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RELATIONSHIP BETWEEN RETURNS OF THE REAL ESTATE AND STOCK MARKET RETURN IN KENYA

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ABSTRACT

The stock market performance has been known to be a good indicator of the economic performance of a country. Over time, investors have been making investments in the stock market, but a lot of attention has shifted to the real estate market as it has been growing as a result of the huge housing demand. The objective of the study was to look at the relationship between real estate and the stock market. With this objective, we sought to investigate the relationship by comparing the indices for both the stock and real estate markets. Since the analysis covered the periods between 2018 and 2012, we used the NSE 20 share index for the stock market and the Hass property index for real estate. Relevant literature was analyzed with regards to the study, looking at local and international studies and this enabled the study to come up with a conceptual framework and an analysis model. Data was collected from the Nairobi Stock Exchange, Kenya National Bureau of Statistics (KNBS) and websites. The data collected was then analyzed using regression analysis and Pearson's correlation coefficient. The study results showed that there was greater impact and relationship when there were controls in the models. The study recommended that the country needs a REITs market to monitor the real estate market since it is an important segment of the economy and may act as an economic barometer, and also to improve the storage of vital macro-economic information to enable researchers to carry out tests that may assist the economy.

Keywords: *Housing Index, Inflation Rate, Interest Rate, Stock Market Return*

INTRODUCTION

The real estate and stock markets have been used by many countries to measure the strength of an economy. People and institutions have invested in these markets to grow their investments and wealth. This study looks at the trends in the real estate market and in the stock market and what implications this can have for both practitioners and policymakers with regards to the measure of economic growth.

The increased presence of real estate and foreign stocks in the portfolios of institutions may have been motivated in part by academic studies that suggest that co-variances between stocks - both local and foreign - and commercial real estate are quite low, indicating that the latter asset classes provide diversification to portfolios invested primarily in stocks. Investors worldwide always look to diversify their investments and have a portfolio that has minimal variation in the returns, hence reducing their risks. Whether they are within the stock market itself where investment is done from stocks of different companies or investment is done from different markets, portfolios are created by investment managers and individuals to minimize risk.

Over the past years investors have invested heavily in these two markets and we shall look at the price indices of these markets and try to see if and how they are related. The stock market is seen as a liquid market where cash flows can be generated quickly as compared to the real estate market. Prices for real estate markets are known to be greatly influenced by demand and supply forces. The higher the demand for the houses and building, the higher the prices will be, for example, in U.S, the prices of houses largely dependent on how many households wish to own units and how many units are available for such ownership.

In most countries, changes in the real estate market are a large and significant part of the future trend of the overall economic activity. The number and quality of investments in the real estate market tends to affect the economic development of the entire economy. The real estate market is therefore very critical for the future of an economy in terms of productivity, employment and income growth.

In Kenya, the property market has grown rapidly and has maintained a hold as a leading real estate market globally. The Kenyan real estate market has delivered greater price stability than all of international markets surveyed – US, UK, UAE, Hong Kong, India, Australia as well as South Africa. The most outstanding feature is that the Kenyan market remained resilient and maintained price stability during global recession (Global Markets Special Report – Hass

Consult). This analysis of real estate markets worldwide adds further support to the belief that the Kenyan market is an unusually solid investment, subject to few swings, and achieving mid-term returns that are amongst the highest in the world (Farhana Hassanali).

In a study by Muthee (2012), where she looked at the relationship between economic growth and real estate prices in Kenya, 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 analyzed indicates that property is a strong asset class that has been underexploited in portfolios.

The stock market is an entity where companies' shares, bonds and derivatives are traded. The stocks listed in the exchange have a trading price which represents the value of the company. When shares, bonds or derivatives are traded on the stock exchange, the price represents the buyers' value of the company. An organization's value is comprised of both tangible and intangible values and the share prices traded are expected to follow market fundamentals when being traded. At times, stock prices are traded on speculation about an event that may occur in the company. When stock prices deviate from market fundamentals, imperfections take place and a market correction takes place. Various models have been used to estimate the share prices but the most commonly used model is the Gordon Growth Model, where stocks prices are based on the discounted present value of future expected dividend payment.

Both the real estate markets and the stock markets are affected by similar economic factors such as interest rates, inflation and deflation rates, demographics, GDP, and Government policies. The degree of integration of these markets will indicate the extent to which these markets are driven by similar economic factors. The degree of integration will also indicate the extent of substitutability between the two markets.

While arguments can be presented for expecting securitized real estate and stock markets to be either integrated or segmented, Gyourko or Keim (2016) present a compelling argument as to why securitized real estate and stock markets would be expected to be co-related. In western companies, a large part of a company's value is tied up in real estate. In these circumstances, it would appear reasonable to suppose that part of the risk in stock market returns should be related to changes in the value of company-owned land and structures. While a portion of this property market risk may be uncorrelated with the firm's core business risk, it is assumed that some is

almost certainly correlated with that risk. Therefore, part of the real estate market risk associated with the general health of the economy should result in a positive correlation between property returns and returns on the stock market. The outcome is that there are common economic factors that may be expected to have some bearing on the returns in both markets.

Due to conflict, political instability and low investment, the Kenyan market has been quite stagnant. However, this has changed over the recent years, with Kenya's property market becoming vibrant and experiencing major change and high growth rates. This has followed growth in the GDP of the country, which is leading to expansion that is creating a middle class which has led to the need for urban centers to come up. The market has been driven with high GDP growth as well as high demand for high-end real estate.

The stock market in Kenya has grown rapidly since its emergence. It is not difficult to observe that the size of the stock market has expanded gradually both in terms of the firms that are listed as well as the amount on investor accounts. Furthermore, the stock market has also shown an increasing level of liquidity, which is verified by the rising amount of total turnover during the given period.

Still looking at the stock market over the last years between 2017 to 2019, those who have invested in real estate earned higher returns compared to individuals investing their monies in the stock market – Nairobi Stock Exchange, showing that for profitable long term investments, the property sector holds the key (Jivanjee, 2016). This showed that there was a missed opportunity for those who relied only on investments in the stock market during this period.

Research Problem

Activity on both real estate and stock markets form significant elements in business cycle fluctuations. A common approach in trying to analyze and understand the impact of these markets has been to study the separate influences of each on business cycle activity. Heaton et al. (2016) stated that the majority of households hold neither common stock nor other risky financial securities. Others invest in stocks almost exclusively or invest in real estate markets alone. The idea of holding a portfolio rather than a single asset has been the focus of financial theory since its introduction by Markowitz in 1952.

The problem therefore we seek to address with this research is the asset allocation decision based on the returns relation of the stock and real estate market. It also seeks to clarify whether the performance of the stock market is at all influenced by the real estate boom and the effect of

consolidating the two assets in a mixed portfolio. The study of price volatility on the stock market has a rich history with research tending to focus on the identification of speculative bubbles (Diba et al., 2018, Cameron, 2019) On the other hand; research on real estate price fluctuations is less extensive than that of stock markets.

Research by Hass Consult Kenya comparing returns in the real estate markets on the Nairobi Stock Exchange in the final quarter of 2016 concluded that the property prices still continued to rise while those of Stocks on the NSE continued to fall, showing a negative relationship. Ochuka (2017) conducted a study to assess the relationship between stock market returns and real economic activity in the economy. Data was collected from the Nairobi Stock Exchange and from the Central Bureau of Statistics. The study covered the period 1998 to 2004. The stock market returns were regressed against production figures and empirically tested. The analysis revealed that there was a positive correlation between stock returns and real activity and that future production can explain present returns.

Minimal studies have been done in the Kenyan market with regards to the empirical relationship between real estate and the stock market so as to ascertain whether there is co-variation. Even though the studies might table different findings with regards to the presence of co-variation, what needs to be ascertained is whether it is there and to what extent. This study seeks to establish exactly how these two variables co-relate as well as find clarify how strong the correlation is if it does exist. The study will therefore seek to answer "Is there a relationship between real estate and the stock market in Kenya?"

Objectives

The main objective of this study was to assess the relationship between returns of real estate and stock market return in Kenya.

The specific objectives were;

- To assess the influence of housing index on stock market return in Kenya.
- To determine the influence of inflation rate on stock market return in Kenya.
- To find out the influence of interest rate on stock market return in Kenya.

Theoretical Review

Efficient Market Theory

An efficient capital market is one in which security prices adjust rapidly to the arrival of new information and therefore the current prices of the securities reflect all the information about the

security. What this means is that the price for which the investor will be paying for the financial asset truly reflects fair or true information about the intrinsic value of this specific asset. In this paper, we assume that both the stock market and the real estate market are information ally efficient markets. This is reinforced by the fact that first, these markets have a large number of profit-maximizing participants who each analyze and value the securities independent of each other, Secondly, information enters the market in a random manner and the timings of one announcement is generally independent of the other. Finally, investors in both the markets adjust the asset prices rapidly to reflect the effect of new information. Security prices are able to adjust rapidly because of the many investors who compete against each other (Brealey, et al., 2001).

There are three forms of efficiency under the efficient market hypothesis. First is the weak form of efficiency where stock prices are assumed to reflect information that may be contained in the past history of the stock prices. Therefore, if a market is characterized by weak form of efficiency, then no one investor or group of investors should be able to earn over the defined period abnormal returns using information about historical prices or by technical analysis.

Second is the semi-strong form of efficiency where all public information is reflected in the stocks prices. Publicly available information includes the firm's financial reports, reports of competing firms' e.t.c. Finally is the strong form efficiency which asserts that stock prices fully reflect all information including private or inside information as well as that which is publicly available. Prices under this efficiency adjust rapidly to both private and public information hence no investor will be able to earn abnormal rates of return.

Studies have shown that the Nairobi Stock Exchange is In this paper, we take the assumption that we are operating under a strong form of efficient capital market, and therefore the stock prices are well adjusted to both public and private information. This will enable us to relate the returns in the stock market to the performance of the market rather than any efforts by individuals to make above normal profits.

Portfolio Theory

The portfolio theory was developed by Markowitz (1952), who derived the expected return for a portfolio of assets and an expected risk measure. According to this theory a portfolio of assets is considered efficient if no other assets or portfolio of assets offers a higher expected return with the same risk, or lower risk with the same expected return. This is achieved through diversification of the portfolio.

The correlation coefficient between two financial assets plays a major role in determining the effectiveness of diversifying a portfolio. Portfolios are diversified to protect against the risk of single securities or class of securities (Markowitz, 1952). Hence, portfolio analysis consists of analyzing the portfolio as a whole rather than relying exclusively on security analysis (Markowitz, 1952). Portfolio theory tells us that if you manage to combine assets whose returns show low correlation with each other, you may be able to minimize risk while maximizing returns. This means that it is possible to be a "prudent investor" even if one's portfolio includes riskier assets, as long as those riskier yet higher-yielding investments are balanced with others in a well-diversified portfolio.

Where there is a positive correlation, the value of correlation coefficient between a stock and a real estate asset is +1 hence it shows that two assets will move in the same direction and there is a positive linear relationship between return and risk. The risk and return of the portfolio of the two assets is a weighted average of the risk and return of each asset (Elton, et al, 2007). The risk of these two assets portfolio cannot be reduced by diversifying across the two assets that have a positive correlation.

On the other hand, where there is a negative correlation, the correlation coefficient between a stock and a real estate asset is – 1, which means the good and bad outcomes of two assets will move exactly opposite to one another and there is a negative linear relationship between return and risk. If this happens, we can construct a portfolio of two assets without risk. To compare to case 1, when the correlation coefficient is – 1, the portfolio of a stock and a real estate asset is less risky than the portfolio when the correlation coefficient is + 1 (Elton, et al, 2007).

In the case where no correlation exists, the correlation coefficient is zero. It indicates that there is no relationship between returns on a stock and a real estate asset. The portfolio of two assets has less risk than every single asset (Elton, et al, 2007).

Wealth versus Credit Price Effects

Jud and Winkler (2002) and Benjamin et al. (2004), there exist two theoretical views to explain the relationship between stock and real estate prices. First is the well-known wealth effect which stresses a transmission channel from stock to housing. Since real estate is considered consumption goods as well as investment goods whereas financial assets such as stocks do not involve direct consumption, households with unexpected gains in the stock market are likely to distribute their portfolios to favor the real estate market. Put differently, households holding

stocks often rebalance their portfolios by selling stocks and investing in other assets such as houses when stock returns rise. One thus sees the wealth effect on consumption via the transmission from stock

The second theory explaining the existence of this relationship between stock and real estate prices is the so-called credit-price effect. This view regards a change in real estate value as an important factor for the balance-sheet position of a firm. For example, credit-constrained firms holding a certain amount of real estate or land benefit when real estate prices rise. This is because an increase in the collateral value stemming from a rise in real estate prices reduces the cost of borrowing and gives the firms or households easier access to financing. The equity value of the firm will then, in turn, rise if the expected profits from the firm's resulting investments are realized. Firms will then need even more real estate or land for the purpose of expanded investment, and will end up with a spiraling upturn in both prices. This transmission mechanism thus illustrates why an exogenous shock results in a persistent effect.

Conceptual Framework

The conceptual framework shows the relationship between the independent and dependent variables (Jessen, Amariglio, Van Boxtel, Breteler, Ceccaldi, Chételat & Glodzik, 2018). The independent variable is returns of real estate conceptualized by housing index, inflation rate, and interest rate while the dependent variable is stock market return.

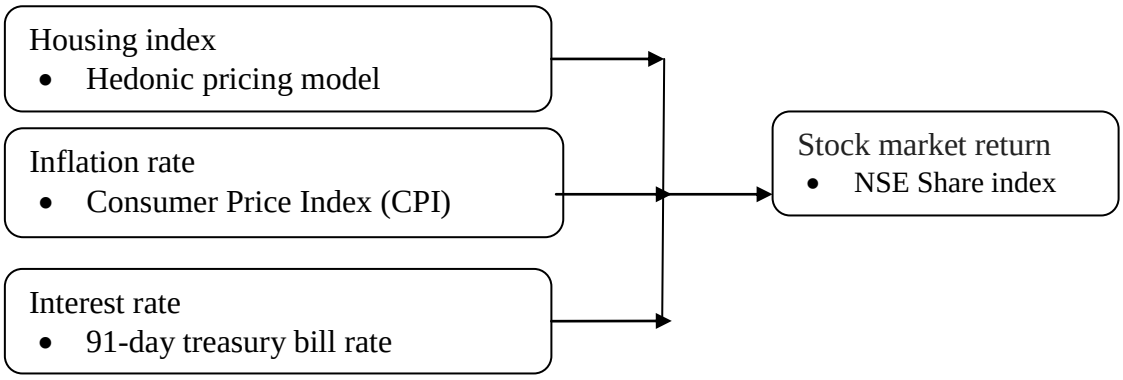

Figure 1: Conceptual Framework

Empirical Literature Review

Liow and Yang (2015) find housing and stock markets to be co-integrated, Chen et al. (2009) finds co-integration in some periods, while Okunev and Wilson (2015) believe the markets are fractionally co-integrated. Though most of this research is done in the US, some authors have

examined the relationship in an international context, either by analyzing other countries individually or through panel data analysis. By examining a larger set of countries panel data analysis seeks to increase the number of observations hence the reliability of the research.

In Kenya, according to a report published by Hass Consult comparing the returns in the Kenyan Housing market to the returns of the Nairobi Stock Exchange in the final quarter of 2016, the property market outperformed the stock market, following the falls on the NSE in November and December even as property prices continued to rise. The Kenyan residential property market has outperformed the Nairobi stock market over the last 10 years.

Fama (2017) found a negative relationship between stock returns and stated that the negative association found between stock returns and inflation is the result of two underlying relationships between stock returns and expected economic activity; and expected economic activity and inflation. The expectation of higher future dividend account for a positive relationship between stock returns and inflation while money demand effects account for a negative relationship between expected activity and inflation.

Schwert (2017) analyzed the reaction of stock prices to the new information about inflation. He stated that the important reason to expect a relationship between stock returns and the unexpected inflation was that unexpected inflation contained new information about future levels of expected inflation. Despite of debtor or creditor hypothesis, it was difficult to predict the distributive effects of unexpected inflation on stock returns. The unexpected inflation has variety of effects on the value of the firm, and unexpected increase in expected inflation could cause government policymakers to react by changing monetary of fiscal policy in order to counteract higher inflation. He found that the stock market seem not read to unexpected inflation during the period of Consumer Price index was sampled on several weeks before the announcement date.

Abd et al. (2017) investigated the predictability power of exchange rates and interest rates' respective volatilities on stock market volatility and return using monthly Kuala Lumpur Composite Index (KLCI) returns, 3 months Malaysia Treasury bond and monthly exchange rate of Ringgit per US Dollar from 1997 January to 2009 November. The study adopts two models based on GARCH (1,1), Model 1 without interest rate, Model 2 with interest rate and exchange rate. The relationship between interest rate and exchange rate and KLCI returns are found to be negative, but significant for exchange rate and insignificant for interest rate. Insignificant relationship exists between return variance and the variables though positive for exchange rate

and negative for interest rate. This means the variables have a certain degree of predictive powers for KLCI returns but weak volatility prediction.

Kim, Morley and Nelson (2018) in their study of the relationship between stock market volatility and the equity premium in the USA, investigated whether there is evidence for a positive relationship between stock market volatility and the equity premium, and whether it is more decisive when the volatility feedback effects of large and persistent changes in market volatility are taken into account. The analysis has two components. First, a log linear present value framework is employed to derive a formal model of volatility feedback under the assumption of Markov-switching market volatility. Second, the model is estimated for a variety of assumptions about information available to economic agents. The empirical results suggest the existence of a negative and significant volatility feedback effect, supporting a positive relationship between stock market volatility and the equity premium.

Durham (2017) in his study of the impact of monetary policy on stock price returns examined the sensitivity of division of the sample period into sub periods, use of rolling regressions for the time-series data indicated that for the vast majority of countries (including the United States), the relationship largely vanished in more recent periods. Also, panel regressions that incorporated cross-sectional variance among 16 countries suggest that the relationship between monetary policy and stock returns is weak or nonexistent. Analysis of excess stock price return, as opposed to raw return, also indicates no relationship. Finally, alternative measures of monetary policy indicate no correlation between easing/tightening cycles and stock returns.

Methodology

This study employed a longitudinal descriptive design. The population of interest in this study was composed of real estate firms in the NSE between 2016 and 2020. The share index was used as a proxy for stock returns hence the sample used was 12 firms that constitute the share index. The study was quantitative in nature and mainly utilized secondary data. The study used quantitative techniques. The Pearson Correlation coefficient and simple regression models were used to investigate the relationship between the two.

FINDINGS

Regression Analysis

Table 1: Regression of NSE 20 share index on housing index with interest rate and inflation controls

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.807[a]	.651	.576	7.2596284

a. Predictors: (Constant), Interest Rate, NSE Share index, Inflation Rate

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1374.331	3	458.110	8.692	.002[a]
	Residual	737.831	14	52.702		
	Total	2112.162	17			

a. Predictors: (Constant), Interest Rate, NSE Share index, Inflation Rate

b. Dependent Variable: Housing Index

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	49.517	21.495		2.304	.037
	NSE Share index	.019	.005	1.028	4.058	.001
	Inflation Rate	.493	.420	.306	1.172	.261
	Interest Rate	1.608	.457	.664	3.517	.003

a. Dependent Variable: Housing Index

The R-value was 0.807 which indicated that the independent variable is a good predictor of housing index. The R^2 showed that the independent variable, NSE 20 share index explained 65.1 percent of the proportion of variance of the dependent variable, the housing index. This was after the introduction of inflation and interest rates as control variables in the model, implying that the two variables combined have a significant impact on the dependent variable, the housing index.

The ANOVA table provided the statistical significance of the test. The ANOVA table showed the F-Value and whether the independent variable was able to significantly predict the dependent variable. From the table, $F(2,15=8.692)$, $p(0.002)<0.005$ shows that the regression model is a good fit of the data at a 5 percent significant level. The NSE 20 share index and interest rate had a significant value of less than 0.05 while the inflation rate variable was greater than 0.005 which shows that in the model it is only significantly affected by NSE 20 share index and interest rate.

The coefficients table provided values that were used for the regression model. The model from the output was:

$$Y = 1374.331 + 0.019(NSE\ share\ index) + 0.493(Inflation\ rate) + 1.608(Interest\ rate)$$

Correlation Analysis

Table 2: Correlation matrix of variables

		NSE Share index	Housing Index	Inflation Rate	Interest Rate
NSE Share index	Pearson Correlation	1			
	Sig. (2-tailed)				
	N	18			
Housing Index	Pearson Correlation	.464	1		
	Sig. (2-tailed)	.052			
	N	18	18		
Inflation Rate	Pearson Correlation	-.777**	-.136	1	
	Sig. (2-tailed)	.000	.590		
	N	18	18	18	
Interest Rate	Pearson Correlation	-.490*	.324	.535*	1
	Sig. (2-tailed)	.039	.189	.022	
	N	18	18	18	18

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Pearson's correlation test was performed to investigate the nature of the relationship of the variables in the study. The NSE 20 share index has a positive correlation with a housing index of 0.464, negative correlation with an inflation rate of 0.777, and a negative correlation with inflation rate of 0.49. This shows that the relationship of NSE 20 share index is highly negatively correlated with the inflation rate. The housing index has a negative correlation of 0.136 with inflation rate, and a positive correlation of 0.324 with an interest rate, while the inflation rate has a positive correlation coefficient of 0.535.

Conclusion

The test of regression of NSE 20 stock index on real estate index with both interest rate and inflation as control variables showed that there is a big impact (0.807) of the independent

variable on the housing index, and the ANOVA table showed that the independent variable significantly predicts the independent variable as it had a value of 0.002 which is less than the significant 0.05. It can therefore be shown that there is impact of the independent (NSE 20 share index) and control variable (interest rate and inflation) on the housing index in Kenya on the dependent variable (housing index). Literature identified macro-economic factors inflation rate and interest rate as control variables. The study therefore conforms to the expectation of earlier studies done in the literature review and shows of the relationship of the two markets.

Recommendations

First, the government and relevant stake holders should establish a REITs market in Kenya so as to be able to monitor the real estate market in the country. The real estate market in the country is growing rapidly and with this market it will enable policymakers to make the right decisions based on the information available from this market. As a huge sector in the economy, defining its own index would be okay.

Secondly, the government statistical agency/agencies should have a proper information database stored in an organized manner to enable ease of access. This will enable researchers to easily get information that would assist the economy.

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