which is the largest component of GDP. Therefore, it can be said that any external shock will be reflected in the demand for real estate first, which will be reflected in residential investments in the. Given that the changes in real estate investment reflects changes in demand for real estate, the "wealth effect" implies

that residential investment leads GDP, while the “external shock effect” and “forward looking effect” imply that the non-residential sector investment, will also lead GDP.

Previous studies suggested that real estate prices (in particular residential prices) are leading indicators of GDP (e.g. Chau, 2001). This is the case in Kenya, as indicated in this study, since real estate prices reflect changes in demand for real estate more quickly. Burns and Grebler (1977) hypothesized that the ratio of housing investment to GDP is linked to the stage of economic development in an inverted U-shape manner: the ratio first rises with the increase of GDP per capita when the economy is taking off but reaches a peak when the economy enters the middle-income period and then tends to decline when the economy becomes mature.

Additionally, an increase in residential investment will lead to economic growth. This explanation is confirmed by Coulson and Kim (2000). They find that residential investment actually Granger causes private consumption which is the largest component of GDP. Therefore, it can be said that any external shock will be reflected in the demand for real estate first, which will be reflected in residential investments in the. Given that the changes in real estate investment reflects changes in demand for real estate, the “wealth effect” implies that residential investment leads GDP, while the “external shock effect” and “forward looking effect” imply that the non-residential sector investment, will also lead GDP.

This is also in line with the discussions by Gachoka (2011), Chege (2010) and Kigige (2011) who have evaluated the stimulus effect of real estate investments to the economy with Chege noting that the introduction of REITS in the Kenyan bourse will have a stimulus effect to the activity at the NSE a wider portfolio and a wealth effect to consumption.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary

This study indicates the continued resilience of the housing market as a long term investment in Kenya with strong demand holding prices firm throughout the economic slowdown and growing property prices continuing to drive overall property returns.

In consideration of this study real estate prices and GDP have a positive correlation and real estate prices have a great impact together with interest rates on GDP. The results of the correlation and the regression analysis indicated that there is a relationship between real estate prices and GDP. The correlation between GDP and real estate prices is even more noticeable immediately preceding period of excessive growth in real estate prices. In both 2008 and 2009 GDP is seen to grow at an increasing rate following the steady growth in real estate prices.

There has been significant correlation between Kenya's home prices and GDP. A 4.043.85 increase in CBK lending rates results in unit increase in the GDP while a 0.08 increase in Housing Price results in a unit increase in GDP in any quarter GDP is Kshs. 135.885.552 (multiplied by '000,000) when all other variables are equal to zero. The correlation between GDP and real estate prices becomes more apparent when we examine the rate of growth in each of the indexes. The correlation between growth in GDP and home prices increase immediately after periods of extreme growth in housing prices.

Fundamentally this correlation is explained in the fact that, as home prices decline, individuals may be less likely to buy new houses for fear that home prices may continue to decline. This then decreases demand for real estate brokers, construction workers, mortgage lenders and other activities related directly and indirectly to housing.

5.2 Conclusion

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 indicate that there is a relationship between the variables revealing that a quarterly change in housing prices may yield a quarterly change in GDP.

The data collected and analyzed indicates that property is a strong asset class which has been under exploited in portfolios. More consideration should be made by institutional investors. Real estate prices have been stable during recession and political instability. The study also reveals that increase in growth rates of GDP can be related to the increase and stability of the real estate prices.

The economy of a country is defined by many factors including aggregate demand, real gross domestic product and even the rate of inflation. indicatively, an increase in housing demand and prices has a positive effect on the wealth of home owners which results in capital gains for home owners. Capital gains strengthen house owner's confidence in the economy, which in turn increases aggregate demand and hence people buy more. The more confidence people have in the economy, the more they are willing to invest. This will lead to equity withdrawal which means that most homeowners will be willing to re-mortgage so as to earn more profits on their capital.

Whenever house prices increase, an upward trend in economic growth is expected. However, rising house prices on the other hand may also put pressure on inflation leading to an eventual increase in interest rates. A decrease in the prices of houses in Kenya can have adverse effects on the economy, such as a reduction in wealth, no equity withdrawal, and less economic growth. A fall in house prices means that the capital gains potential of homeowners is reduced and hence their wealth is limited.

A fall in house prices will also lead to homeowners' being reluctant to withdraw their equity. Since homeowners' equity will fall, their capital gains will diminish so they will

be unwilling to re-mortgage and probably decide to wait until the prices moved higher. This will as a result lead to a decreased consumer spending rate. When consumer spending falls, economic growth will also reduce.

5.3 Policy Recommendations

Real estate industry can promote expansion of the consumer market. Continuing pursuit and update of demand of demand on property will inevitably stimulate and promote real estate and expand the consumer market.

The government should establish regular detection system in the real estate market and work with Hass Consult , the producers of the property index, the National bureau of statistics to be in control of the information, making it more readily available and moreso to reflect bubble and overheated development statistics.

Macroeconomic policy implemented to boost residential construction should be capable of mitigating the negative spillover effects in economic downturns. The Government should also consider an integrated national legal system established and harmonized with existing regional and international norms. Security of real estate transactions should be enhanced by protecting property rights coupled with an efficient and transparent property market.

Enhancement of access to credit and mortgages as well as microfinance for the low income earners will also boost the economy. Social housing should also be considered as an integral part of the real estate market to promote growth. Good governance and integrated policies for decision making in order to create and sustain good, sound business climate and foster a stable market should be enhanced. The same should be guided by unambiguous financial and investment rules.

Finally, the Government should consider investing in training, development and capacity building for those in various functions in the housing supply chain.

5.4 Limitations of the study

Every researcher encounters some difficulties in the course of the project. First and foremost, the data sources were from varied sources spanning the Hass Property Index, Central Bank of Kenya and the Kenya National bureau of Statistics. The data was not standardized and mining was a tedious exercise. The Hass Property Index is also not a standard index in presentation and this caused a problem in deriving the necessary data as some quarters concentrated on various other factors other than the real index issues. This is because the index is still in its evolving stages and hence the need to maintain improvements.

This study is also limited by the fact that the researcher could not draw causal inferences without scientific experimentation, the research and data however suggests that a relationship exists.

Given the short period of research, the researcher also identifies that she could have benefitted from a longer period. The period taken was quite short and the variables and details required were enormous.

Project related costs were also a real challenge to the study. The cost of internet, telephone calls, stationery, data analysis software, printing and photocopy and transport costs all added up to the expenses of the project. Real resilience is then a requirement .

5.5 Suggestion for further Studies

Given the limitations discussed and from observation, the researcher recommends that a similar study can be undertaken for a longer period and on an year on year basis to establish the long term effect of changes of housing prices on GDP. A causal relationship study on the variables in a scientific manner is also another range of study that can be explored.

The researcher also recommends a study of the effect of real estate sector policy on the national economy. A relationship study between the growth of the real estate sector and the related industries in mining and constructions is likely to reveal a relationship that can be managed and enhanced.

The researcher also recommends a study on effect of change in the credit market that lower transactional costs of additional borrowing on housing on the GDP of a country. This will bring forward the real effect of change in interest rates and transactional costs of economic growth.

A study of the real estate prices relationship with fiscal policy is also recommended. A study of this nature will establish exactly which fiscal policies facilitate or curtail growth in real estate prices and indeed growth of the real estate sector. This will also come up with strong cases for reform in fiscal policy to facilitate growth of the real estate sector as a key driver of the economy.

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APPENDIX 1 : HOUSE PRICES

| | | Hass House Price (KShs.) | GDP at Market Prices (Constant 2001 prices – KShs. Million) | GDP Seasonally Adjusted (Constant 2001 prices – KShs. Million) |
|------|----|-----------------------------|--|---|
| 2005 | Q1 | 15.682,819 | 281,335 | 284,508 |
| | Q2 | 15.672,251 | 277,857 | 292,150 |
| | Q3 | 15.210,303 | 303,053 | 295,632 |
| | Q4 | 15.004,467 | 313,004 | 302,156 |
| 2006 | Q1 | 15,070,019 | 298,153 | 302,795 |
| | Q2 | 15,214,632 | 295,111 | 309,612 |
| | Q3 | 15,284,622 | 327,868 | 318,051 |
| | Q4 | 15,669,341 | 328,338 | 318,676 |
| 2007 | Q1 | 16,282,188 | 319,276 | 323,713 |
| | Q2 | 16,345,741 | 319,661 | 334,143 |
| | Q3 | 16,684,129 | 348,660 | 336,038 |
| | Q4 | 17,527,830 | 349,249 | 341,767 |
| 2008 | Q1 | 18,201,965 | 322,737 | 328,111 |
| | Q2 | 18,522,041 | 326,640 | 341,260 |
| | Q3 | 19,414,782 | 357,680 | 343,708 |
| | Q4 | 20,248,165 | 350,206 | 345,329 |
| 2009 | Q1 | 20,725,803 | 343,449 | 347,027 |
| | Q2 | 20,433,480 | 333,253 | 348,559 |
| | Q3 | 19,996,447 | 364,395 | 349,885 |
| | Q4 | 20,080,317 | 353,290 | 350,076 |
| 2010 | Q1 | 20,433,762 | 359,706 | 361,346 |
| | Q2 | 20,536,327 | 349,356 | 366,194 |

Source-Hass property index

APPENDIX 2 : GDP

| | | GDP at Market Prices (Constant 2001 prices – KShs. Million) | GDP Seasonally Adjusted (Constant 2001 prices – KShs. Million) |
|------|----|--|---|
| 2005 | Q1 | 281,335 | 284.508 |
| | Q2 | 277,857 | 292.150 |
| | Q3 | 303,053 | 295.632 |
| | Q4 | 313,004 | 302.156 |
| 2006 | Q1 | 298,153 | 302.795 |
| | Q2 | 295,111 | 309.612 |
| | Q3 | 327,868 | 318.051 |
| | Q4 | 328,338 | 318.676 |
| 2007 | Q1 | 319,276 | 323.713 |
| | Q2 | 319,661 | 334.143 |
| | Q3 | 348,660 | 336.038 |
| | Q4 | 349,249 | 341.767 |
| 2008 | Q1 | 322,737 | 328.111 |
| | Q2 | 326,640 | 341.260 |
| | Q3 | 357,680 | 343.708 |
| | Q4 | 350,206 | 345.329 |
| 2009 | Q1 | 343,449 | 347.027 |
| | Q2 | 333,253 | 348.559 |
| | Q3 | 364,395 | 349.885 |
| | Q4 | 353,290 | 350.076 |
| 2010 | Q1 | 359,706 | 361.346 |
| | Q2 | 349,356 | 366.194 |

Source : Kenya National Bureau of Statistics

APPENDIX 3 : INTEREST RATES

| | | CBK Interest Rates |
|------|----|-----------------------------------|
| 2005 | Q1 | 12.4 |
| | Q2 | 13.1 |
| | Q3 | 13.0 |
| | Q4 | 13.0 |
| 2006 | Q1 | 13.3 |
| | Q2 | 13.8 |
| | Q3 | 13.6 |
| | Q4 | 13.9 |
| 2007 | Q1 | 13.7 |
| | Q2 | 13.3 |
| | Q3 | 13.1 |
| | Q4 | 13.3 |
| 2008 | Q1 | 13.9 |
| | Q2 | 14.0 |
| | Q3 | 13.7 |
| | Q4 | 14.4 |
| 2009 | Q1 | 14.8 |
| | Q2 | 14.9 |
| | Q3 | 14.8 |
| | Q4 | 14.8 |
| 2010 | Q1 | 14.9 |
| | Q2 | 14.5 |

Source : Central bank of Kenya