MACROECONOMIC VARIABLES AND THEIR EFFECT ON STOCK MARKET RETURNS IN KENYA

BY

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UNITED STATES INTERNATIONAL UNIVERSITY-AFRICA

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A Research Project Report submitted to the Chandaria School of Business in Partial Fulfillment of the Requirement for the Degree of Master of Business Administration (MBA)

UNITED STATES INTERNATIONAL UNIVERSITY-AFRICA

SUMMER 2018
STUDENTS DECLARATION

I, the undersigned, hereby declare that this research project report is my original work and has not been presented to any other University, college or institution for higher learning or otherwise other than the United States International University-Africa.

Signed: ___________________________        Date: ___________________________

Kori Kevin Mtweta (651172)

This project report has been presented for examination with my approval as the appointed supervisor.

Signed: ___________________________        Date: ___________________________

Dr. Elizabeth Kalunda

Signed: ___________________________        Date: ___________________________

Dean, Chandaria School of Business
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ABSTRACT

The main objective of the study was to determine the effect of macroeconomic variables on stock market returns in Kenya. The study aimed to find out the effects of exchange rates on the performance of NSE 20 Share Index in Kenya, to establish the effects of money supply on the performance of NSE 20 Share Index in Kenya and to determine the effects of inflation on the performance of NSE 20 Share Index in Kenya.

Secondary data was obtained from reports provided by the Central Bank of Kenya, Kenya National Bureau of Statistics and the Nairobi Securities Exchange (NSE). The independent variables were exchange rates, money supply and inflation whereas the dependent variable was the NSE 20 Share Index Value. The study adopted a descriptive research design. A census sampling technique was used, and the sample size established as 20 companies in the NSE 20 Share Index. The data collected for the study was analyzed using Statistical Package for the Social Sciences and Microsoft excel to generate descriptive and inferential statistics.

The results were presented in form of tables and figures. Multivariate ordinary least square was used to describe the relationship between the independent and dependent variables. The results established that exchange rates had a negative and significant correlation with the performance of the NSE 20 share index value whereas inflation had a negative and insignificant correlation with the same. Money supply was found to have a positive correlation with the performance of the NSE 20 share index value which was insignificant.

The regression analysis recorded an R Square of 0.571 which implied that study independent variables explained 57.10% change in the performance of the NSE 20 Share Index returns. The results from the ANOVA proved that this change was statistically significant. The regression model revealed that with all factors held constant, a unit change in exchange rates would lead to a -1.827 change in the NSE 20 Share Index returns whereas as a unit change of money supply would lead to a positive 2.548 change in the same. Inflation would lead to negative change on the NSE 20 Share index by a factor of -2.120.

In conclusion, the study established that money supply greatly influences the stock market returns in Kenya and investors will look to buy and trade their securities in the market only if enough money is in supply. Inflation had a negative influence on stock market returns and
concluded that the consumer price index needs to be monitored for it to remain profitable. Exchange rates had a negative effect on the stock market returns. Therefore, lower foreign currency rates would be ideal for a positive stock market performance.

It was recommended that the government should monitor and regulate the foreign exchange rates in order to make the foreign exchange rates profitable. The Central Bank of Kenya should also ensure that money is always in circulation as it is pivotal for investment which in turn profits the stock market. Lastly, the government should monitor and maintain the inflation rates to desired targets to make the stock more profitable. For further studies this research recommends the use of a longer study period and account for more macroeconomic variables which will improve the prediction power of the model. It is also recommended to use NSE indexes with a larger population target.
ACKNOWLEDGEMENT

First and Foremost, I would like to give thanks to the Almighty God for blessing me with the health that enabled me to complete this project. I would also like to thank my business research lecturer Dr. Paul Katuse for his guidance on this research project.

I would also like to express my sincere gratitude to my supervisor, Dr. Elizabeth Kalunda Muvui for her unconditional support and exemplary guidance in undertaking this research project. Her knowledge in Finance was pivotal in writing my thesis and completion of this research.

Lastly, I would like to appreciate the support of my family and friends who helped me maintain focus throughout my MBA program.
DEDICATION

I dedicate this thesis to my loving mother and supervisor who encouraged and supported me throughout the process.
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<td>CBK</td>
<td>Central Bank of Kenya</td>
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<td>CPI</td>
<td>Consumer Price Index</td>
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<td>GDP</td>
<td>Gross Domestic Product</td>
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<td>M3</td>
<td>Broad Money</td>
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<td>NSE</td>
<td>Nairobi Securities Exchange</td>
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<td>USD</td>
<td>United States Dollar</td>
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CHAPTER ONE

1.0 INTRODUCTION

1.1 Background of the Study

The stock market is a market where shares of public listed companies are traded, and plays a big role in the financial industry, both in developed and developing countries. This market offers availability of long-term capital to the listed firms through the primary market where companies float shares to the public in an initial public offering or IPO. This is achieved by pooling funds from different investors which in turn allow the companies to expand in business by offering investors different investment avenues for their surplus funds (Mohammed, 2011).

A country’s growth is directly related to the economy, which is made of variables such as gross domestic product, foreign direct investment, remittances, inflation, interest rate, money supply, exchange rate and many more. These variables are not only pivotal to the economy but also affect the stock returns. Further, the movements of the stock market are affected by changes in the fundamentals of the economy and the prospects of the fundamentals. The stock market is seen as a way of measuring the performance of a market over time. Stock market indexes provide historical stock performances which help in the comparison of individual portfolio performances. By use of the indices, it can be used as a benchmark for investors or managers who compare their returns with the market return. Therefore, knowledge of such variables and their impact on share prices is highly appreciable on the part of the firms and investors (Aurangzeb, 2012).

Najeb (2013) described a stock market as a very sophisticated market place where stocks are the traded commodity at the same time being the center to the creation and development of a strong and competitive economy. Yartey and Adjasi (2007) affirmed that the stock market forms a significant part of the financial sector of any economy. A stock market that is streamlined and properly functioning is expected to cut the cost of equity capital for companies and allow investors to effectively price and hedge risk.
In the 20th Century, the International Monetary Fund, World Bank and African Development Bank undertook stock market development programs for developing countries in the emerging stock market. Their findings indicated that emerging stock markets experienced notable development since the early 1990’s. The market capitalization of the emerging countries significantly grew from less than $2 trillion in 1995 to $5 trillion in 2005. In the Sub-Saharan Africa there were five stock markets and three in North Africa. There are about 19 stock exchanges ranging from start-up markets in Uganda, Mozambique, Nigerian stock exchange markets and Johannesburg stock exchange (Yartey & Adjasi, 2007).

Theories emerged to relate the activities of these markets to exogenous factors, with this said the efficient market hypothesis is one to discuss. The classic definitions of the efficient market hypothesis were made by Harry Roberts in 1967 and Eugene Fama in 1970. According to Fama (1970) an efficient market is a market where there are large numbers of rational profit maximisers’, actively competing trying to predict future market values of individual securities. This is also a market where important current information is considered freely available to all participants in an efficient market competition, among the many intelligent participants which leads to a situation where at any point in time, actual prices of individual securities already reflect the effects of information based on events that have already occurred and on events which as of now, the market expects to take in the future. Allan, Brealey and Myers (2011) defined a market as efficient when it was not possible to earn a return higher than the market return.

Eakins and Mishkin (2012) argued that an efficient market hypothesis is a market where assets prices fully reflected all information available. In a nutshell efficient market hypothesis infers that all publicly available information is embodied in the current share price where an investor cannot change the price or return of the market. This proceeds to introduce the Arbitrage Pricing Model also known as APT developed by Ross (1979) which is a model based on this hypothesis. The model clearly explains that all factors that affect future cash flow and risk are determinants of stock returns thus making the theory potentially better compared to other theories. It holds that the expected return of financial assets can be modelled as a linear function of various macro-economic factors or theoretical market
indices, where the sensitivity to changes in each factor is represented by a factor specific beta coefficient. Several attempts have been made by researchers to identify or study the factors that affect stock returns using the APT model, but these studies have greatly varied depending on the variables the researchers used.

The economic times looks at macroeconomics as the branch of economics that studies the behavior and performance of an economy as a whole. It focuses on the aggregate changes in the economy such as unemployment, growth rate, gross domestic product and inflation. It is commonly believed that asset prices react in a sensitive way to economic news. Macroeconomic variables like gross domestic product, currency exchange rates, inflation, money supply and industrial production, have explanatory power over prices and returns. Investor’s confidence is usually greatly reduced with factors like recession and unexpected increase on inflation in the market which leads to fall of prices (The Economic Times, 2017).

Research done shows that individual investors are subject to various behavioral biases, which seem to be rather persistent (Barber & Odean, 2001; Bailey, Kumar & Ng, 2011). Among these, individual investors have difficulty learning from their experiences and if they do, it is a slow process (Gervais, Heaton & Odean, 2011). News of a recovery in the economy would enhance investor confidence which in turn leads to rise in asset prices. Aurangzeb (2012) noted studies were done in United States of America, United Kingdom and Japan to find out the relationship between macroeconomic variables and the fluctuation of stock prices. The findings showed that macroeconomic variables have a significant impact on stock prices. These results helped investors make better predictions about movement of the stock prices whenever these fundamentals change their position.

According to Wang (2010), the dynamic changes in the macro-economic variables have a diverse effect on the economy although the recent innovation in macro-economic fundamentals are lacking in the emerging markets. These changes have always been of prime interest in the capital market stability and strategies adopted by investors. It is observed that information available publicly on macro-economic fundamentals may make stock returns partially predictable. Prices tend to move up and down like a wave-length and understanding
why it behaves this way is not only crucial to investors but to policy makers. Studies undertaken by researchers like Jamil and Ullah (2013) who investigated impact of foreign exchange on stock prices, Mohammed (2011) who conducted a study on the impact micro and macroeconomic variables have on emerging stock market returns, just to mention a few, show varied results with respect to the variables used by each researcher. These studies indicate that there are various variables that affect stock returns but a clear-cut cause and effect between the macro-economic variables and stock prices has not been established and still quite debatable.

There is a need to establish a lead-lag effect between macro-economic variables and stock market returns. From this point of view, a conducive macro-economic environment positively stimulates investment and capital formation which is important for equity market development. Mohammed (2011) inferred that a significant time lagged effects of macro-economic variables on stock prices indicate information inefficiency of the stock market.

In Kenya, the stock exchange market noticed significant improvements in 1995, after the stock market liberation. This led to improved development of the stock market including the openness, market capitalization and shares turnover (NSE, 2018). According to Kinuthia (2015), studies conducted on the stock performance between the years 1990 and 2012 indicated turnover increased from a low of less than a billion in the 1990 to more than 3 billion in 1995 which reached a high of Ksh. 110.3 billion in 2010. A similar trend was witnessed in market capitalization with the highest level of Ksh. 13,070 billion being recorded in 2010 from 10.9 billion in 1990 (NSE, 2018). The Economic Survey (GOK, 2013) suggested performance of the stock market improved during the year 2012. The NSE 20 Share Index rose by 29 percent to 4,133 from 3,205 in 2011 December. Market capitalization increased by 46.5 percent from Ksh. 868 billion in 2011 to Ksh. 1,272 billion in December 2012. Inflation decreased from 14 percent in 2011 to 9.4 percent in 2012. It was observed that the year of 2011 to 2012 was characterized by the bullish foreign investment participation in the equity market which averaged to 45 percent of the total turnover due to the currency depreciation. The second quarter of 2012 was however not as productive as the market started experiencing shortcoming due to easing of inflation and exchange rate
pressures. Such changes in the stock prices and the cause of these changes are imperative for the capital markets as they are known to be sources of long-term funds for firms and the government (Capital Market Authority, 2012).

The Nairobi Securities Exchange or NSE is said to be one of the leading exchanges in Africa. Based in Kenya, it is one of the fastest growing economies in the Sub-Saharan Africa. It was founded in 1954 and boasts of a six-decade heritage in listing both equity and debt securities. It houses both local and international investors looking to gain exposure to Kenya and Africa’s economic growth. The NSE demutualized and self-listed in 2014 which meant that shares of the NSE can be tradeable on the stock exchange itself. This made it possible to separate ownership from management of the NSE while keeping along with the global trends (NSE, 2018). The NSE currently has four indices used to measure the performance of stocks. One of the indices is known as the NSE All Share Index or NASI which is a weighted index of all the listed companies on the exchange. The Exchange also houses the Financial Times Stock Exchange also known as FTSE NSE Kenya 15 representing the performance of the largest 15 stocks trading on the NSE which is ranked by full market capitalization. It also has an index representing the performance of the 25 most liquid stocks trading on the NSE which is known as FTSE NSE Kenya 25. The NSE 20 Share Index is a weighted index of 20 blue chip companies using market capitalization, shares traded, number of deals and turnover as criteria to be part of the 20 companies (Karanja, 2012).

1.2 Statement of the Problem

Macro-economist and finance theorists have a general agreement, in that stock markets are driven by macro-economic variables termed as fundamentals in the economy. It is also agreed that there is a linkage that exists between the stock market and the realistic activities. The arbitrage pricing theory advocates that the forces that influence the stock market returns are those macro-economic variables that changes the expected cash-flow and discount factors. Researchers have carried out vast studies in the emerging markets to show the relationship between macro-economic variables and stock market performance.
Naik (2013) investigated the relationships between the Indian Stock market index and industrial production index, wholesale price index, money supply, exchange rate and treasury bill rates. Using monthly data for the variables between the period of 1994 to 2011 and the aid of Johansen’s co-integration and vector error correction model for analysis, the results of the study observed that in the long run, stock prices are positively related to money supply but no causality from stock prices to money supply in the short run. Osamuonyi and Evbayiro-Osagie (2012) concluded the same in their study attempting to determine the relationship between macroeconomic variables and the Nigerian capital market index. The variables under study were interest rates, inflation rates, exchange rates, fiscal deficit, gross domestic product and money supply using year data of period between 1975 to 2005. The study employed vector error correction model.

Kuwormu (2012) on the other hand examined the effect of macroeconomic fundamentals on the Ghanaian stock market returns using monthly data from January 1992 to December 2008. The author used the following variables: 91-day treasury bill rate for interest rate, crude oil prices, consumer price index for inflation and exchange rate. The study used Johansen Multivariate cointegration procedure. He iterated that a cointegration exists between them and indicating a long-term relationship. Sohail (2009) employed Johanssen’s co-integration technique to examine how stock prices respond to macroeconomic variables. The study showed that money supply represented by M2 had a negative effect on the stock market returns.

Songole (2012) established that market interest rates, consumer price index and exchange rate have a negative relationship with stock return in the Kenyan markets. Ochieng and Adhiambo (2013) concluded that the 91-day T-bill rate negatively affects the Nairobi All Share Index where as inflation affects it positively. Kimani and Mutuku (2013) on the other hand showed that there is a negative relationship between inflation and stock market performance in Kenya. Aduba, Masila and Osango (2012) reported that there is no relationship between stock market development and macro-economic stability whereas Mongeri (2011) established that foreign exchange rates have a negative significant impact on the market performance.
These studies showed varied results on their studies on the macro-economic factors that have an influence on the stock market returns. It was also clear that there is a lack of consensus of the impact macroeconomic factors have on stock market returns. The question of this study was to understand which macro-economic variables affect stock market returns in Kenya with the focus being on the NSE 20 Share index.

1.3 General Objective
The general objective of this study was to identify which macro-economic variables have a significant effect on the stock market returns in Kenya.

1.4 Specific Objectives
The Specific objectives of the study were:

1.4.1 To find out the effects of exchange rates on the performance of NSE 20 Share Index in Kenya.
1.4.2 To establish the effects of money supply on the performance of NSE 20 Share Index in Kenya.
1.4.3 To determine the effects of inflation on the performance of NSE 20 Share Index in Kenya.

1.5 Significance of the Study
1.5.1 Central Bank of Kenya
Central Bank of Kenya will find this study useful when it comes to the control of money supply and its expenditure. Money supply being a contributing variable in the market, this study will be pivotal on how the CBK will regulate supply of money according the situation at hand.

1.5.2 Nairobi Securities Exchange
The NSE will be one benefactor of the study being that it is concerned with stock market returns. This study will add on to the knowledge and in understanding on what causes the wavelike motions in stock market returns in Kenya.
1.5.3 Financial Institution and Investors

Financial Managers, policy makers and investors in the investment sector will find this study useful in making decisions on their investment. This study will further educate entrepreneurs and other class of managers on the macroeconomic variables that will have a significant impact on their returns in the stock market exchange.

1.5.4 Academicians and Researchers

The Findings of this study will be of benefit to academicians, student and researchers since it adds to the current scope of knowledge on the influence of macroeconomic variables on stock market returns. This study will be for further research on the macroeconomic variables that affect the stock market returns in Kenya.

1.6 Scope of the Study

This study aimed to find out if the following macroeconomic variables; exchange rates, money supply and inflation significantly affects the performance of the NSE 20 Share Index. The researcher obtained the relevant information for the said independent variables from the Kenya National Bureau of Statistics and Central Bank of Kenya. Data for the dependent variable was obtained from the Nairobi Securities Exchange, primary focus being on the NSE 20 Share Index which consists of the 20 listed companies in this share index. These companies include; Industrial and Commercial Development Corporation, Kenya Electrical, Mumius Sugar Company, Rea Vipingo, CMC Holdings, Express Limited, Nation Media Group, Sasini, Kenya Airways, Safaricom, Barclays, Equity, Kenya Commercial Bank Limited, Standard Chartered, Bamburi Cement, British American Tobacco, East African Breweries Limited, East African Cables, Kenya Power and Lighting Company and Athi River Mining. The study used data from the period 2008 to 2013 which are the years within which the NSE 20 share index companies were constant. The data of this study being secondary in nature was obtained from the mentioned NSE historical reports, the Central Bank of Kenya and the Kenya National Bureau of Statistics.
1.7 Definition Terms

1.7.1 Stock Market

A Stock Market can be a very sophisticated market place, where stocks and shares are the traded commodity at the same time it is central to the creation and development of strong and competitive economy (Najeb, 2013).

1.7.2 Stock Market Returns

These are returns that the investors generate out of the stock market. The return could be in the form of profit through trading or in the form of dividends given by the company to its shareholders from time to time (Economywatch, 2010).

1.7.3 Macroeconomic Variables

Macroeconomic variables are defined as the key indicators that show the prevailing trends in the economy (Gurloveleen, 2015).

1.7.4 Inflation

Inflation is defined as the rate of increase in prices over a given period of time (Ceyda, 2010).

1.7.5 Money Supply

Money supply is defined as currency in circulation plus demand deposits held by the non-public in commercial banks (Groth, 2011).

1.7.6 Interest Rates

This is a charge paid by the borrower of material goods to the owner as a type of return for the utilization of the assets. It is the price for the use of owner’s money or any material goods. It may also be the money earned by deposited finances for a particular period of time (Hamdan, 2014).
1.7.7 Exchange Rates
Exchange rates are defined as the nominal exchange rate adjusted for the relative purchasing power. It is also interpreted as the purchasing power of the currency abroad relative to that at home (Bill, 2014).

1.8 Chapter Summary
This chapter not only gave a global overview of the stock market, but it also looked at the regional and local aspects of the stock market behavior. The chapter also introduced the macroeconomic variables that affect the said stock market. It further went on to highlight the research objectives of the study, significance and scope of the study. The second chapter discusses the literature review based on the research objectives of the study, whereas the third chapter discusses the research design and methodology used in the study. The results and findings are presented in the fourth chapter as the summary, discussion, conclusion and further recommendations presented in the fifth chapter.
CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Introduction
This chapter provided literature from past researchers and scholars on the impact macro-economic variables have on stock market returns. This chapter examined the concepts and theories concerned with the stock market return performance with major focus on the macro-economic variables: exchange rates, money supply and inflation. By considering the literature from past authors, this chapter formed the theoretical and conceptual framework of the study on what impacts the stock market performance in Kenya.

2.2 Exchange Rates and the Stock Market Returns
Studies have concluded that there is a strong relationship between exchange rate movement and stock market returns volatility, while others have not. According to Tsen (2011) the real exchange rate has been identified to play a quite important role in the investment determination and the global trade systems as the appreciation of the real exchange rate can lead to retarded exports, a change in the amount of debt payment that needs to be conducted and a growth of the inflow of foreign direct investment. Exchange rates can greatly affect the economy.

Wu, Lu and Perez (2012) studied the relationship between the US Dollar and the stock exchange index who focused their research in the Philippine Stock Exchange or PSEI. The study employed time series analysis and used secondary monthly data from the period of July 1997 to July 2010 with 157 observations, the Philippine Stock Exchange Index’s samples used adjust close index. The study findings revealed that there is a stable long-term relationship between US Dollar exchange rate and PSEI based on the co-integration test. Although the PSEI’s trend movement will gradually increase in the short run, the movement will tend to become zero whereas the growth of US dollar exchange rate will keep deteriorating.
Yau and Njeh (2008) pointed out that even with the existence of a relationship between the stock exchange rate and the exchange rate which is signified by the researchers, the magnitude and direction of the relationship is normally an element of increasing debate. Yau and Njeh (2008) went on employing the granger causality on their study on the relationship between the financial assets and exchange rates of United States of America and Japan. The study found that there is no short-term causal relationship between the two although in the longer run a positive relationship was existent.

Similarly, a study was done by Ratanapakorn and Sharma (2007) investigating the long term and short-term relationships between the US stock price index and six macroeconomic variables over the period 1975 to 1999. The study employed the granger causality test which revealed that stock prices have a negative relationship with interest rates in the long term but have a positive relationship with money supply, industrial production and exchange rates in the same. The study concluded that exchange rates have a significance in the stock market return.

Dayyat (2008) examined the relationship between Amman Stock exchange index and the exchange rates employing granger causality test. The study used monthly and annual data gathered from analytical reports from the central bank of Jordan and Amman Stock exchange spanning the period between 1989-2004. The results of the study established that there was a negative and insignificant relationship between the Amman stock exchange and the exchange rates. This concluded that no relationship existed between the exchange rate and stock market returns.

Sohail and Hussain (2009) in Pakistan examined the long run and short run relationships between stock prices and exchange rate between the Lahore Stock Exchange and Macroeconomic variables. The study employed the vector error correlation model analysis and monthly data from the period of December 2002 to June 2008. The findings of the study revealed that there was a negative impact of consumer price index on stock returns, while industrial production index, real effective exchange rate and money supply had a positive significant effect on stock returns in the long run.
Plinkus and Boguslankas (2009) examined the short run relationship between stock market prices and macroeconomic variables in Lithuania. The study employed time series analysis using monthly data from the period of January 2000 to June 2009. The findings of the study concluded gross domestic product and money supply have a strong positive effect on stock market prices in the short run while employment rate, exchange rate, short-term interest rates cause opposite movements for the stock prices.

Jamil and Ullah (2013) examined the impact of foreign exchange rates on stock prices for Pakistan employing the co-integration technique and vector error correction mechanism using monthly data from 1998 to 2009. The study found out that a relationship exists between exchange rates and stock market returns both in the short run and long run. The short run period was found to have a positive but significant relationship, while the long was not significant. The short run sensitivity of stock market returns to exchange rates indicates that the investments on the market are short term and majority of investors liquidate their stock within one year.

Aurangzeb (2012) examined the factors affecting performance of stock market of South Asian countries and drew the same conclusion. The study employed descriptive studies for its analysis, using monthly data for the period of 1997 to 2010 of three South Asian countries namely, Pakistan, India and Sri Lanka. The findings of the study indicated that the exchange rates have significant positive impact on the performance of stock market of South Asia.

In a study undertaken by Cheng, Tzeng and Kang (2011) to establish the impact of Non-Macroeconomic events on Taiwan electronic stock index returns, found that the exchange rate had significance and a positive effect on stock returns. The study used multiple regression analysis, with industrial production, money supply and exchange rates as the independent variables. Hsing (2011) on the other hand examined the effects of selected macroeconomic variables on the stock market index of Johannesburg Stock Exchange in South Africa. This study using the Exponential Generalized Autoregressive Conditional Heteroskedasticity model-EGARCH concluded that there was a positive relationship between the exchange rate and the stock market returns (Hsing, 2011).
Adarmola (2012) had similar findings when the author investigated exchange rate volatility and stock market behavior in Nigeria using quarterly data for the period of 1985 to 2009. The study found out that exchange rate has a significant impact on Nigerian stock market both in the long and short run. The study showed that in the short run the exchange rate had a positive impact as opposed to the long run which had a negative impact.

Adjasi, Harvey and Agyapong (2008) conducted a study in the Ghanaian Stock exchange on the effect of exchange rate. The study employed the exponential generalized autoregressive conditional heteroskedasticity with data from the period of 1995 to 2005. The findings of the study concluded that the exchange rate volatility and the stock market returns had a negative relationship. This study went on to specify that a reduction in stock prices reduces the wealth of local investors which leads in the reduction of liquidity in the economy.

According to a study done by Coleman and Tettey (2008) on the effect of foreign exchange-rate volatility on foreign direct investment in Sub-Saharan Africa, a case of Ghana, it was observed that any losses from the exchange rates did not affect the equities on the market, but the shareholders benefited from the market. Autoregressive conditional heteroskedasticity and Generalized autoregressive conditional heteroskedasticity models were employed to determine the real exchange rate volatility as cointegration and equity capital markets were used to determine both short term and long-term relationships. The study used time series data covering the period of 1970-2002.

According to the Daily Nation newspaper 2008, performance of the Nairobi stock exchange had not been spared by the global economic meltdown that had hit African countries as well as the Asian. The year of 2008 saw the NSE 20-share index drop by 40%, a performance witnessed in other regional securities. The NSE 20-share index went on losing 1983.49 points. Kenyan stock market was not the only victim of this downfall as the Egyptian Exchange suffered the same fate by losing 33% on its 30-index. Looking at these numbers, one Mr. Mwebesa of the NSE blamed the exit of foreign investors for this poor performance as they are key players of the foreign currency that plays a huge part in the rates. Foreign participation in the stock market is said to be growing and in the month of June 2008 it had
grown to about 55%. It is clearly observed that Kenya is highly dependent on international trade for capital goods (Daily Nation, 2008).

Sifunjo and Mwasaru (2012) used Johansen consideration procedure and error correction model for their analysis on the casual relationship between NSE equity prices and foreign exchange rate. Their study used monthly data from November 1993 to May 1999. Their study found a significant positive relationship in the long run as opposed to the short run.

A study by Cheng, Tzeng and Kang (2013) looked at the effects of volatility spillovers for firm performance and exchange rates with focus on Taiwan. This study was based on two conditional multivariate models, BEKK-AGARCH and VARMA-AGARCH in the volatility specification and daily Data from 1 July 2008 to 29 June 2019 for 999 firms. The findings of the study found a negative correlation between exchange rate returns and stock returns. According to Aroni (2012) his analysis on factors influencing stock prices firms listed in the NSE bore results that showed negative correlation between foreign exchange rate fluctuation and stock returns.

On the other hand, Olweny and Omondi (2011) studied the effects of macroeconomic factors on stock return volatility on the Nairobi Securities Exchange. The study focused on the effects of foreign exchange rate, interest rate and inflation on stock return volatility at the NSE. Monthly time series data was used for the period of 10 years between January 2001 and December 2010 employing EGARCH and TGARCH as their analysis models. The findings of the study concluded that foreign exchange rate affect stock return volatility negatively.

2.3 Money Supply and the Stock Market Returns
According to Jess and Alfred (2009) money supply is considered one of the components of monetary policy for the Central Bank of Kenya. There is chance that there will be a possible anticipation or un-anticipation of money supply by the people in a country. Money supply can further be divided into multiple categories such as M1, M2 and M3. This is a classification according to the type and size of the account in which the instrument is kept.
M1 is identified as the currency held by public plus demand deposit. M2 on the other hand is equivalent to M1 plus savings and time deposits that are licensed by banks and held by the public. M3 is equivalent to M2 including deposits with restricted licensed banks and companies that take deposits, also held by the public (Jess & Alfreed, 2009).

Ahmed (2011) acknowledged that there are no disputes when it comes to justifications in the relationships between macroeconomic variables and the stock market returns. Using the monetary portfolio theory, investors understand how changes in money supply can be used to contrast the equilibrium position of money which in turn changes the composition and prices of assets in the investment portfolio. Ahmed (2011) investigated the long relationship between three macroeconomic variables: money supply, real gross domestic product and price level in the Sudanese economy. The study used annual data between the periods of 1960 to 2005 employing granger causality test to determine the short run direction of causality between the variables and cointegration analysis to investigate the existence of a long run relationship between the variables. The study concluded that money supply showed a significant long-term relationship with the stock market returns.

Barnor (2014) examined the effect of macroeconomic variables: inflation rate, exchange rates, interest rates and money supply on stock market returns in Ghana or the Ghanaian Stock Market. The study employed time series data analysis between the periods of January 2000 and December 2013 to determine whether there was a statistically significant relationship between the selected macroeconomic variables and the Ghanaian stock market exchange. The results of the study revealed that the exchange rates denoted by the US Dollars had a significant positive effect on the Ghanaian stock market whereas inflation represented by the wholesale price index did not significantly affect the stock market returns. However, interest rates and money supply represented by M2 had a negative effect on the stock market returns.

Sangmi and Hassan (2013) analyzed macroeconomic variables on stock market interactions. To examine the effects of the macroeconomic variables on the stock price returns in the Indian stock market, the study focused on six macroeconomic variables: inflation, exchange
rate, industrial production, money supply, gold price, interest rates as the independent variables and Senex, Nifty and BSE 100 as the dependent variables representing the stock market. The study used monthly series data for the period of April 2008 to June 2012 employing multiple regression analysis to construct a quantitative model showing the relationship between the independent variables and stock price. The results of the findings concluded that there was a significant relationship between the selected macroeconomic variables and the stock price in the Indian stock market.

Zaheer and Kashif (2014) investigated the relationship between Karachi stock market 100 index and macroeconomic variables: inflation, industrial production, money supply, exchange rate and interest rate using monthly data spanning between the periods of 2001 to 2011. The study employed Johnson co-integration test, Augmented Dicky Fuller and Phillip Perron tests to analyses the long-term relationship between the macroeconomic variables and stock market returns. The study also used the autoregressive conditional heteroskedasticity Lagrange multiplier test to determine the presence of heteroskedasticity which was evident. The generalized autoregressive conditional heteroskedastic model was employed to determine the relationship between the stock returns and the variance of the squared error terms in the trend of the data. The results of the findings revealed that consumer index, money supply, exchange rates and interest rates had a negative association with the stock returns whereas industrial production had a positive association with the stock returns. The study concluded that all the variables were significantly associated to the stock market except inflation.

Naik (2013) studied the relationship between the Indian stock market index or BSE Sensex and the following macroeconomic variables: industrial production index, wholesale price index, money supply, treasury bills rates and exchange rates. Using Johansen’s co-integration and vector error correction model for their analysis, they drew results that indicated a positive relation to money supply in the long run. Through this study the author established that money supply affects stock prices only in the long run but no causality from stock price to money supply changes have an indirect effect through their effect on real output which in turn impact the stock prices.
Brahmasrene and Jiranyakul (2007) examined the relationship between stock market index and selected macroeconomic variables: Consumer Price index, money supply, interest rates and nominal exchange rates during the post financial liberation and post financial crisis in Thailand stock market. The study employed Johansen cointegration model and used monthly data from the period of January 1992 to December 2003. The results of the study revealed that a positive relationship between money supply and the stock market existed.

Buyuksalvarci (2010) analyzed the effect of select seven variables of macroeconomics in the Turkish stock Exchange Market using the Arbitrage Theory framework. Multiple regression method was used in processing the data of the seven macroeconomic variables which included the consumer price index, money market interest rate, gold price, industrial production index, oil price, foreign exchange rate and money supply as the independent variables and the Turkish stock market index with focus on the Istanbul stock exchange index-100 as the dependent variable. The study employed data on a monthly basis over the period of January 2003 to March 2010. The results indicated that interest rate, industrial production index, oil prices, foreign exchange rate had a negative effect while money supply had a positive impact on the ISE-100 Index returns. The study also concluded inflation rate and gold price have no significant effect on ISE-100 Index returns (Ahmet Buyuksalvarci, 2010).

Shiblee (2009) conducted a study on the impact of inflation, gross domestic product, unemployment and money supply on stock prices on New York exchange. The study employed and used data from the federal reserve during the period of 1994 to 2007. The findings of the study concluded that money supply and inflation showed strong positive influence while other factors did not quite give a feasible influence on the companies selected for the study.

Osamuonyi and Eybayiro-Osagie (2012) arrived at the same findings when they looked to determine the relationship between macroeconomic variables and the Nigerian capital market index. The study using yearly data looked at the following variables: interest rates, inflation rates, exchange rates, fiscal deficit, gross domestic product and money supply from 1975 to
2005 to study the short-run changes as well as the long-run relationship between the stock market and the mentioned variables in the Nigerian economy. The study found out that money supply represented by M2 had a significant but negative relationship with stock market index in both short-run and long-run. Studies have tried to further explain the relationship between money supply and stock returns by hypothesizing that the growth rate of money supply would affect the economy and in turn the expected stock returns. Money supply growth would indicate excess liquidity available for purchasing securities, making security prices to go higher. An increase in money supply would lead to inflation and may increase discount rate and a reduction of stock prices.

Cagli, Halac and Taskin (2010) investigated the relationship between money supply and equity returns on the Turkish Stock market. The study used Gregory-Hanses test and monthly data between the period 1992 to 2003. The study revealed that the Istanbul Stock Exchange National-100 or ISE-100 cointegrated with gross domestic product, United States crude oil prices and industrial production but not with money supply.

Sulaiman, Adnan, Jalil and Adnan (2009) carried out an empirical investigation between money supply, government expenditure, output and prices in the Pakistani market. The study employed the Johnson co-integration test together with granger causality test, with annual data from the period of 1977 to 2007. The findings of the study showed that public expenditure and inflation had a negative relation to the economic growth in the long run while money supply presented by M2 had a positive impact on the economic growth yet a negative relation to the stock.

Investigation done by Ratanapakron and Sharma (2007) on the relationship between the United States Stock price index and six macroeconomic variables, industrial production, money supply, treasury bill rate, government bond rate, inflation and Japanese Yen against the US Dollar exchange rate between the period of 1975 and 1999, observed that there was a positive relationship between the stock prices and money supply in the long term.
Shaoping (2008) discussed the effects of the changes in macroeconomic factors with money supply being one of the variables on the development of equity returns. The author confirmed a positive effect of the money supply on the development of the said equity returns in the periods between 2005 and 2007 employing the Johnson co-integration test. His study found the existence of a long-term stable relationship between equity market performance and monetary aggregate and similarly the market performance and money supply had a positive co-integration.

According Sirucek (2010) the macroeconomic factors that have an influence in the development of stock returns are the interest rates, inflation, gross domestic products, money supply, the movement of international capital changes in exchange rates, political and economic shocks. He added that the most important variable influencing the development of stock prices in the long term is the amount of money in circulation or in the economy in our case money supply. Other studies indicate that negative effects can be countered by economic stimulus provided by money growth, also known as the corporate earnings effect, which may be responsible in increasing future cash flows and stock prices.

2.4 Inflation and the Stock Market Returns

Inflation is said to be a complex economic phenomenon that has been having an extensive attention of the macroeconomists, policymakers and the central bankers in both developed and developing countries. It has been a subject of the macroeconomics and one of the principal concerns of the policymakers and the public. Tucker (2007) refers to inflation as an increase in the general price level of goods and services in the economy. Inflation is an increase in the overall average level of prices and not an increase in any specific product. The impact of inflation on the economy are diverse and can have both positive and negative effect.

According to Tucker (2007) the negative effects look to be more pronounced and comprise a decrease in the real value of money as well as other monetary variables over time. This results to uncertainty over future inflation rates and conversantly discourage investment and savings, and if the inflation levels have a significant rise, it may result to shortages of goods
as consumers begin to purchase in plenty with the assumptions that prices may increase in
the near future. Inflation is seen by many as negative news by the stock market as it looks to
hamper consumer spending and therefore company earnings.

Lee (2009) conducted a study to investigate the relationship between equity return and the
inflation by re-examining the market in the pre-war and post-war by using longer sample
period of the United states and International data. The study observed that there was
overpricing with high inflation in the pre-war periods. This concluded that indeed, the
mispricing component plays a key role in the equity market and inflation relation in both the
periods. Lee (2009) observed that the relations in the pre-war and post-war periods were
consistent.

Inflation is regarded as one of the most compelling macroeconomic variables, which has a
negative effect on monetary movement (Rostagno, Motto & Christiano, 2010). It is identified
on the premise of value lists which are the likes of the gross domestic product deflator,
consumer price index and maker value file. Further exploration demonstrated its outcome as
a negative relationship of the stock market returns particularly in the pre-war periods. Such
relationship was acknowledged as a key exploration result as opposed to looking at the gleam
of Fisher speculation and sight that was set up as normal stock can come to eventually be of
support against inflation (Yahyazadehfar, Shams & Matan, 2012).

Geetha, Mohidin, Chandran and Chong (2011) conducted a study on the relationship between
inflation rates and stock markets in United States, Malaysia and China. The study employed
vector error correction model using monthly time series secondary data from the period of
January 2000 to November 2009. The study stated that inflation rate can be divided into
expected and unexpected inflation. Expected inflation rate is one where economist and
consumers plan on a year to year, this means that people are less likely to hold cash, overtime
money loses its value due to inflation. Unexpected inflation is one beyond expectation of
economists and consumers. In a nutshell, the effect of unexpected inflation is much more
harmful than the effects of expected inflation. Major effect of unexpected inflation is a re-
distribution of wealth from lenders to borrowers.
Liu and Shrestha (2008) analyzed the long-term relationship between macroeconomic variables and the Chinese stock market using heteroscedastic cointegration. The study used exchange rate, inflation, money supply, industrial production and interest rates as the independent variables and the stock market indices as the dependent variables. Monthly data from the period of January 1992 to December 2001 was used, employing heteroskedastic cointegration to determine the relationship between the macroeconomic variables and the stock market indices. The results of the study revealed a long-term relationship between the macroeconomic variables and the stock market returns. It was established that a positive relationship existed between both industrial production and money supply with the stock market returns. However, there was a negative association between inflation, exchange rate and interest rate with the stock market returns. This concluded that the Chinese stock market was significantly affected by the macroeconomic information.

Pal and Mittal (2011) examined the impact of macroeconomic indicators on the Indian capital markets. The study’s key macroeconomic variables were: interest rates, inflation rate, exchange rates and gross domestic savings of the Indian economy which were the independent variables whereas the BSE 30 Share Sensex and S&P Nifty 50 Share indexes as the dependent variables. The study used quarterly time series data spanning the period from January 1995 to December 2008 employing the unit root test, the cointegration test and error correction mechanism to test for both short term and long-term relationship between the variables in the study. The results of the study established a long-term relationship between macroeconomic variables and the Indian Stock indices. Inflation showed a significant impact on both the BSE and Nifty indices whereas interest rates and exchange rates showed significant impact on the Nifty and BSE Index respectively. The gross domestic savings was insignificant to both indices.

Bordo, Dueker & Wheelock (2008) examined the relationship between inflation, monetary policy and United States stock market conditions. The study employed a hybrid latent-Variable VAR and used monthly data from the period of August 1952- December 2005 including six flags in the Qual-VAR autoregressions. The model allowed data to partly identify market conditions guided by their classifications of periods of exceptionally rapid
and prolonged increase in the real stock prices when there are booms and declines. The findings of the study concluded that inflation has large negative impact on stock market conditions, apart from their real effects on asset prices.

Reddy (2012) conducted a study on the impact of inflation and GDP on stock market returns in India. The study used regression analysis and monthly data spawning from the period of 1997 to 2009. This study concluded that a reduction in inflation rate resulted in increased stock prices. The regression analysis showed that the variable accounted for up to 95.6%.

Mohammad (2011) conducted a study on the impact of changes in selected microeconomic and macroeconomic variables on equity market performance in Bangladesh. The study employed multivariate regression model computed on standard ordinary least square formula and granger causality test. Monthly data for all the variable under study were examined, covering the period from July 2002 to December 2009. The study concluded that there was a negative relationship between equity market performance and inflation including foreign remittance, whereas market price per earnings and growth in equity market capitalization had a positive influence on the market returns. There was no unidirectional granger causality found between the returns and any of the independent variables according to the study. This means that the market was inefficient due to lack of the granger causality.

A study conducted by Walid, Chaker, Masood and Fry (2011) attempted to formulate the relationship between the stock market returns against the inflation levels. The outcome of their empirical work suggested that the level of inflation affects share price index both in the short run and long run. Tripathy and Kumar (2014) investigated the long-term relationship between inflation and stock market returns in the Brazilian, Russian, Indian and Chinese markets. The study employed panel data for the period between 2003 and 2013. The findings of the study revealed a significant negative relationship between inflation rate and stock index in Russia and a significantly positive relationship for India and China.
Kuwornu and Victor (2012) investigated the relationship between macroeconomic variables and stock market returns in Ghanaian market. The study employed the ordinary least square estimation model using monthly data from the period of 1992 to 2008. The findings of the study concluded that a significant relationship between stock market returns and the consumer price index existed. According to Ouma and Muriu’s (2014) study of the impact of the various macroeconomic variables on stock returns at the Nairobi stock exchange, they found that money supply, exchange rate and inflation having a significant impact on the stock market returns in Kenya. The study used arbitrage pricing theory and capital asset pricing model for monthly data during the period of 2003 to 2013. Ordinary least square technique was also applied to test the validity of the model and the relative importance the different variables and their impact on stock returns. The findings of the study revealed that inflation had a positive significant impact on the stock market returns.

Barasa (2014) investigated the determinants of stock market performance at the Nairobi Securities exchange. The study employed a descriptive research design using secondary data for the period 2000 to 2013. The study revealed that the NSE 20-Share Index including the CPI as inflation, money supply and GDP per Capita diminished just before, during and immediately after the general elections. The study also revealed that the relationship between inflation and the stock market performance was inverse. The conclusion was that the relationship between inflation and the stock market performance is inverse and insignificant.

Khan and Yousuf ‘s (2013) study examined the influence of a selective set of macroeconomic forces on stock market prices in Bangladesh. The Dhaka stock exchange All share price index-DSI was used to represent the prices in the stock market while interest rates, exchange rates, consumer price index, crude oil and money supply were the selected macroeconomic variables affecting the stock returns. The study employed cointegration technique, vector error correction model, impulse response functions and variance decompositions using monthly data from period 1992 to 2011. The findings of the study revealed that interest rates, crude oil prices and money supply had a positive impact on stock market returns where as inflation does not have an impact on stock prices in the long run.
2.5 Chapter Summary

This chapter presented the literature review based on the following research objectives; to find out the effects of exchange rates on the performance of the NSE 20 Share index in Kenya, to establish the effects of money supply on the performance of NSE 20 Share index in Kenya and to determine the effects of inflation on the performance of the NSE 20 Share index in Kenya. Chapter three discusses the research methodology that is used in the study to collect data.
CHAPTER THREE

3.0 RESEARCH METHDOLOGY

3.1 Introduction
This chapter explains the general methodology applied in this research. It aimed to describe the research design, the population, sampling design, data collection methods, research procedures and data analysis including the presentation methods to be utilized in this research.

3.2 Research Design
Research design is referred to as the plan, structure and strategy of research. It is a blueprint that will guide the research process. Borg, Gall and Gall (2007) defined research as a detailed outline on how research will take place. It clearly defines the methods and procedures that will be used to collect and analyze data. Saunders, Lewis and Thornhill (2016) defined it as a framework for the collection and analysis of data to answer research questions and meet research objectives providing reasoned justification for choice of data sources, collection and analysis techniques.

This study employed a descriptive research design. Flick (2009) noted that descriptive research design is one that has become widely accepted in the field of finance and economics as it is proving to be extremely useful in policy evaluations. According to Saunders, Lewis and Thornhill (2009) the object of descriptive research is one which portrays an accurate profile of persons, events or situations. It may be an extension of or a forerunner to a piece of exploratory research or often a piece of explanatory research. Further, the correlational approach was employed by the study to describe the relationship between the independent and dependent variables. Cooper and Schindler (2014) asserted that one of the objectives of descriptive studies is the discovery of associations among different variables. The objective is at times labeled a correlational study, a sub set of descriptive studies.

The study aimed to investigate the impact of the selected macro-economic variables on the stock market performance in Kenya. The research used secondary data available in its quest to collect all relevant information needed. Descriptive research design was appropriate for the study as it helped the researcher report situations as observed before producing relevant
The study used quantitative data collection techniques which included data analysis procedures that entailed the use of graphs to generate or use numerical data. The main objective of this study was to provide a clear understanding of which macro-economic variables had a significant impact on the stock market performance in Kenya.

3.3 Population and Sampling Design

3.3.1 Population

A research population is normally a large collection of individuals or object that is the focus of a scientific query. It is usually for the benefit of the population that researches are done. Cooper and Schindler (2014) defined a population as the total collection of individuals whom researchers seek to make inference on. Borg, Gall and Gall (2007) defined a target population as an entire group of people, events or things that the researcher intents to investigate.

The target population for this study was the companies listed on the Nairobi Stock Exchange market between the period of 2008 to 2013 focusing on 20 companies listed and included in the NSE 20 Share Index: Industrial and Commercial Development Corporation, Kenya Electrical, Mumius Sugar Company, Rea Vipingo, CMC Holdings, Express Limited, Nation Media Group, Sasini, Kenya Airways, Safaricom, Barclays, Equity, Kenya Commercial Bank Standard Chartered, Bamburi Cement, British American Tobacco, East African Breweries Limited, East African Cables, Kenya Power and Lighting Company and Athi River Mining.

3.3.2 Sampling Design

3.3.2.1 Sampling Frame

Cooper and Schindler (2014) noted that a sampling frame is a list of elements from which the sample is collected and closely associated to the population. According to Saunders (2016), from the sampling frame the required number of subjects, respondents, elements and firms are chosen to make up a sample. It was therefore important that the sampling frame was unbiased, current and accurate. This study aimed to examine all 20 companies listed on the NSE 20 share index which made up the sampling frame. This was the entire population of the study.
3.3.2.2 Sampling Technique

According to Saunders, Lewis and Thornhill (2016) the sampling frame for any probability sample is a complete list of all the cases in the target population from which the sample will be drawn. It is considered essential as the methodology applied is used to determine whether the sample of the study is a true representation of the whole population from which it is drawn or not. The findings from the study was assumed as a true representative of the study population (Copper & Schindler, 2014).

This study targeted 20 companies listed in the NSE 20 Share Index in Kenya thus census was used to collect its data. The use of census is normally employed as it provides a true measure of the population. As a result, no sampling technique was necessary because the research employed the entire population.

3.3.2.3 Sample Size

A sample can be defined as a group of cases consisting of a part of the target population that a researcher carefully selects for analysis of their study in order to determine facts about that population (Schindler & Cooper, 2014). A larger population size means a smaller percentage of the population required to receive a representative sample. However, the authors concluded that for desired precision of the estimate, the larger the sample should be (Schindler & Cooper, 2014). The study examined 20 companies listed on the NSE 20 share index to determine the impact of the selected macro-economic variables on the stock market returns in Kenya. The sample of the study was therefore the 20 companies listed on the NSE 20 share index.

Table 3.1: Sample Size Distribution Table

<table>
<thead>
<tr>
<th>Population</th>
<th>Sample</th>
<th>% Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>20</td>
<td>100</td>
</tr>
</tbody>
</table>

3.4 Data Collection Methods

Data collection can be defined as the process of gathering and measuring information to answer questions that prompted the undertaking of the research (Flick, 2009). The study involved the use of secondary data. According to Saunders et al (2016) secondary data refers
to data that was collected initially for some other purpose and can be further analyzed to provide additional or different knowledge, interpretations and conclusions. Secondary data for the dependent variable of the study was obtained from the NSE historical financial reports on the market performance of the companies which span from a period of 2008 to 2013. The study specifically used the NSE 20 share index as the dependent variable to measure the stock market performance.

The study also obtained data to study the independent variables: exchange rates, inflation and money supply from the Kenya National Bureau of Statistics website and the Central Bank of Kenya.

3.5 Research Procedures
Research process or procedures is simply actions undertaken by the researcher to collect data required for the study. Since the study used secondary data, information was collected from the Nairobi Stock Exchange. The NSE contains enough accurate secondary data for the study specifically for the dependent variable in the study. The Kenya National Bureau of Statistics provided data on inflation which was represented by the Consumer Price Index whereas the data on the exchange rates and money supply was collected from the CBK website. The Kenya National Bureau of Statistics and Central Bank of Kenya are credible sources that contain accurate secondary data for the study’s independent variables.

3.6 Data Analysis Methods
The study involved the use of descriptive and inferential statistics in the analysis of data which helped to establish the relationship between the three independent variables and the dependent variable which was the NSE 20 share index that represents the stock market performance. The independent variables included the macro-economic variables; exchange rates, inflation and money supply. The dependent variable was the NSE 20 share index that carries the 20 companies that will be under study.

According to Cooper and Schindler (2014) descriptive studies refer to methods of organizing and summarizing data. For this study frequencies and percentages were used as well as measures of central tendency, presented through graphs and tables to organize data for easy reference and communication.
Inferential statistics refer to methods of drawing conclusions from sample data about a population (Cooper & Schindler, 2014). For this study, regression and correlation analysis was used to determine the nature and the strength of the relationship between the independent and the dependent variables. When it came to analysis, correlation was used together with regression analysis to measure how well the line of regression varies with the dependent variable. The two methods are based on the association between two or more variables. Statistical package for social sciences and Excel were used as analytical tools in the study.

3.6.1 Measures of Variables

Sangmi & Hassan (2013) examined macroeconomic variables that had interactions on the stock market in India. The authors used six variables: inflation, exchange rates, industrial production, money supply, gold price, interest rate as their independent variables and the BSE 100 as the dependent variable in their study, with secondary monthly data spanning a period of 5 years.

Their study argued that using the growth change between the monthly variables would give more precise and accurate values as opposed to using raw figures. The research employed the formulas in Sangmi & Hassan’s (2013) study to measure the variables in the study.

3.6.1.1 The Stock Market Index

The Stock indices employed are NSE 20 Share Index. Firstly, from the daily closing price index, the quarterly average price index is calculated. Then, the stock market return is calculated by the following formula.

\[ MR = \left\{ \frac{(M_t - M_{t-1})}{M_{t-1}} \right\} \times 100 \]

Where, \( M_t \) = Average quarterly closing price index of t time.

\( M_{t-1} \) = Average quarterly closing price index of t-1 time.

3.6.1.2 Exchange Rates

Quarterly change in average exchange rate (USD) is used and calculated using the following formula.
ER= (ER_t-ER_{t-1})

Where, ER_t= Quarterly average exchange rate in time t.
ER_{t-1}= Quarterly average exchange rate in time t-1.

3.6.1.3 Money Supply

Quarterly change in average money supply (KSH) is used and is calculated using the following formula.

MS= \{(M3_t-M3_{t-1})/M3_{t-1}\} * 100

Where, M3_t= Average supply of money quarterly
M3_{t-1}= Average supply of money quarterly of time t-1

3.6.1.4 Inflation Rate

Inflation has been calculated from the weighted average Consumer Price Index as per the following formula.

IF= \{(CPI_t-CPI_{t-1})/CPI_{t-1}\} * 100

Where, CPI_t= Weighted average quarterly CPI in time t.
CPI_{t-1}= Weighted average quarterly CPI in time t-1.

3.6.2. Base Value

The study considered data between the period of 2008 to 2013 and due to this, the first value of every quarter assumed a base value of zero to represent the change in both the dependent and independent variables.

3.6.3 Analytical Model

The unit of analysis of this study was the NSE 20 Share Index which was obtained from the Nairobi Securities Exchange. Other selected variables were the independent variables: exchange rates, inflation and money supply.
The study analytical model was depicted by the following regression model:

\[ Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon \]

Where:

Y - Stock Market Return - percentage change in the NSE 20 Share Index.

X_1 - Exchange rate - growth change in US dollar exchange rate.

X_2 - Money supply - percentage change in monetary base (M3); the sum of currency in circulation, and reserve balances (deposits held by banks and other depository institutions in their accounts at the federal Reserve).

X_3 - Inflation - percentage change in the consumer price index

\( \alpha \)- constant coefficient of the firms under study

\( \beta \)- Determines the relationship between the independent variable and the dependent variable or the gradient of the regression measuring the amount of the change in Y associated with a unit change in X.

\( \varepsilon \)- Error term

3.7 Chapter Summary

This chapter clearly described the research methodology that the research used to accomplish the objectives of the study. This chapter presented the research methodology under the following sections; research design, population, sampling frame, sampling technique, sample size, data collection and data analysis. The following chapter covered data analysis and presentation of the findings of this research.
CHAPTER FOUR

4.0 RESULTS AND FINDINGS

4.1 Introduction
The purpose of this study was to analyze which macroeconomic variables had a significant impact on the stock market returns in Kenya. This chapter presented the outcome of the study and their interpretation. The chapter provided results on the independent variables: exchange rates, inflation and money supply as well as the NSE 20 Share Index which is the dependent variable. It also presented results based on the three research objectives.

4.2 Descriptive Statistics and Trends on the Main Research Variables
The data collected spanned the period between 2008 to 2013 which was obtained in quarters. The study targeted a sample of 20 companies that make up the NSE 20 Share Index as at 31st December 2013. The study obtained the required data regarding all the listed 20 companies in the NSE 20 Share Index, meaning the study attained a 100% return rate.

The purpose of the study was to determine which macroeconomic variables had a significant impact on the stock market returns in Kenya, the case being 20 listed companies in the Nairobi stock exchange 20 Share Index. The specific objectives of the study were: to find out the effects of exchange rates on the performance of the NSE 20 Share index in Kenya, to establish the effects of money supply on the performance of NSE 20 Share index in Kenya and to determine effects of inflation on the performance of NSE 20 Share index in Kenya.

4.2.1 Descriptive Statistics and Trend on the Percentage Change in the NSE 20 Share Index

From the descriptive analysis in table 4.1 it can be noted that the year of 2010 recorded the highest value for the NSE 20 Share Index as shown by the mean value of 8.138 while the year 2008 recorded the lowest value for the NSE 20 Share Index with a mean of -10.358. The standard deviation described variability in percentage of the NSE 20 Share Index in the 6-year period, with the highest deviation being 17.909 in 2008 and lowest being 3.761 in 2012.

Table 4.1: Descriptive Statistics on the Percentage Change in the NSE 20 Share Index

<table>
<thead>
<tr>
<th>Year</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>-33.643</td>
<td>6.811</td>
<td>-10.358</td>
<td>17.909</td>
</tr>
<tr>
<td>2010</td>
<td>-0.264</td>
<td>15.505</td>
<td>8.138</td>
<td>7.041</td>
</tr>
<tr>
<td>2012</td>
<td>0.273</td>
<td>9.234</td>
<td>5.419</td>
<td>3.761</td>
</tr>
<tr>
<td>2013</td>
<td>-0.643</td>
<td>10.410</td>
<td>4.676</td>
<td>4.535</td>
</tr>
</tbody>
</table>

The study was determined to establish the trends of the NSE 20 Share Index using a line graph which was presented by figure 4.1 below. The diagram below revealed the NSE 20 Share Index to be fluctuating each year in the period of study.

Figure 4.1: Percentage Change in the NSE 20 Share Index
The study sought to find out the trend in the NSE 20 Share Index in the period 2008 to 2013 per quarter. The study observed that throughout the study period the NSE 20 Share Index had an irregular rise and fall. Figure 4.1 revealed high volatility in the index value with maximum returns recorded in the year of 2010 and minimum returns in the year of 2009.

4.2.2 Descriptive Statistics and Trend on the Growth Change in Exchange Rate (USD)

Foreign exchange rate was understudy and the study opted to use the US Dollar. This currency is regarded the strongest and it is also the most traded foreign currency in Kenya besides in the Nairobi Securities Exchange. The study used the US Dollar exchange rates from the period of 2008 to 2013 to analyze data.

From the descriptive studies below, it was established that the year 2011 recorded the highest value of exchange rate as shown by the mean value of 3.322 while the year of 2012 recorded the lowest value of -2.080. The standard deviation depicted variability in percentage exchange rates in the 6-year period recording the highest deviation of 6.362 in the year of 2008 and the lowest in 2010 with a deviation of 1.232.

### Table 4.2: Descriptive Statistics on the Growth Change in Exchange Rates

<table>
<thead>
<tr>
<th>Year</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>-5.262</td>
<td>9.097</td>
<td>2.429</td>
<td>6.362</td>
</tr>
<tr>
<td>2009</td>
<td>-2.180</td>
<td>1.992</td>
<td>-0.619</td>
<td>1.808</td>
</tr>
<tr>
<td>2010</td>
<td>-0.364</td>
<td>2.455</td>
<td>1.359</td>
<td>1.232</td>
</tr>
<tr>
<td>2011</td>
<td>0.802</td>
<td>6.864</td>
<td>3.322</td>
<td>2.692</td>
</tr>
<tr>
<td>2012</td>
<td>-9.743</td>
<td>1.277</td>
<td>-2.080</td>
<td>5.140</td>
</tr>
<tr>
<td>2013</td>
<td>-2.149</td>
<td>2.650</td>
<td>0.083</td>
<td>2.229</td>
</tr>
</tbody>
</table>

The study sought to establish the trends of the exchange rates in US Dollars using a line graph which was presented by figure 4.2 below. The trend revealed a high volatility for the exchange rates between the quarters of 2008 to 2013. The irregular rise and fall saw the exchange rates record a maximum value in 2008 and a minimum value in 2012.
4.2.3 Descriptive Statistics and Trend on the Percentage Change in Money Supply (M3)

From the results of the descriptive study presented in table 4.3 below, it was be noted that the year of 2010 recorded the highest percentage value of money supply presented by M3 in the country as shown by the mean value of 5.059 while the year of 2008 recorded the lowest value of 2.423. In addition, values for standard deviation depicted variability in value of money supply in the country in the 6-year period with the highest deviation recorded at 2.361 in the year of 2008 and the lowest deviation of 1.358 recorded in the year of 2013.

Table 4.3: Descriptive Statistics on the Percentage Change in Money Supply

<table>
<thead>
<tr>
<th>Year</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>0.000</td>
<td>4.770</td>
<td>2.423</td>
<td>2.361</td>
</tr>
<tr>
<td>2009</td>
<td>0.991</td>
<td>4.649</td>
<td>3.409</td>
<td>1.650</td>
</tr>
<tr>
<td>2010</td>
<td>2.941</td>
<td>6.371</td>
<td>5.059</td>
<td>1.487</td>
</tr>
<tr>
<td>2012</td>
<td>0.223</td>
<td>4.800</td>
<td>3.305</td>
<td>2.134</td>
</tr>
<tr>
<td>2013</td>
<td>1.868</td>
<td>4.686</td>
<td>3.213</td>
<td>1.358</td>
</tr>
</tbody>
</table>
The study looked to establish the trend of money supply in the country. M3 which is the extended broad money in Kenya shillings, was presented in a line graph as shown in figure 4.3 below.

The results of the study revealed that money supply fluctuated through the quarters of 2008 to 2013. The trend in figure 4.3 revealed that money supply was highly volatile as well between years 2008 and 2013 with the lowest recorded supply value noted in 2012 and the highest value in 2010.

![Percentage change in Money Supply](image)

**Figure 4.3: Percentage Change in Money Supply (M3)**

### 4.2.4 Descriptive Statistics and Trend on the Percentage Change in Inflation (CPI)

Inflation can be investigated by calculating the trends of the CPI. CPI is seen as a measure of the weighted average change in retail prices paid by consumers for a given basket of goods and services. The study used the consumer price index of Kenya between the years 2008 to 2013 in the analysis.

The study conducted a descriptive analysis and noted that the year of 2011 recorded the highest percentage value in consumer price index as shown by the mean value of 4.288 whereas 2012 recorded the lowest value of 0.854. Values for standard deviation depicted variability in exchange rates during the 6-year period with the highest deviation recorded at 2.251 in 2008 and the lowest value of 0.471 being recorded in the year 2010. This information was presented by table 4.4 below.
Table 4.4: Descriptive Statistics on the Percentage Change in the CPI

<table>
<thead>
<tr>
<th>Year</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Std Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>0.000</td>
<td>5.381</td>
<td>2.457</td>
<td>2.251</td>
</tr>
<tr>
<td>2009</td>
<td>0.961</td>
<td>3.138</td>
<td>1.897</td>
<td>1.037</td>
</tr>
<tr>
<td>2010</td>
<td>0.607</td>
<td>1.616</td>
<td>0.938</td>
<td>0.471</td>
</tr>
<tr>
<td>2011</td>
<td>3.488</td>
<td>5.977</td>
<td>4.288</td>
<td>1.139</td>
</tr>
<tr>
<td>2012</td>
<td>-1.405</td>
<td>1.947</td>
<td>0.854</td>
<td>1.539</td>
</tr>
<tr>
<td>2013</td>
<td>1.086</td>
<td>2.468</td>
<td>1.773</td>
<td>0.586</td>
</tr>
</tbody>
</table>

The study sought to establish the trend of inflation which was represented by the consumer price index in the country. A line graph was used to clearly show the trends which was presented by figure 4.4 below.

The study results revealed that the consumer price index had been fluctuating through the quarters of the period of study. Figure 4.4 observed a high volatile trend with a maximum value noted in 2011 and the minimum value noted in 2012.

![Figure 4.4: Percentage Change in Inflation (CPI)](image-url)
4.3 Inferential Statistics

4.3.1 Pearson Correlation Analysis

After analyzing the trends and the descriptive statistics, the study conducted a Pearson correlation analysis to establish a linear relationship between the dependent and the independent variables in the study. This helps in determining the strength of association in the model, that is, which macroeconomic variables have a significant impact on the NSE 20 Share Index or the stock market returns.

Table 4.5: Correlations

<table>
<thead>
<tr>
<th></th>
<th>NSE 20 Share Index</th>
<th>Exchange Rates (USD)</th>
<th>Money Supply (KSH)</th>
<th>Consumer Price Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSE 20 Share Index</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>1</td>
<td>-.562**</td>
<td>.281</td>
<td>-.365</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td></td>
<td>.004</td>
<td>.184</td>
<td>.079</td>
</tr>
<tr>
<td>N</td>
<td>24</td>
<td>24</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td>Exchange Rates (USD)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>-.562**</td>
<td>1</td>
<td>.199</td>
<td>.086</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.004</td>
<td></td>
<td>.352</td>
<td>.690</td>
</tr>
<tr>
<td>N</td>
<td>24</td>
<td>24</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td>Money Supply (KSH)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>.281</td>
<td>.199</td>
<td>1</td>
<td>-.005</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.184</td>
<td>.352</td>
<td></td>
<td>.981</td>
</tr>
<tr>
<td>N</td>
<td>24</td>
<td>24</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td>Consumer Price Index</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>-.365</td>
<td>.086</td>
<td>-.005</td>
<td>1</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.079</td>
<td>.690</td>
<td>.981</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>24</td>
<td>24</td>
<td>24</td>
<td>24</td>
</tr>
</tbody>
</table>

**. Correlation is significant at the 0.01 level (2-tailed).
The Pearson correlation was conducted to show how the variables in the study correlated with each other. Table 4.5 above established a strong negative correlation between the NSE 20 Share Index and the exchange rates as shown by the correlation factor of -0.562. The strong negative correlation was found to be statistically significant as the p value was noted to be at 0.004, which is less than 0.05 for a confidence level of 95%. The study also noted a negative correlation between the NSE 20 share index and the CPI as shown by the correlation factor of -0.365. This negative correlation was not statistically significant as the value was noted to be at 0.168 which is more than the level of significance at 0.05. Money supply was also correlated with the NSE 20 Share index and a positive correlation was noted, which was established by the correlation factor 0.281. However, the study was found to be statistically insignificant as the p value was noted to be at 0.184.

4.3.2 Regression Analysis

The study conducted a multiple regression analysis to establish the relationship between the percentage and growth changes in exchange rates, money supply, inflation and the NSE 20 Share Index. The study used statistical package for the social sciences to code, enter and compute the measurements of multiple linear regression. Table 4.6 presents the model summary.

**Table 4.6: Model Summary**

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
<th>R Square Change</th>
<th>F Change</th>
<th>df1</th>
<th>df2</th>
<th>Sig. F Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.756&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.571</td>
<td>0.507</td>
<td>7.929845</td>
<td>0.571</td>
<td>8.882</td>
<td>3</td>
<td>20</td>
<td>0.001</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Consumer Price Index, Money Supply (KSH), Exchange Rates (USD)

The study used the coefficient of determination to evaluate the model fit. The adjusted R Square also known as the coefficient of multiple determination is a percentage of the variance in the dependent variable explained by the independent variables. The study notes that the model has an adjusted R square of 0.571. This implies that 57.10% of the variation in
the NSE 20 Share index returns are explained by the independent variables in the study which are: exchange rates, money supply and consumer price index.

The study used an ANOVA table to further test the significance of the model above. The analysis conducted, established that the regression model independent variables were statistically significant with a p value less than 0.05 for a 95% confidence level in the influence of the dependent variable. This was a clear indication that the three independent variables together have a significant impact on the NSE 20 share index.

These findings were presented by the table 4.7 below.

**Table 4.7: ANOVA**

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Regression</td>
<td>1675.623</td>
<td>3</td>
<td>558.541</td>
<td>8.882</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>1257.649</td>
<td>20</td>
<td>62.882</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>2933.272</td>
<td>23</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent Variable: NSE 20 Share Index

b. Predictors: (Constant), Consumer Price Index, Money Supply (KSH), Exchange Rates (USD)

The study used the table below to represent the coefficients results of the regression analysis. As per the regression output presented in the table 4.8, the equation was represented as follows:

\[ Y = -3.996 + (-1.827) X_1 + 2.548 X_2 + (-2.120) X_3 + \varepsilon \]

The regression model below revealed that a unit change in the exchange rates while holding all the other factors constant leads to a change in the NSE 20 share index returns by a factor of -1.827. Unit change in Money supply on the other hand, holding all factors constant would influence a unit change of 2.548 in the NSE 20 Share Index returns. A unit change in the consumer price index while holding all factors constant would change the NSE 20 Share Index returns by a factor of -2.120.
Table 4.8: Coefficients

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>95.0% Lower Bound</th>
<th>Confidence Upper Bound</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td>t</td>
</tr>
<tr>
<td>1 (Constant)</td>
<td>-3.996</td>
<td>4.296</td>
<td>- .930</td>
<td>.363</td>
</tr>
<tr>
<td>Exchange Rates (USD)</td>
<td>-1.827</td>
<td>.446</td>
<td>-.615</td>
<td>-4.098</td>
</tr>
<tr>
<td>Money Supply (KSH)</td>
<td>2.548</td>
<td>.949</td>
<td>.401</td>
<td>2.685</td>
</tr>
<tr>
<td>Consumer Price Index</td>
<td>-2.120</td>
<td>1.004</td>
<td>-.310</td>
<td>-2.112</td>
</tr>
</tbody>
</table>

a. Dependent Variable: NSE 20 Share Index

The study undertook the analysis at a confidence level of 95% and implemented a criterion of using the p value of less than 0.05 in comparing whether the predictor variables were of significance. If the predictor values were not equal to or less than the probability value, then they would not be of significance to the model. From the table above all the predictor variables were of significance in the model as their values were less than 0.05. Predictor variables are also referred to as independent variables.

4.4 Chapter Summary

This chapter provided results and findings based on secondary data information obtained from the Central Bank of Kenya, Kenya National Bureau of Statistics and companies listed on the NSE. The chapter analyzed the relationship that exists between the stock market performance of the NSE 20 Share Index with the Macroeconomic variables; exchange rates, inflation represented by CPI and money supply respectively. The next chapter provides the summary, discussion, conclusion and recommendation of the findings.
CHAPTER FIVE

5.0 DISCUSSION CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter discussed and made any necessary recommendation and conclusions with regard to the findings established from the study which was to identify the macroeconomic variables that had a significant impact on the stock market return.

5.2 Summary

The general objective of the study was to identify which macroeconomic variables had a significant impact on the stock market returns in Kenya. The study was guided by the following research objectives: To find out the effects of exchange rates on the performance of NSE 20 Share Index in Kenya; To establish the effects of money supply on the stock performance of the NSE 20 Share Index in Kenya; To find out the effects of Inflation on the performance of the NSE 20 Share Index Kenya.

The study used secondary data obtained from the NSE to determine which companies were included in the NSE 20 share index for the analysis of its performance over the six-year period from 2008 to 2013. Thus, the study used census sampling technique. These companies remained unchanged over the period which fulfilled the purpose of the study. The Central Bank of Kenya and Kenya National Bureau of Statistics provided relevant data used to represent the independent variables in the study. Statistical Package for Social Sciences and Microsoft excel was used to describe the descriptive data which was analyzed through means, standard deviations and frequencies. Correlation and regression analysis were used to determine the relationship between the dependent and independent variables. The relevant information was presented by use of tables and graphs.

Descriptive analysis conducted revealed that exchange rates fluctuated in the observed period of study recording its highest value of 3.332 in the year of 2011 and the lowest value of -2.080 in 2012. The study used the growth change in the US Dollar Currency which is regarded as the strongest currency in the market. A Pearson correlation analysis was conducted between the exchange rates and the NSE 20 share index value which revealed a negative and statistically significant relationship between the two variables. The regression
model established that a unit change in exchange rates leads to a change in the NSE 20 share index returns by a factor of -1.827. This implied that with increased exchange rates there is a decline in the performance of the NSE 20 share index.

Money supply was represented by the percentage value in broad money or M3. The study conducted a descriptive analysis which revealed that money supply fluctuated throughout the study period observed, recording the highest percentage value of 5.059 in 2010 and the lowest value of 2.423 in 2008. The study conducted a Pearson correlation analysis and established that when the NSE 20 share index is correlated with money supply, a positive and an insignificant relationship is observed. The regression model established that a unit change of money supply would lead to a positive change on the NSE 20 share index by a factor of 2.548, implying that as money supply increases in the market, the NSE 20 share index performance improves and increases the stock market returns.

Lastly, the study conducted a descriptive analysis on inflation and revealed a highly volatile trend between the year of 2008 and 2013. Inflation was represented by the percentage change in the consumer price index which revealed its highest value of 4.288 in 2011 and its lowest value of 0.854 in 2012. Inflation was correlated with the NSE 20 share index value and the results from the Pearson correlation revealed a negative correlation between inflation and the NSE 20 share index. The regression model revealed that a unit change in inflation would lead to a negative change in the NSE 20 share index by a factor of -2.120 established that the higher the inflation the lower the returns in the NSE 20 share index.

5.3 Discussion

5.3.1 Effects of Exchange Rates on the performance of NSE 20 Share Index in Kenya

On analysis, the results of the study revealed variations in exchange rates in Kenya over the study period. Results from the Pearson correlation done established that exchange rates had a negative correlation to the NSE 20 share index performance, which was also statistically significant.

This is in agreement with Pilinkus (2009) who established similar results in his study that was investigating the short run relationship between stock market prices and macroeconomic variables in Lithuania with one of the variables being exchange rates. The study employed
Augmented Dickey Fuller test to check the stationary of selected time series data since a spurious regression may occur if a time series is not stationary. The study also employed impulse response function to test the existence of any short run relationship between the stock market and macroeconomic variables. The study revealed that exchange rates negatively influenced stock market returns.

Barasa (2014) argued that exchange rate movements greatly affected stock market return volatility which in turn affected the information received by the investors. When there are high fluctuations in the exchange rates, the exchange rates movements, the market return volatility would be high.

Exchange rates can greatly affect the economy, it has been identified as an important player in investment determination and global trade systems. This is observed when the appreciation of the real exchange rates leads to retarded exports, a great change in the amount of debt payment and the long-term growth of foreign direct investment (Tsen, 2011).

According to Jamil and Ullah (2013) a long run relationship between exchange rates and stock market returns is one that is negative which also agrees with results of this study. Their study suggested that in the short run the relationship was negative and significant because the short run sensitivity of stock market returns to exchange rates indicates that the investments in the stock market are short term and investors tend to liquidate their stock within one year. The results of this study also implied that with increase in exchange rates the performance of the NSE 20 share index will decline.

However, the results are not supported by Yau and Njeh (2008) who argued that the relationship between stock market returns and exchange rates is normally of an increasing debate. They conducted a study on the relationship between the financial assets and exchange rates of the United States of America and Japan. They employed granger causality test to test for a short-term and long-term relationship between the variables. The results of the study found no short-term causal relationship between the two variables, but a positive long-run relationship existed.
The results of this study are also not supported by Dayyat (2008) who concluded that exchange rate has an insignificant relationship with stock market returns in his study. He sought to establish a relationship between Amman Stock Exchange Index and the exchange rates using granger causality test between the period of 1989 to 2004. Using data from monthly gathered and annual analytical reports from the central bank of Jordan and Amman stock exchange, the results revealed no significance and a negative relationship.

**5.3.2 Effect of Money Supply on the performance of the NSE 20 Share Index in Kenya**

The results of this study revealed variations in money supply in Kenya over the period of study. Results from the Pearson correlation done established that money supply has a positive correlation with the NSE 20 share index performance.

This agrees with Alam (2009) who investigated the effects of selected macroeconomic variables on the stock market index in South Africa employing the exponential generalized autoregressive conditional heteroskedasticity. The findings established similar results to showing a positive correlation between money supply and stock market index. The study argued this was because expansionary monetary policy or increased money supply increases the stock returns which was explained by the authors findings.

The results of the study are also in agreement with Inoti (2014) who argued that money supply can be used to predict the behavior of the NSE 20 share index. The study found a positive relationship between broad money supply and the NSE 20 share index in Kenya. He investigated macroeconomic variables and equity securities market indices, case being the Nairobi Securities Exchange.

In a recent study by Yoshino and Farhad (2015), on the response stock markets have on monetary supply, their case being on the Tehran stock market, the study revealed similar results. They used the vector error correctional model to estimate the response of Asian stock market prices to exogenous monetary policy shocks. Their results indicated that stock prices increase persistently in response to exogenous monetary policy. This concluded that there is an endogenous response of stock prices to monetary supply as evidenced by their results. The results of this study therefore implied that with increase in money supply, the performance of the NSE 20 share index will improve or rise.
According to Naik (2013), money supply affects stock prices in the long run but no causality from stock price to money supply changes have an indirect effect through their effect on real output which in turn impact stock prices. The study used industrial production index, wholesale price index, money supply, treasury bills and exchange rates.

The results of this study are also in supported by Mutuku (2014) who examined the relationship between stock market return and monetary policy decisions in Kenya using time series data for the period 2003 to 2013. The findings of the study suggested that money supply had a positive and significant impact on the stock market returns. Mutuku (2014) argued that the government through the monetary bodies and authorities in Kenya can improve the wealth of investors in the stock market by affecting the money supply multiplier which not only positively influences stock market returns but also has a significant impact.

However, the results of this study are not supported by Osamuonyi (2012) who examined the relationship between macroeconomic variables and the Nigerian capital market index. The macroeconomic variables understudy were interest rates, inflation rates, exchange rates, fiscal deficit, gross domestic product and money supply. The study concluded that money supply had a significant but negative relationship with the stock market index both in short and long run.

The results of this study are also not supported by Cagli, Halac and Taskin (2010) investigation on the relationship between money supply and equity returns on the Turkish Stock Market. The findings of the study established that the Istanbul Stock Exchange has no cointegration with money supply, concluding a negative relationship between the two observed variables.

In theory, monetary policy affects prices including stocks prices with a lag. The Central Bank of Kenya had previously been targeting broad money supply as an intermediate target but changed their approach following an amendment of the CBK act. These targets broader money aggregates including reserve money (Barasa 2014).
5.3.3 Effects of Inflation on the performance of the NSE 20 Share Index in Kenya

To establish the effect of inflation on the performance of the NSE 20 share index a correlation analysis was observed. The results of this study revealed that the NSE 20 share index performance negatively correlated with the consumer price index. This implied that with increase in the consumer price index the performance of the NSE 20 share index declines.

This is in agreement with Barasa (2014) in his study on the macroeconomic determinants of the stock market performance at the NSE, employing a descriptive research design and using secondary data spanning between the period of 2000 and 2013, established that the NSE 20 share index including the consumer price index, money supply and gross domestic product per capita plummeted just before, during and immediately after the general elections. The study also concluded that the relationship between inflation which was measured using the consumer price index and stock market performance was inverse. This established that the relationship between inflation and stock market performance was negative and insignificant.

Ahmad and Naseem (2011) established similar findings concluding that there is a negative impact of inflation on stock market returns. Their study was on the Pakistani stock market returns using monthly data of inflation. Tucker (2007) argued that the negative effects are more visible and pronounced as it leads to a decrease in value of money as well as other monetary variables over time which is evident from the results of this study.

Mohammed (2011) in his study on the impact of changes in selected microeconomic and macroeconomic variables on equity market performance in Bangladesh was in agreement with the results of this study concluding that there is a negative relationship between equity market performance and inflation. These results were supported by the fact that there was no unidirectional granger causality found between the returns and any of the selected independent variables in the study meaning the market was inefficient.

However, the results are not supported by Vena (2014) in his study on the effect of inflation on the stock market returns in the NSE using the same methodology employed in this study, concluded that a positive relationship was established between the two variables. The author argued this was because as inflation increases, bond market participants increase interest
rates used by stock market participants to discount unchanged expectations of future nominal dividends. The said dividend price ratio moves with the nominal bond yield as the stock market investors irrationally fail to adjust the nominal growth rate to match the nominal discount rate. Which then implies that stock prices are either undervalued or overvalue when inflation is high and low in its respective measure. The yield that arises from the interaction of rational and irrational investors is then said to be positively correlated with inflation and the nominal interest rate.

The study results are also not supported by Yadav, Lama and Rajangahlot (2015) in their study investigating the influence of inflation on the returns of the Pakistani stock market. The study used monthly data spanning a period of 2004 to 2014 with the Karachi stock 300 index as the dependent variable and the consumer price index as the independent variable. The purpose of their study was to test both long-term and short-term relationship between inflation and stock market index. Using simple regression model in their analysis, they established that a positive and an insignificant relationship existed between inflation and the stock market returns in Pakistan.

Knowledge on the effects of inflation on the variability of stock exchange volatility can help investors in the stock market. Other market operators can use this understanding to make good portfolio decisions based on their knowledge of the past economy and expectations about the future as well as stemming the adverse effect of inflation on stock market volatility (Vena 2014).

5.4 Conclusion

5.4.1 Effect of Exchange rates on the performance of the NSE 20 Share Index in Kenya

It is seen that the foreign exchange rates in Kenya, the study’s focus being on US Dollar is one that is not constant as it keeps fluctuating with time. The findings reveal that the exchange rate has a negative effect on the performance of the NSE 20 Share Index in Kenya. This means that exchange rates have a negative effect on the stock market returns in Kenya.
5.4.2 Effects of Money Supply on the performance of the NSE 20 Share Index in Kenya

Money supply has been noted to have a positive effect on the performance of the NSE 20 Share Index in Kenya. The higher the money supply the better the stock market performance which leads to better market returns.

5.4.3 Effects of Inflation on the performance of the NSE 20 Share Index in Kenya

The findings of the study have seen inflation as a variable that fluctuates. The study used the consumer price index to represent inflation which had a negative effect on the performance of the NSE 20 share index in Kenya. The negative effect is one which leads to a fall in the stock market performance and the performance of the NSE 20 share index in Kenya.

5.5 Recommendations

5.5.1 Recommendations for Improvement

5.5.1.1 Effect of Exchange Rates on the performance of the NSE 20 Share Index in Kenya

Exchange rates has been established as one that fluctuates and inherently one that has a negative effect on the stock market performance in our case the NSE 20 share index. It is therefore necessary for the government to come up with strategies or adjustments to accommodate these fluctuating rates for the stock market to remain profitable. The government should monitor and maintain these exchange rates to a desired level.

5.5.1.2 Effect of Money Supply on the performance of the NSE 20 Share Index in Kenya

The study established that money supply positively affected the performance of the NSE 20 Share index in Kenya. The study used broad money; narrow money in circulation, short-term deposits in banks, 24-hour market funds, longer term time deposits and money market funds with more than 24-hour maturity. The Central Bank of Kenya is responsible in formulating monetary policies that ensures money is available. It is therefore the responsibility of the Central Bank of Kenya to ensure money is in circulation as it is vital for investment. With this said the CBK should monitor the money in circulation and understand its effect on the performance of the stock market performance.
5.5.1.3 Effect of Inflation on the performance of the NSE 20 Share Index in Kenya

It is often assumed that inflation has negative effects on stock market returns. This study confirmed that inflation has a negative effect on the performance of the NSE 20 share index in Kenya. As the consumer price index increased the performance of the NSE 20 share index fell. Therefore, the government needs to study consumer behavior and keep their buying or purchasing patterns constant or better, this will thus be an effective way of monitoring and maintaining the inflation rate at the desired levels.

5.5.2 Recommendation for Further Studies

The general objective of this study was to determine what macroeconomic variables have a significant impact on the stock market performance in Kenya. The study focused on exchange rates denoted by the US Dollar, inflation represented by the consumer price index and money supply represented by broad money in the country within a 6-year period. Further studies can be done by using a longer study period and account for more macroeconomic variables that can improve the prediction power of the model used. Similar studies using NSE share indexes with a larger target population can be replicated in order to determine whether the results from this study maintain a similar pattern or relation.
REFERENCES


APPENDICES

Appendix I: NSE 20 Share Index Listed Companies 2008-2013

1. Industrial and Commercial Development Corporation
2. Kenya Electrical
3. Mumias Sugar Company
4. Rea Vipingo
5. CMC Holdings
6. Express Kenya Limited
7. Nation Media Group
8. Sasini Limited
9. Kenya Airways Limited
10. Safaricom Limited
11. Barclays Bank Limited
12. Equity Bank Limited
13. Kenya Commercial Bank
14. Standard Chartered Bank Limited
15. Bamburi Cement Limited
16. British American Tobacco Kenya Limited
17. East African Breweries Ltd
18. East African Cables
19. Kenya Power and Lighting Company Limited
20. Athi River Mining Limited
Appendix II: Data Collecting Tool

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