THE EFFECT OF SELECTED MACROECONOMIC VARIABLES ON STOCK RETURNS OF COMPANIES LISTED IN THE NAIROBI SECURITIES EXCHANGE

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A Research Project Submitted to the Graduate School in Partial Fulfilment of the Requirements for the Master of Business Administration Degree of Egerton University

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DECLARATION AND RECOMMENDATION

Declaration

I declare that this research project is my original work and to the best of my knowledge, it has not been presented for examination in any university or any other institution for award of any degree or diploma or any other certificate.

Signature...…………………………Date..

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CM11/14500/15

Recommendation

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

Signature………………………Date……………………….

Dr. Fredrick kalui

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DEDICATION

This research project is dedicated to my dad Douglas Kibara Githendue my mum Jecinta Wambui, Madam Purity Macharia. Dedication also goes to Baby Jayden, nieces, nephews and my siblings; Johnson Murimi, Peter Maina, Evans Mutugi, Charity Njoki, Deborah Muthoni and Nahason Muriuki. This research project also dedicated to Dr Reverend Emily Wangui and Pastor Phelesia Mukonzi Mukunzi of Bethany House of Prayers Nakuru; NYS Secondary School teaching staffs; and friends Susan Wangeci Njonge, Janet Moraa Ondieki, and Cecilia Kiplamai of Naivasha Girls' High School for their continued support and encouragement through the entire research process.

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ABSTRACT

This study sought to determine the effect of macroeconomic variables on the stock returns for the companies listed in Nairobi securities exchange. The target population for this study was 20 companies Listed in Nairobi securities exchange used in the computation of the NSE 20 share index. This study used secondary data and the data was collected using data collection sheet. The sample data covering a period of 5 years from 2014 - 2018 was collected from various sources. The descriptive analysis was done using frequencies, percentages, means and standard deviations for all the variables for this study while inferential statistics used in this study were Pearson correlation and both simple and multiple regression analysis. The study found out that Money Supply, Gross Domestic Product, Oil Prices and Interest rates contributed to 71.4% variation in the stock returns meaning that other factors not included in this study accounted for 28.6%.The results of the study revealed that money supply had a strong negative relationship (r=0.697). Money supply had a significant effect on stock returns of companies listed in Nairobi Securities Exchange (P Value= 0.037< 0.05), R^2= 0.486%, β= -0.674 and F statistics = 6.615>3.84. Oil Prices had insignificant effect on stock returns of companies listed in Nairobi Securities Exchange (P Value= 0.153< 0.05), R^2= 0.268%, β= 0.471 and F statistics = 2.5697<3.84. Gross Domestic Product had a significant effect on stock returns of companies listed in Nairobi Securities Exchange (P Value= 0.004< 0.05), R^2= 0.718%, β= 0.532 and F statistics = 17.799>5.32. Interest rates had a significant effect on stock returns of companies listed in Nairobi Securities Exchange (P Value= 0.037< 0.05), R^2= 0.718%,β= 0.532 and F statistics = 17.799>5.32. Money Supply, Oil Prices, Gross Domestic Product, and Interest Rates jointly had a positive strong relationship with stock returns of companies listed in the Nairobi Securities Exchange. Money Supply, Oil Prices, Gross Domestic Product, and Interest Rates jointly significantly affected stock returns of companies listed in the Nairobi Securities Exchange. Where, (R=0.924, R^2= 0.854 P Value =0.048< 0.05,β =0674, F statistics =13.679 >532.The study concluded that money supply, gross domestic product and interest rate; positively affected the stock returns of companies listed in Nairobi Securities Exchange. The study also concludes that Oil Prices do not significantly affect stock returns of companies listed in Nairobi Securities Exchange. This study recommends close monitoring of macroeconomic environment in order to ensure stability of stock returns in the Nairobi Securities Exchange. The study added new knowledge to research work.

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LIST OF ABBREVIATIONS AND ACCRONYMS

ADF   Augmented Dickey Fuller

AIMS   Alternative Investment Market Segment

APR   Annual Percentage Rate

APT   Arbitrage Pricing Theory

ANOVA   Analysis of Variance

ARDL   Autoregressive Distributed Lag

CAPM   Capital-Pricing Model

CBK   Central Bank of Kenya

CMA   Capital Market Authority

CPI   Consumer Price Index

DW   Durbin Watson

EMH   Efficient Market Hypothesis

FDI   Foreign Direct Investment

FIMS   Fixed Income Market Segment

FGLS   Feasible Generalized Least Square

GARCH   Generalized Autoregressive Conditional Heteroskedasticity

GDP   Gross Domestic Product

GEMS   Enterprise Market Segment

ILO   International Labour Organization

IRFs   Impulse Response Functions

KNBS   Kenya Bureau of Statistics

MIMS   Main Investment Market Segment

NASI   Nairobi Securities Exchange All Share Index

NSE   Nairobi Securities Exchange

OLS   Ordinary Least Squares

SPSS   Statistical Package for Social Sciences

VECM   Vector Error Correlation Model

VIF   Variance Inflation Factor

CHAPTER ONE
INTRODUCTION

1.1   Background of the study

A stock market is a facility that helps in the buying and selling of stocks of the public listed companies by the buyers and sellers that gather to trade (Monther & Kaothar, 2010). The largest Stock exchange market in the world is the New York Stock Exchange (NYSE) in the US with the oldest publicly traded companies with a market capitalization of $28.19 Trillion. The NASDAQ still in the US has rated the second-largest stock market with a market capitalization of about $12.98 Trillion and has companies dealing with technology and that have big names in the world. The S & P 500 represents US Stock Market. London Stock Exchange in England, Tokyo Stock Exchange in Japan and Shanghai Stock Exchange in China are also the leading and biggest Stock exchanges markets in the world. Combined, the world's Stock exchanges markets have a market capitalization of $ 89.5 trillion. Worldwide, it is only sixteen Stock exchanges markets with a market capitalization of US $ 1 Trillion each and they contributed to 87% of the global market in 2015.

According to a consolidated report by the African Markets platform (2020), Zimbabwe showed the best performance with the best African Stock Market Indices over the first nine months of 2020. Zimbabwe All-share Index (ZSE-ASI) which is the main financial market index, showed a growth by 612% under the reviewed period using the values of the local currency. Under the same period of review, it is only the Rwanda Stock Exchange and Malawi Stock Exchanges that showed a positive performance in dollar terms of +6.8% and +2.9% respectively. The other African Stock Exchange Markets including NSE showed a decline in their performance. Uganda and Zambia Stock Markets had the worst performance. Nairobi Securities Exchange (NSE) is the best performing in Sub- Saharan Africa in the last decade outperforming Johannesburg Stock Exchange and Nigerian Stock Exchange, which are its competitors. Ten years before 2020, the Nairobi Securities Exchange benchmark index increased by 74% while Johannesburg increased by 9% and the Nigerian Stock Exchange decreased by 50% under the period of review.

The stock market attracts so many investors through the availability of various opportunities that give them returns. Nairobi securities exchange is a very important institution to the growth of the Kenyan economy as it helps in the creation of wealth and helps the investors with an avenue for investing their resources (Junkin, 2012). In addition, private companies and the

government are also beneficiaries of the stock market in acquiring funds to support their projects and to meet their daily operational costs (Ndegwa, 2015).

Nairobi securities exchange act as an intermediary between the investors and borrowers and this facilitates the circulation of money in the economy. Listed companies in the Nairobi securities exchange benefit from the stock market through the ability to be able to acquire long - term capital through public initial offer and hence they can expand their business activities and meet their daily operational costs. Brealey et al. (2011) suggested that a market has efficiency when it is impossible for an investor to make extreme returns. It, therefore, means that the returns earned would be equal to the market return. The fair value of shares is then a reflection of the worth of a company represented by the anticipated future cash flows discounted at a cost of capital.

Stock return is a profit or loss that an investor gets from investing in stock and it constitutes any change in the value of the investment and cash flows which investor receives from the investment in that stock. The stock return is measured in absolute terms for instance dollars or as a percentage of the amount invested. In other words, stock return is a combination of dividends and increases in the stock price known as a capital gain.

1.1.1   Stock Returns

Mugambi and Okech (2016) defined stock returns as the increase or decrease in the value of a stock and it is usually given as a percentage and the stock returns comprise of any capital gains and any revenue that is received from the investment in the financial asset. Capital gain is the difference of price of a stock within two given period and then that difference is divided by the price at the beginning of the period. Investors in the stock market look at the stock return as a motivating factor that they consider before investing in a stock. Jeyanthi and William (2010) defined a return as any gain earned because of appreciation in the stock prices. Weston (2012) defined stock returns as the total wealth of a company divided by the total number of the stocks of that given company.

Stock returns depend on the availability of enough flow of information in the market and how effective and efficient allocation of the stock returns. The volatility of stock prices that causes uncertainty in stock returns usually influences the demand and supply of the stocks (Taofik & Omosolo, 2013). Aliyu (2011) high stocks returns are associated with high profits and hence

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the firm is said to greatly contribute to the growth and development of the economy of a country and in turns, this is likely to attract so many investors to come and invest in that firm's stocks. This makes the issue of stocks' volatility attract the attention of researchers in the whole economy as deterioration in the economic growth trends creates an environment that is difficult for consumption and investment (Erdugan, 2012).

Stock returns can is said to be the attached value of a financial asset that it can earn from the market which depends on the company's performance. Sifunjo and Mwasaru (2012) stock return volatility at the Nairobi securities exchange is determined by interactions between borrowers and savers of the funds and which directly influences market capitalization of the individual firms and in the entire market as a whole.

Economic fundamentals, company specifics, stock market volatility, and political shocks are some of the factors that affect stock returns. The volatility in stock returns is the unpredictability of stock prices. In finance, the intrinsic value of a firm is the product of share price multiplied by the number of shares outstanding at a particular time. According to investors, when a market experiences excessive volatility, then the importance of share prices as an indicator of firm value becomes weak.

Kirui et al. (2014) stated important Share prices are determined by various fundamental economic factors for instance inflation, gross domestic product, mean exchange rate, interest rates and unemployment rate. In advanced countries, variations of share prices are largely associated with the volatilities of macroeconomic variables.

Stock markets are mostly measured using stock market indexing. NSE 20 share index acts as a benchmark for the measurement of the performance of the stock market in the calculation of stock returns as it. This study will use the NSE 20 Share index as the variable of measure for stock returns. The dividends are paid quarterly and they will be ignored in this study. NSE website will be used to obtain Monthly NSE 20 Share index data.

1.1.2 Macroeconomic variables

Macroeconomic variables are those economic fundamentals that have the potential of affecting the performance of the country's economy, the stock market returns, and stock price volatility (Kitati et al., 2015). Examples include employment/unemployment rate, foreign exchange

rates, gross domestic product, money supply, interest rate, industrial production rate, inflation rate. Macroeconomic variables are variables that control the macro-economy, that is, the whole economy (Olukayode & Akinwande, 2009). Macroeconomic factors influence the existence, behavior, and performance of companies. The impact of these factors may be direct such as competitors or indirectly such as business climate. Atanda (2012) Gross Domestic Product, unemployment, exchange rate, and inflation were identified as the variables that have a major influence on the economy. This study used crude oil prices, money supply, gross domestic product, and interest rate. The choice of these macroeconomic variables was based on the empirical review where there is no such combination used and hence this would contribute to new knowledge.

Crude oil is a very important factor for the production process and hence the price of the oil is an important input in the production process. For this reason, the oil price is the measure for the real economic activity in a country. A rise in oil price in the international market would mean lower economic activity in every sector of a country and this has an effect of decreasing the stock returns (Kuwornu, 2011). Surplus oil production would lead to the lowering of the oil prices in the international market and this will lead to an increase in real economic activity that in turn would lead to an increase in stock prices. Subsequently Increase in stock prices lead to an increase in oil prices (Basher & Sadorsky, 2011). Oil prices directly influence the stock prices, which in turn determine future cash flow. Oil prices can indirectly affect the stock prices by influencing the interest rate that is essential in discounting the future cash flow. There is profit reduction when there is a lack of adequate balancing of the influence between essentials of production, increase in the oil prices, for instance, increases in the cost of performing business activities and for companies not related to oil production. There is the effect of inflating the prices of the final products and hence a negative effect to the consumers, this will eventually reduce the profits and hence the stock prices since the demands of final goods and services will fall (Basher & Sadorsky, 2011). Central banks and policymakers respond to a general increase in consumer goods in a country by increasing interest rates which then is a discount rate used in discounting the future cash flows.

Basu (2011) defined inflation as a general rise in prices of goods and services across the board. The most common indicators used to measure inflation are the consumer price index and producer price index. PPI tracks the average price of a basket of goods that a company uses to transform them into finished products. Barnor (2014) stated that inflation rates could have

either positive or negative repercussions. Higher producer inflation depletes company profits, shrink's expansion, and the growth of markets and consequently increases unemployment because companies cease to hire workers. Stock prices rise or fall based on production indices signals. Disposable income caused increase in inflation and reduction in the production of essential goods and services. Inflation has the effect of reducing the buying power of the low-income earners and hence they are usually not able to acquire essential goods and services.

According to Schiller (2008), an exchange rate is can be either a direct or indirect quotation Foreign exchange rate evaluates the currency of one country to another. It defines how much local currency is required to procure the same basket of commodities and services as in another country as it would in the local country. The exchange rate influences the comparative value between local and international goods and the foreign appetite for local goods (Ncube & Ndou, 2011). Nominal exchanges rates appear in many studies to value the changes in the international exchange rates although they can also be valued in real terms. An increase in the value of the local prices decreases the demands of a country's products since other countries will have to pay more and hence the stocks of the firms in that country will reduce since investors will not be willing to invest in such companies, this is as explained by good market theory. There is a notion that stock returns and exchange rates are inversely related and hence increase in exchange rates will lead to a decrease in stock returns while the decrease in the exchange rates will lead to an increase in stock returns. The portfolio balance theory explains the relationship between the stock markets and the exchange rate market although the level of the relationship of the empirical studies is still not clear and sometimes the results are contradicting.

Gross domestic product is the total production of a country in a specific period valued in monetary terms (Schiller, 2008). Gross domestic product per capita is a good measure for economic recession and the recovery thereafter. Gross domestic product is a measure of aggregate income earned by a country from its local and foreign elements of production. A momentous change in gross domestic product either positive or negative impacts directly on the stock market return. An economic outlook that promises an expansion of the economy will certainly cause stock prices to rise because a rational investor will seek to buy stocks and benefit from the proceeds of an expanding economy. The opposite is also true when it expected that there is going to be a recession of the economy, stock prices tend to decline with investors opting to sell their stock and purchase securities with a lesser risk such as bonds. Wang (2013)

states that gross domestic product usually is the preferred macroeconomic factor to arrive at the overall economic productivity within an economy; the rate of growth of the gross domestic product reflects the state of the economic phases. This study used real values of Gross Domestic Product in data analysis.

The interest rate is the cost of borrowing money. Interest rate is the part of a loan that an investor will ask for because of using his money. Interest rate refers to the cost expressed as a percentage of the principal charged by the lender to the borrower for lending the money. This Study will use the Central Bank of Kenya Lending Rate as a proxy to measure interest rate. Songole (2012) noted that investors substitute buying stocks of optimal interest rates as are resulted by the interaction of market mechanism of money in an economy (Darfor & Agyapong, 2010). The government through the central bank usually adjusts the interest rates as necessary to control the amount of money in circulation. Many of the studies conducted on the relationship between macroeconomic variables and stock returns found that interest rates negatively significantly affect the stock returns. Olweny (2011) found the interest rates were significant in affecting stock returns for firms listed in Nairobi Stock Exchange. Central Bank of Kenya Lending Rate was an indicator for interest rates for this study.

The unemployment rate is another significant indicator used to measure the underutilization of labour supply in a country. It is one of the most fundamental significant indicators in the economy and a key measure in the labour market. The unemployment rate is the proportion of the people with the ability and willingness to work at the prevailing wage rate but they cannot secure job opportunities. The unemployment rate total workforce is a percentage. Information on unemployment signals market participants on the strength and wealth of the economy. It becomes very difficult to find job opportunities when the unemployment rate level is high and also the wage rate is very low as the salary increases and promotions are minimal. On the other hand, a low employment rate shows good economic performance hence the government will always work hard to minimize the unemployment rate. A higher employment rate means higher economic output, more sales, higher returns, and high corporate profits. Stock prices and stock market returns rise or fall with an increase or decrease in the employment rate. The unemployment rate announcement by ILO is one of the information that flows in the stock market in the stock market and has a significant effect on the stock prices and hence stock returns (Mwaore, 2017). A high unemployment rate means slow growth, low corporate profits, falling stock prices and low stock market return.

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The balance of payments is the difference between the total amount of goods a country exports and the total amount of goods a country imports. If the number of goods that a country exports are greater than the number of goods that a country imports, there is a balance of payments deficit.

Economic growth is the amount that the level of output within an economy increases over a given period (again usually measured over a year). Economic growth is extremely desirable as it means that, in general, the people within an economy are getting richer. Technological improvement, and increased in the demand for goods and services, and an increase in the size of the workforce (a fall in unemployment), are various ways of increasing the economic growth. Money Supply is the total quantity of money in the economy at any given time. It is measured as the average yearly monetary base (M3); the sum of currency in circulation, and reserve balances. Money is collections of liquid assets are medium of exchange and for repayment of debt that are generally accepted. In that role, it serves to economize on the use of scarce resources devoted to exchange, expands resources for production, facilitates trade, promotes specialization, and contributes to a society's welfare. This study will use M2 as a proxy for measuring the money supply. This study used M2 because it is a broader classification of money than M1 that only includes the liquid assets. M2 was also relevant for this study because it does not include assets that are the least liquid like in M3. The country's government or central bank collects, records, and publishes periodically the money supply data.

1.1.3 Nairobi Securities Exchange (NSE)

A group of voluntary stockbrokers registered under the Societies Act in British Kenya established the Nairobi securities exchange in 1954 as Nairobi stock exchange. Nairobi securities exchange is located in Nairobi that is the capital city of Kenya. Its chairperson is Samuel Kimani and its CEO is Geoffrey Odundo. Nairobi security exchange deals with Kenya Shillings Currency. Currently, it has listed sixty-four companies distributed in different segments. It is a member of the Africa Securities Exchange Association. The stock prices keep on changing as per market activities influenced by the forces of demand and supply where the prices tend to increase within the demand of stock and reduce with the increase in the supply of the stocks (Songole, 2012). The listed companies are in different industry such as investment, insurance, and construction, automobile, commercial and services, agriculture, and banking.

Nairobi securities exchange is a market used by the listed companies and the Government uses to exchange their financial securities. Capital Market Authority (CMA) is the institution that is responsible for overseeing the activities of the Nairobi Securities Exchange. Capital Market Authority (CMA) has the responsibility of giving a trading platform for securities of the listed companies at the Nairobi Securities Exchange. The total number of companies listed at Nairobi Securities Exchange is 65 and this is according to NSE (2018). Nairobi Securities Exchange facilitates the conversion of the savings to invest in profitable avenues rather than keeping it unutilized. This encourages both local and foreign investors to have a habit of investing since they are certain of some returns.

Many policies formulated and implemented have facilitated the growth and advancement of the Nairobi Securities Exchange. This gives confidence and morale to both individual and private investors to save and invest their funds in the stock market. Giving Capital Market authority to regulate the functioning of the Nairobi Securities Exchange and eradication of differences between leverage and shares to have a variety in the stock market is one of the policies that have been developed (Kemboi & Tarus, 2012). The Capital Market Authority (Kemboi & Tarus, 2012) issued regulations to guide the giving out of the commercial papers, corporate bonds, and significant outline on the changes that listed firms' corporate governance systems intended to assure investors.

Nairobi Securities Exchange has gained dominance in both East and Central Africa with the value of the total number of shares traded greatly increasing where the current market capitalization is 2,270.98 billion as of 14 August 2019 (NSE, 2018). The total number of companies listed in the Nairobi Securities Exchange is 65 that operate in the four main segments that are Alternative Investment Market Segment (AIMS), Growth Enterprise Market Segment (GEMS), Main Investment Market Segment (MIMS), and Fixed Income Market Segment (FIMS). The small, young, and upcoming companies invest their capital in Alternative Investment Market Segment that has less strict requirements than those in Main Investment Market Segment that they may not be in a position to meet. These also help to respond to the dynamic needs of the savers and enhance the liquidity of the firms with many funds through a listing of the existing shares not aimed at the soliciting of the capital but for marketability. Institutional investors and individuals with intention of diversifying their portfolios get opportunities to do the investment (Nairobi Securities Exchange, 2010).

NSE 20 share index is one of the common indexes used in the Nairobi securities exchange for measuring the returns of the 20 best-performing companies listed in the Nairobi securities exchange. An index is a combination of various stocks that is representative of the whole market. The investors to monitor the performance of a stock market use the index and hence they can make investment decisions (NSE, 2016). Nse 20 share index arrived at by finding the average of shares of the 20 best-performing companies listed at the Nairobi Securities Exchange. NSE reviews the companies from time to time usually at the end of the day .Dropping and addition of companies in the list takes place. For a company to be included in the list of the 20 companies used in the calculation of the Nse 20 share index it must have at least 40% market capitalization. Also its shares that are traded in the Nse must at minimum be 20%, liquidity of 20% and must have a turnover of at least 10%; A free float of at least 20% is also a requirement; At least a market capitalization of Kshs. 20 million and also the company should have a good record of high profit and dividend. Appendix II is the list of Nse 20 share index in this study.

1.2   Statement of the Problem

Volatility in stock returns is one of the leading problems facing the Nairobi Securities Exchange as noted in the sessional paper No. 10 of 2012 on Kenya Vision 2030. The NSE 20 share index has been fluctuating over time and hence affecting the stock returns of the quoted companies at the Nairobi securities exchange (Kamande, 2015). Kalui (2004) confirmed that there is volatility at Nairobi Securities Exchange and that it caused by various factors in the market. Stock returns volatility has the effect of eroding investors' confidence in making investment decisions in the Nairobi Securities Exchange. Stock return volatility has been linked to macroeconomic variables where some of the theories in finance such as Arbitrage Pricing Theory have viewed macroeconomic variables as predictors of stock returns volatility.

Several studies carried out on the effect of macroeconomic variables on stock returns have shown conflicting results. Hence, there is no consensus on the effect of macroeconomic variables on stock returns. Ouma and Muriu (2014) and Kirui (2014) using OLS found the insignificant effect of interest rate on stock return while Gatebi (2013), Olweny and Omondi (2014) found a negative effect. Olweny and Omondi (2014), Ouma and Muriu (2014) confirmed inflation to be significant while Kirui (2014) found it to be insignificant. Olweny and Omondi (2014) concluded a positive relationship between exchange rate and the stock

returns while Kirui (2014) found exchange rate to be insignificant. This study will seek to fill the above gaps by using different macroeconomic variables to give valid results.

1.3   Objectives of the study

1.3.1   General objective

The general objective of this study is to determine the effect of selected macroeconomic variables on the stock returns of companies listed in NSE.

1.3.2   Specific Objectives

The study specifically sought to achieve the following objectives:

i.   To determine the effect of money supply on stock returns of the companies listed in the Nairobi Securities Exchange.

ii.   To determine the effect of oil prices on stock returns of the companies listed in the Nairobi Securities Exchange.

iii.   To determine the effect of the gross domestic product on stock returns of the companies listed in the Nairobi Securities Exchange.

iv.   To determine the effect of interest rates on stock returns of the companies listed in the Nairobi Securities Exchange.

v.   To determine the joint effect of money supply, oil prices, gross domestic product, and interest rates on stock returns of the companies listed in the Nairobi Securities Exchange.

1.4   Research Hypotheses

The research tested the following hypotheses to achieve the above objectives:

Ho1：   There is no significant effect of money supply on stock returns of the companies listed in the Nairobi Securities Exchange**.**

Ho2:   There is no significant effect of oil prices on stock returns of the companies listed in the Nairobi Securities Exchange.

Ho3：   There is no significant effect of the gross domestic product on stock returns of the companies listed in the Nairobi Securities Exchange.

Ho4：   There is no significant effect of interest rate on stock returns of the companies listed in the Nairobi Securities Exchange.

Ho5: There is no significant joint effect of money supply, oil prices, gross domestic product, and interest rate on stock returns of the companies listed in the Nairobi Securities Exchange.

1.5 Justification of the Study

The findings of this study will help firms' managers, government, and interested parties to formulate a sustainable model that will help in running the companies and hence generating a lot of income in the end. These plans will also help in the smooth running of firms' affairs and managers will have an easy time in running the firms. This study will be of great help to the Central Bank of Kenya (CBK), Capital Markets Authority, and Kenya Revenue Authority (KRA) since it will help them to improve their control systems and hence improve their services to the public and will use the study findings to improve on the framework for regulation.

This study will also be useful to the management and staffs of firms by helping them to put in place structures that will enable in improving the performance of their stocks hence enabling their firms to be profitable. Academicians who engage in financial research will find it useful as one of the working documents. They will be able to answer the question of whether or not CMA should intervene in stock prices management of the listed firms.

1.6 Scope of the Study

This study was limited to the 20 companies listed in NSE as of December 2019 used in the computation of the NSE 20 Share Index. This is because of the availability of the information from the Capital Market Authority and Nairobi Securities Exchange website. The study used money supply, oil price, gross domestic product, and interest rates as macroeconomic variables. The study sought to examine the effect of macroeconomic variables and stock returns for the companies listed in the Nairobi Securities Exchange. The researcher focused on all of them and the study used census. Secondary data for the period 2014 – 2018 was the current data used in this study and this is because this is the most recent period. The study focused on all companies listed in Nairobi Securities Exchange and will use the NSE 20 share index.

1.7 Limitations of the Study

The first limitation is the exclusion of the unlisted firms since this study will once include only use companies listed in the NSE. However, the researcher hopes that the findings of this study will apply to all the companies in the Nairobi Securities Exchange.

Secondary data will be used in this study and some of the data may be prone to errors especially data on selected macroeconomic factors. To overcome this, the researcher will seek data spanning several years to check on the consistency of the data.

1.8 Operational Definition of Terms

Gross domestic product - Refers to the total value of goods and services produced in a country in a particular year.

Money supply - Money supply refers to the total quantity of money in circulation at a point in time.

Oil price - Refers to the spot price of one barrel of the benchmark crude oil.

Interest rate - This is the cost of borrowing money

Macroeconomic Variables – They are indicators or main signposts signaling the current trends in the economy.

Stock Market - Refers to public markets that exist for issuing, buying and selling stocks that trade on a stock exchange or over-the-counter

Stock Market Volatility: Stock market volatility is the fluctuation in the price of the broad stock market index over a defined period. It is the dispersion and not the direction of price changes.

Stock return – This is the profit or loss on an investment in a stock.

Volatility: Volatility is the relative rate at which the price of a security moves up and down within a very short period.

CHAPTER TWO
LITERATURE REVIEW

2.1   Introduction

This chapter summarizes the information from other researchers who have carried out their research in the same field of study. The specific areas covered here are theoretical review, empirical studies, and conceptual framework.

2.2   Theories Underlying the Study

This section discusses the following theories that guided this study: Arbitrage Pricing Theory, Efficient Market Hypothesis (EMH) and empirical studies.

2.2.1   Arbitrage Pricing Theory (APT)

Ross (1976) developed this theory. Arbitrage pricing theory states that it is possible to model expected return on the financial asset as a linear function of various macroeconomic variables or theoretical market indices. Arbitrage pricing theory developed after the Capital-pricing model (CAPM) failure as it suffered criticisms from other scholars due to assumptions among them being the usage of a single factor in the model. Beta coefficient measures sensitivity to changes in each of the macroeconomic variables.

This theory concludes that the expected and unexpected factors determine the return earned on an asset. According to this theory, many factors cause asset returns systematically deviate from their expected values and there should be no chance of arbitrage in an efficient financial market; which ensuring assets can prevent expected return is a linear function of its sensitivity to the n common factors. The capital-pricing model is not always able to account for the difference in assets' returns using their betas. This paved way for the development of an alternative approach, called Arbitrage Pricing Model, for estimating the assets' expected returns.

Arbitrage pricing theory, unlike the Capital-pricing model, does not assume that investors employ mean-variance analysis for their investment decisions. However, like the Capital-pricing model, the Arbitrage pricing theory is not founded on the notion that investors are rewarded for assuming non-diversifiable (systematic) risk; diversifiable (unsystematic) risk is not compensated. Beta is the most important single factor in the Capital-pricing model that captures the systematic risk of an asset. In Arbitrage pricing theory, one or more macroeconomic factors may measure the systematic (non - diversifiable) risk of an asset. The

fundamental logic of Arbitrage pricing theory is that investors will always indulge in arbitrage whenever they find differences in the returns of assets.

Arbitrage Pricing Theory assumes that economic factors such as gross domestic product, price level, the structure of interest rates etc cause market risk. Thus, there will be as many betas as the number of factors. Like in the Capital pricing model, in Arbitrage Pricing Theory also there is no compensation for the risk arising from firm-specific factors. The portfolio return under Arbitrage Pricing Theory will be the weighted average of expected return and market – related unexpected. The steps involved in estimating the unexpected return on an asset include; searching for the factors that affect the asset's return; Estimation of the risk premium for each factor; estimation. Arbitrage Pricing Theory assumes that there are so many factors that make stock returns deviate from expected returns. The following is the APT model equation

$$E(r_j) = r_f + b_{j1}RP_1 + b_{j2}RP_2 + b_{j3}RP_3 + b_{j4}RP_4 + ... + b_{jn}RP_n + \varepsilon_j$$

Where:

$E(r_j)$ = the asset's expected rate of return.

r_f = the expected level of return for stock $E(r_j)$ if all factors have a value of zero; usually called the risk-free rate.

b_j = the sensitivity of the asset's return to the particular factor.

RP = the risk premium associated with the particular factor.

ε_j= a random error term.

Arbitrage Pricing Theory is relevant to this study as the theory states that the returns of a financial asset is a linear function of several macroeconomic variables and hence this theory will help this study to predict the effect of macroeconomic variables on stock returns.

2.2.2 Efficient Market Hypothesis Theory (EMH)

Fama (1970) developed this theory. The theory states that the stocks trade at a fair value and the existing stocks' prices reflect all the available information concerning macroeconomic variables. This makes it very difficult for investors to make abnormal returns by taking advantage of undervalued stocks or by selling stocks at higher prices. When setting up stock prices in an efficient market, consider all the available information in the market in order to avoid making of abnormal returns by investors. In an efficient stock market, the stock prices will not change even after the flow of new market in the market. There are three forms of hypotheses namely; Weak, Semi – Strong and Strong form of efficiencies.

According to Fama, Weak form of efficiency claims that the existing stock prices reflects all the past or historical information of macroeconomic variables and hence the investors cannot generate excessive returns through technical analysis or by use of historical information to make decisions. Semi – Strong form of efficiency suggests that the existing stock prices reflect all the available information that is in public domain, hence, investors cannot use that information to make abnormal returns.

Even with the utilization of the above forms of efficiencies an investor will not be able to make abnormal returns but only normal returns since the existing stock prices contains all the information available in the market. This means that the stock returns obtained from the financial assets will be equal to the market return in an efficient market. The proposition on EMH is that existing prices of stocks completely have a bearing of the presented information around the value of the company. The fair value of stocks is then a reflection of the worth of a company is what would be represented by the anticipated future cash flows discounted at a cost coins and notes that are in circulation and other money equivalents.

This theory is relevant in this study since it show how stock prices and hence stock returns quickly reflect any information on change macro economic variables. Stock returns incorporate all the relevant information on the changes of the macro economic variables used in this study. Similarly, stocks returns reflect all the changes in the macro economic variables in the stock market and hence this theory will help in explaining the effect of macro economic variables on the stock returns.

2.3   Empirical Studies

This section presents review of literature on studies done on macroeconomic variables and stock returns.

2.3.1   Money Supply and stock returns

Picha (2017) determined the effect of money supply on the stock market. The source of data for this study was the National flow of funds accounts more so those from assets from US household are portfolios. The study employed Johansen's cointegration methodology to analyze data on both short term and long-term relationships among the variables. The results revealed that money supply influence valuation of S& P 500 index with 6 months lag. The study concluded that assets classes could positively influence price of S & P 500 index.

Balagobei (2017) established the impact of money supply on stock market returns. The study took place at Colombo Stock Exchange in Sri Lanka. The Study used multiple linear regressions to achieve the main objective of this study of determining the association between the money supply and stock market returns. The study concluded that money supply insignificantly influenced stock market return at Colombo Stock Exchange.

Sirucek (20120 Examine the impact of money supply on stock prices and stock bubbles in US capital market. The study used M2 and aggregate MZM 9 money with zero maturity) as a measure of money supply. Regression and correlation analysis were method use to analyze data. The study found a strong relationship between money supply and stock prices hence the stock returns. The study concluded that money supply measured by M2 monetary aggregate is not a significant factor in the development of the speculative bubble of 2007 although MZM it is a main factor in the development of stock bubble.

Muchiri (2012) examined the influence of money supply on the performance of the Nairobi Securities Exchange. Theories used in this study were Random walk hypothesis school, Technical schools, Behavioral school of finance, Fundamentalist schools, and Macroeconomic hypothesis school. Methods of data analysis employed in this study were Regression analysis, descriptive analysis and correlation analysis to analyze the data for this study. The model was a good fit in this study as the F statistics value was greater than the F critical value and the P-value was less than 0.05. Money supply insignificantly and positively influences the share prices of companies listed in the Nairobi Securities Exchange. The study revealed that during the period of study, the share prices greatly increased in the Nairobi Securities Exchange. The findings also revealed that money supply positively but insignificantly influenced the share prices of the Nairobi Securities Exchange while the share prices were negatively and insignificantly influenced the share prices.

2.3.2 Oil prices and stock return

Kelikume and Muritala (2017) determined the impact of changes in oil prices on the stock market. This study took place in five oil exporting African countries namely; Nigeria, South Africa, Tunisia, Ghana, and Egypt. The study utilized monthly time series data for the period from quarter one 2010 to quarter four 2018.Stock market returns computed from all share index from the countries except Egypt was used. The Bloomberg database was the source for the

stock and oil price data. The study performed panel analysis between oil prices and stock returns as method of analyzing data. The results revealed that a negative insignificant relationship between oil prices and stock returns in African stock markets.

Kalyanaraman and Tuwajri (2014) analyzed the stock prices and oil prices. The study took place in Saudi Arabia. The consumer price index has used as a proxy for the inflation rate. This study used Time series monthly data for the period January 1994 to June 2013. The study used Vector error correction model and cointegration test as the methods of analyzing the secondary data collected. The results of the Vector error correction model depicted that in the long - run oil prices had a relationship with the stock prices.

Samontaray et al. (2014) conducted a study on the oil prices on the returns. The study took place at the Saudi stock market. The Study used time series monthly secondary data for the period December 2003 to December 2013. This study used a multiple linear regression model and correlation to analyze the collected data. Adjusted R squared was 0.93 depicting that the selected macroeconomic variables contributed 95% of the variation of the model. Correlation analysis results showed that at a 5% significant level oil WTI independent variable had the greatest relationship with stock returns at Saudi stock market.

Kuwornu (2011) examined the relationship between oil prices and stock returns. The study took place in Ghana. The study used time series monthly secondary data for the period 1992 to 2008. This study used Arbitrage Pricing Theory and Capital Pricing model theories. This study used descriptive and regression analysis to analyze the collected data. The study found out that oil prices insignificantly affected the stock returns in Ghana.

2.3.3 Gross Domestic Product and stock returns

Nyanaro and Elly (2017) examined the relationship between stock market performance and Gross Domestic Product in East African Community. The study used all - share indexes in four stock markets w in the four stock markets. Source of the data was the capital markets, EASRA and from each country's stock markets. World Bank Website was the source for the Gross Domestic Product growth. The study performed Vector Autoregressive model as well as the Granger test for casuality to test the relationship between the gross domestic product and stock returns. The results of the study revealed that there was a long – term relationship between Gross Domestic Product and market performance in East African Community. There was no relationship between the stock returns and gross domestic product. The study concluded that

increase in stock market capitalization and liquidity in East African Community contribute to the gross domestic product growth.

Nasibu (2013) studied the impact of Gross Domestic Product on stock market return. The study took place at the Nairobi Securities Exchange in Kenya. Independent variable used in this study gross domestic product and dependent variable was stock market return. The study utilized time series secondary data for the period 2006 to 2012. This study used ordinary least squares to analyze the collected data. The findings of the study revealed that Gross Domestic Product insignificantly influenced stock returns of the companies listed in the Nairobi Securities Exchange.

Kulhanek (2014) determined the relationship between stock returns and Gross Domestic Product in the central and Eastern Europe. The study took place in Czech Republic, Slovak Republic, Poland, Hungary, and Australia. The study used Vector Autoregressive and Error Correction models to analyze data. The study utilized quarterly time series data for the period from quarter one: 2010 to quarter two: 2012. There was a long – run relationship between Gross domestic product and Stock markets returns as confirmed by Co – integration test. The study concluded that there was a long – run relationships among the applied variables.

2.3.4 Interest rates and Stock returns

Alam et al. (2009) investigated the relationship between interest Rate and Stock Price. The study involved both developed and underdeveloped countries. The countries used for this study were; Australia, Bangladesh, Canada, Chile, Columbia, Germany, Italy, Jamaica, Japan, Malaysia, Mexico, Philippines, South Africa, Spain and Venezuela. Independent variable for this study was interest rate. The study used Efficient Market Hypothesis theory. The study used time-series monthly data for the period Jan 1988 to March 2003. The study used both Time Series and panel regressions as methods of analyzing data. The results revealed that there was a significant negative relationship between interest rates and share price. The study concluded if the Interest rate is considerably controlled for the counties, it would be the great benefit of these countries' stock exchange through demand pull way of more investors in share market and supply push of more extensional investment of companies.

Kalui (2004) carried out a study on the influence of interest rates stock price volatility in the Nairobi Securities Exchange. The study took place in Kenya. Secondary data used in this study was for a period from 1998 to 2002. Cross-sectional multiple regression analysis was done for

the data collected. The results revealed that all the variables had an influence on stock price volatility in the Nairobi Securities Exchange.

Addo and Sunzuoye (2013) examined the effect of interest rate on the Ghana financial market returns. Applying the valuation model in their data analysis, their study covered the period 1995-2011. The study used Johansen's Multivariate Co-integration and Vector Error Correction models to appreciate the nature of the relationship that existed between the variables. The study findings found that interest rate had an effect on the Ghana capital market returns but the individual influence of the designated variables were not satisfactory good predictors of stock returns.

Otieno et al. (2017) carried out a study on the effect of Interest rate on stock market returns. The study took place in Nairobi. The dependent variable for this study was the stock return and independent variable was interest rate. Modern Portfolio Theory, Capital Pricing Theory, and Arbitrage Pricing Theory were theories used in this study. The study utilized monthly time series data for the period January 1993 and December 2015. The study performed Granger Casuality between interest rate and stock market return as methods of analyzing data. The results also revealed that the Co-integrating residuals are fractionally integrated. Additionally, 3 – month Treasury Bills Rate and lending rate negatively Granger cause stock market returns in the long – run.

Thuo (2012) examined the effect of interest rates volatility on stock returns. The study took place in the Nairobi securities exchange. The study employed descriptive research design. The study utilized monthly time series data for the period 2007 and 2011. Regressions and correlation analysis were the methods used to analyze data. The study also performed Two GARCH (1, 1). The study's results found that conditional market return has a negative and significant relationship with interest rates and a positive and significant relationship with interest rates. The study concluded that interest rates strongly predict volatility and stock returns.

2.4   Summary of the literature and research gap

According to the literature reviewed, a variety of theories has been applied as well as different macroeconomic variables used to show the impact of macroeconomic variables on stock market return volatility. Theories are silent on which and the number of macroeconomic

variables to be included in the model. Studies conducted in developed and developing economies realize many conflicting findings on the relationship between macroeconomic variables and stock market returns.

Various studies done in Kenya have yielded varying results. Ouma and Muriu (2014) and Kirui (2014) using OLS found an insignificant relationship between interest rate and stock return while Gatebi (2013) and Olweny and Omondi (2014) concluded a negative relationship. Olweny and Omondi (2014), Ouma and Muriu (2014) found inflation to be significant while Kirui (2014) found it to be insignificant.

Olweny and Omondi (2014) concluded a positive relationship between exchange rate and the stock returns while Kirui (2014) found exchange rate to be insignificant. However, Ouma and Muriu (2014) realized a negative relationship between the returns and the exchange rate. The varying results are attributable to differences in macroeconomic variables used, research methodology applied and the period covered. In addition, the reviewed studies have not clearly shown the effect of macroeconomic factors and stock returns in Kenya.

2.5 Conceptual framework

Conceptual framework is a graphical or diagrammatic representation the relationship between variables in a study it helps the researchers and it helps the researchers see the proposed relationship easily and quickly.

Independent Variables   **Dependent Variable**
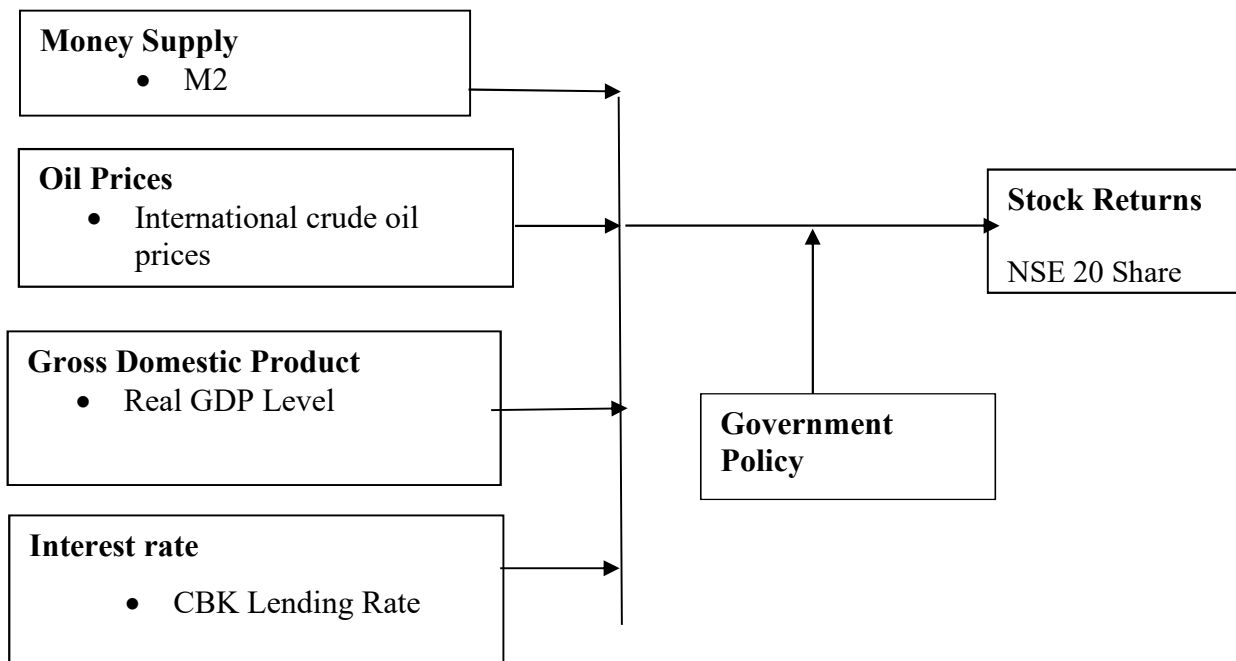
Figure 2.1: Conceptual framework showing the relationship between selected macroeconomic variables and stock returns of companies listed in the Nairobi Securities exchange

This study showed the relationship between the independent variables (selected macroeconomic variables) and the dependent variables (stock returns). The dependent variable for this study was stock returns while independent variables were money supply, oil price, Interest rate, and Gross Domestic Product. The study measured money supply using M2; oil price was measured using retail crude oil price; Interest rate was measured using CBK Lending rate and Gross Domestic Product was measured using Real GDP level. The stud used Nse 20 Share index as a proxy for the dependent variable.

Objective one (H01) indicate that money supply was related to stock returns of companies listed in the Nairobi securities exchange. Objective two (H02) indicate that oil prices were related to stock returns of companies listed in the Nairobi securities exchange. Objective three (H03) indicate that gross domestic product was related to stock returns of companies listed in the Nairobi securities exchange. Objective four (H04) indicate that the interest rate was related to stock returns of companies listed in the Nairobi securities exchange. Objective five (H05) indicate that money supply, oil prices, gross domestic product and interest rate were jointly related to stock returns of companies listed in the Nairobi securities exchange.

CHAPTER THREE
RESEARCH METHODOLOGY

3.1   Introduction

This chapter outlines the procedures followed in conducting the study. These include research design, target population, sample, and sampling technique, data collection instrument, pilot testing, as well as the methods employed to analyze data.

3.2   Research Design

This study adopted a descriptive research design. Descriptive design is a design that quantitatively describes the relationship between or among the variables. This is a research design used to obtain information concerning the status of the phenomena to describe what exists concerning variables or conditions in a situation (Muchiri 2012). The descriptive research design was suitable for this study since it helped in achieving the main objective of this study and which involved the description of macroeconomic variables and stock returns and the data obtained was for a given period. In addition, several past studies successfully used this research design, for instance, (Ndegwa 2015) Effect of macroeconomic variables on stock market returns at the Nairobi Securities Exchange.

3.3   Target Population

The target population for this study was 20 companies used in the computation of the Nse 20 Share Index. The 20 firms acted as a representative of the population. The study used a census approach since the number of firms is small. The choice of the 20 firms in this study is because these are the best performing firms in the market and they cover all the sectors in the Nairobi Securities Exchange and hence it is the best for this study.

3.4   Instrumentation

Cooper and Schindler (2014) observed that the quality of any research findings depends on the choice and the design of data collection instruments used. This study used secondary data for analysis. The study captured the data using a data collection sheet.

3.5   Data Collection Procedure

Before data collection, the researcher asked for permission from the Department of Accounting, Finance, and Management Science at Egerton University. The researcher further asked for authorization from National Commission for Science, Technology, and Innovation.

Quarterly data for a period of 5years (January 2014 to December 2018) was collected. The study-extracted data for Nse 20 share index from the Nairobi Securities Exchange handbooks for the period 2014-2018. This was be done by use of desk search techniques and by visiting the NSE. The study obtained data for interest rate and the money supply from CBK and data for oil prices and GDP from KNBS. The study used real values for all the variables.

3.6   Data Analysis and presentation

The collected data was first put in Microsoft excel and then analyzed by both descriptive and inferential statistics with the aid of the Statistical Package for Social Sciences (SPSS) version 24. The study-transformed data of the variables to logarithmic form to reduce large values and that it can be possible to explain and compare different values of different variables for instance those with big figures and small figures. In addition, this ensured that the values were proportionate. The study performed both descriptive and inferential analysis. The descriptive analysis involved frequencies and percentages, means and standard deviations across all variables (independent and dependent variables). The study used tables to present the results. The use of descriptive statistics is preferred as these methods allow for the meaningful description of the results by the use of minimal indices (Marshall & Rossman, 2014). The study employed inferential statistics in form of correlation and multiple regression analyses.

 The study used Pearson correlation coefficient to determine the strength and direction of independent variables on the dependent variable. The study used both simple regression and multiple regression models to test the hypothesis. The study used a 0.0.5 significance level to decide on whether to accept or reject the null hypothesis. The F – statistics at a 95% confidence level was used to determining the significant relationship between the dependent variable and independent variables. In addition, the study used coefficient of determination (R2) to test the contribution of each independent variable on the dependent variable. The key variables used when analyzing data were the stock returns, money supply, oil prices, Gross Domestic Product, and interest rates.

3.6.1   Model specification

The study used simple regression analysis for objectives one to four and multiple regression analysis for objective five to get the combined effect.

The first objective was to determine the effect of money supply on stock returns for the companies listed in the Nairobi Securities Exchange. The study specified simple linear regression model for money supply as;

$$Y= \beta_0 + \beta_1 X_1 + \varepsilon \quad \text{...3.1}$$

Where: Y= stock returns

β_0 =constant

β_1 = Variable Coefficients

X1= money supply

ε - Error Term

The second objective was to determine the effect of oil prices on stock returns for the companies listed in the Nairobi Securities Exchange. The study specified simple regression model as follows;

$$Y= \beta_0 + \beta_2 X_2 + \varepsilon \quad \text{...3.2}$$

Where: Y= stock returns

β_0 =constant

β_2 = Variable Coefficients

X2= oil prices

ε = Error Term

The third objective was to determine the effect of the gross domestic product on stock returns for the companies listed in the Nairobi Securities Exchange. The study specified simple linear regression model as follows;

$$Y= \beta_0 + \beta_3 X_3 + \varepsilon \quad \text{.. 3.3}$$

Where: Y= stock returns

β_0 =constant

β_3 = Variable Coefficients

X3= gross domestic

ε = Error Term

The fourth objective was to determine the effect of the Interest Rates on stock returns for the companies listed in the Nairobi Securities Exchange. The study specified simple linear regression model as follows;

$$Y= \beta_0 + \beta_4 X_4 + \varepsilon \quad \text{.. 3.4}$$

Where: Y= stock returns

$\beta 0$ =constant

$\beta 4$ = Variable Coefficients

X4= Interest Rates

ε = Error Term

The following multiple regression model was adopted.

Y = β0 + β1X1+ β2X2+ β3X3 + β4X4 + ε

Where:

Y represented the parameters Stock returns

B0 represented Constant

X1 represented Money Supply

X2 represented Oil Prices

X3 represented Gross Domestic Product

X4 represented Interest Rate

ε represents Error Term

β1, β2, β3, and β4 represent Regression coefficients of Independent variables

3.6.1   Operationalization of variables

This section represents the measurements that used to operationalize the study variables.

Table 3.1 Variable Measurement

Variable	Operational Indicators	Measurement	Supporting Literature
Stock returns	Nse 20 Share Index	Abnormal returns of Nse 20 Share Index	Ndegwa (2015)
Money Supply	Notes and coins, other money equivalents and short term deposits in the bank	M2	Ouma & Muriu (2014)
Oil Prices	International Crude oil prices, exchange rate	Retail crude oil price	Kamande (2015)
Gross Domestic Product	Income of the country	Real GDP	Mugambi & Okech (2016)
Interest rates	Inflation, Debt level	CBK Lending Rate	Songole (2012)

3.7   Diagnostic tests

Before data analysis, the following diagnostic tests for regression were done to test the assumptions of the multiple regression models (Mutandwa et al., 2016), that is multicollinearity, normality, linearity, and autocorrelations.

3.7.1   Test for Multicollinearity

To confirm if some variables were highly related to one another, this study carried out a multicollinearity test. This study assessed the level of correlation between the variables using the Variance Inflation Factor (VIF). In addition, the study used VIF to approximate the level of variance inflated due to the linear dependence with other variables. Table 4.1 depicted results from multicollinearity.

3.7.2   Test of Normality

Most of the statistical analysis such as T-tests, Anova, regression, and correlations must be based on the assumption that the data has a normal distribution. Hence, it is assumed that

samples were derived from populations that are normally distributed. The assumption of normality is very crucial because if there is no normality in distribution, the researcher will not be able to make valid and correct conclusions. To evaluate the level of conformity of the variable to the assumption of a normal probability distribution, a test of normality was carried out. The study used a histogram to test the normality of distribution. Figure 4.1 presents the results for normality.

3.7.3   Linearity

Multiple regressions only give valid results only when the association between independent and dependent variables are in linear form (Osborne & Waters, 2002). Multiple regressions underestimate the results when the relationship between the dependent and independent variables are not linear. Linearity means that all the values of the output variable for each increment of a variable are along a straight line. Linearity is a very vital relationship between independent and dependent variables. This study used scatter plots as shown in figure 4.2 to test linearity.

3.7.4   Auto-correlation test

It is important to identify and take care of serial correlation in the idiosyncratic error term since failure to do so gives biased standard errors, as well as an inefficient parameter, estimates Wooldridge (2002). The study carried this test to test the null hypothesis that there is no serial auto-correlation in the data. Feasible generalized least square (FGLS) is used in the case when the case of serial auto-correlation is identified in a study. The study used Durbin and Watson (1951) to test for serial auto-correlation and it used to test the first-order auto-correlation, which only tests the association between error and its immediate previous value. This study utilized Durbin Watson (DW) test to ensure that the residuals of the models had no serial auto-correlation since the independence of the residuals is very important in regression analysis. The results depicted in Table 4.2 reveals that no DW statistics were close to 2.0, which is the prescribed value hence concluded that there was no auto-correlation as shown by a value of 1.350.

DATA ANALYSIS, RESULTS AND DISCUSSION

4.1   Introduction

This chapter presents and discusses the data analysis, findings, interpretations, and presentation of the study in line with the research objective. The research objective was to determine the effect of macroeconomic variables on the stock returns of the company listed in the Nairobi Securities Exchange.

4.2   Diagnostic Tests

Statistical tests rely upon certain tests about the variables used in the analysis. Osborne and waters (2002), argue that when these tests have not met the results may not be valid and may lead to type I or type II error or under or over-estimation of significance. It is therefore important to pretest for these tests for the validity of the results, hence ensuring that the findings are worth using in decision-making. Before data analysis, the following diagnostic tests for regression were checked, that is, multicollinearity, normality, linearity and autocorrelations.

4.2.1   Test for Multicollinearity

The table below presents results for Tolerance and Variance Inflation values.

Table 4.1 Results for Tests of Multicollinearity

Model	Collinearity Statistics	
	Tolerance	VIF
Money Supply	.885	1.130
Oil Prices	.827	1.209
Interest rate	.972	1.029
Gross Domestic Product	.814	1.229

Dependent Variable: Stock Returns

The test for multicollinearity was conducted to assess whether one or more of the variables of interest are highly correlated with one or more of the other independent variables. The variance inflation factor (VIF) was used to evaluate the level of correlation between variables and to estimate how much variance of a coefficient was inflated because of linear dependence with other predictors. The results for tests of multicollinearity were presented in table 4.1 above

The results in Table 4.1 revealed that there was no serious problem with multicollinearity, the variance inflation factors for the variables were between 1.029 and 1.229, meaning that the variables were not highly correlated since tolerance values were above 0.1, and VIF did not exceed 10. This is an assurance that the regression coefficients were stable hence valid significance test.

4.2.2 Test of Normality

The figure below represents results for test of normality.
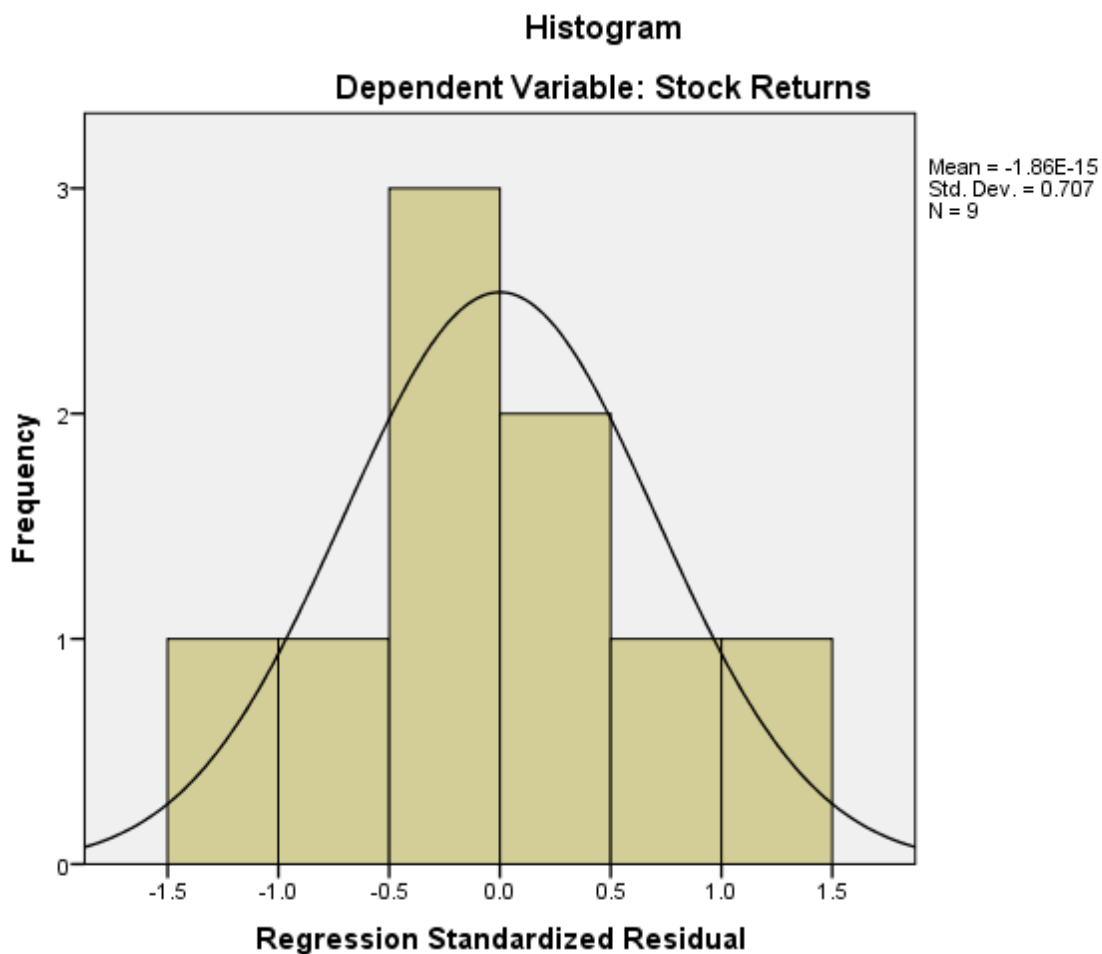
Figure 4.1 Test for Normality of stock returns

Majority of the statistical procedures including correlations, regression, t-tests and analysis of variance are based on the assumptions that the data follows normal distribution. Thus, it is assumed that the populations from which the samples are taken are normally distributed. Normality is important because if the assumptions do not hold, it is impossible to draw accurate

and reliable conclusions. Test of normality is carried out to assess the extent to which the variables of interest assume a normal probability distribution.

This study tested for normality using histogram. The results for test of normality were presented in figure 4.1. Figure 4.1 above, shows a histogram for stock returns data from the firms in Kenya that was bell shaped indicating that the data was normally distributed. The standard deviation was 0.707 on a sample of 20 companies used 20-share index indicating normal distribution.

4.2.3   Linearity
The figure below represents results for linearity of stock returns.

Scatter Plot
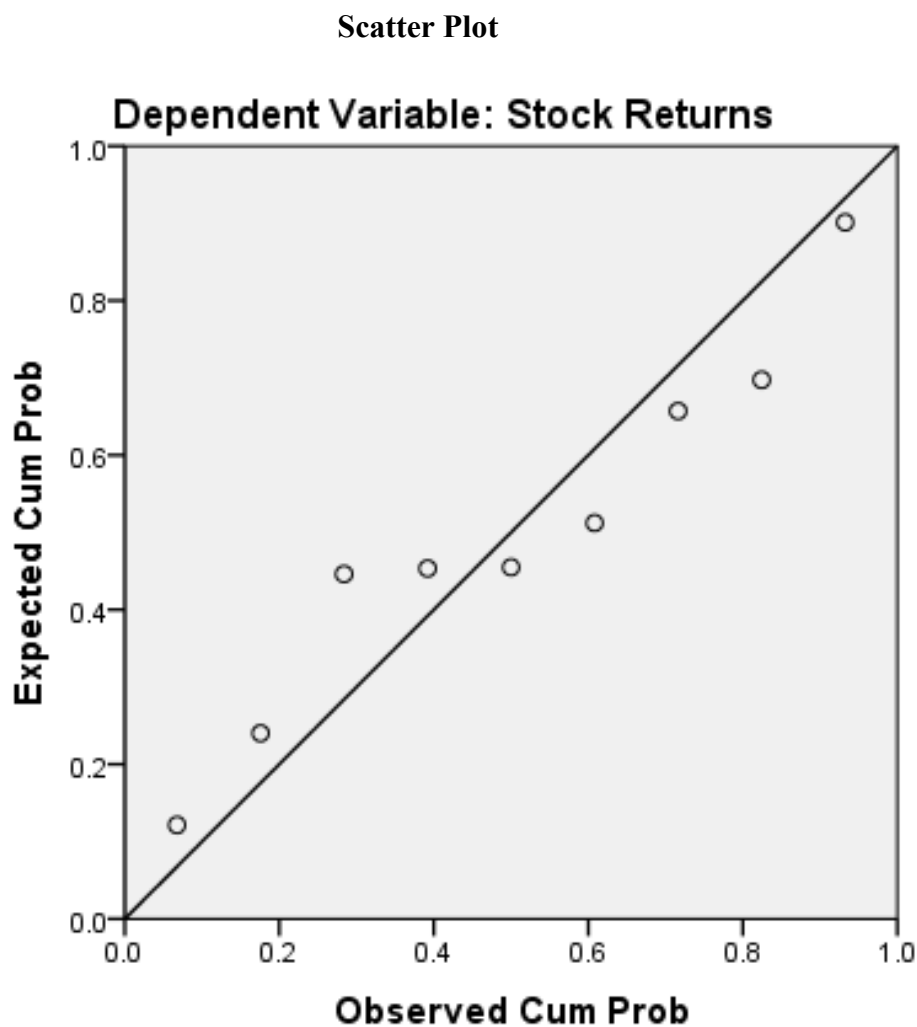
Figure 4.2 Test for linearity of stock returns

Figure 4.2 above shows there was general linearity of data despite some cases being slightly away from the regression line. The findings also show that the effect of the macro-economic factors on firm's stock returns corporations is positive.

4.2.4 Autocorrelation test

Table 4.2 Autocorrelation test

Durbin-Watson	Sig.
1.350	.083

According to Wooldridge (2002), failure to identify and account for serial correlation in the idiosyncratic error term in a panel model would result into biased standard errors and inefficient parameter estimates. The null hypothesis of this test was that the data had no serial autocorrelation. If serial autocorrelation was detected in the study data, then the feasible generalized least square (FGLS) estimation procedure would be adopted. The test for autocorrelation was made by using Durbin and Watson (1951). Durbin Watson (DW) is a test for first order autocorrelation that is it tests only for a relationship between an error and its immediately previous value. This study used Durbin Watson (DW) test to check that the residuals of the models were not auto correlated since independence of the residuals is one of the basic hypotheses of regression analysis. The results in the table 4.2 show that there was no DW statistics that were close to the prescribed value of 2.0 for residual independence; this implied that the data had no autocorrelation as shown by 1.350.

4.3 Descriptive Statistics

4.3.1 Stock Returns

The table below represents the results for mean, standard deviation, skewness and kurtosis.

Table 4.3 Stock Returns

Year	Mean	SD	Skewness	Kurtosis
2014	5043.6850	181.3895	0.0301	-1.1887
2015	4592.1250	579.7091	0.2474	-4.1122
2016	3513.0300	372.3386	0.6551	-2.1608
2017	3545.7750	295.1822	-1.7575	3.0969
2018	3711.5000	81.9939	-1.0646	1.3635
Average	**4081.2230**	**302.1227**	**-0.3779**	**-0.6003**

The study measured the stock returns using the NSE 20 share index, the average mean of 20 share index recorded was 4081.2230, the average standard deviation was 302.1227 and the average skewness was -0.3779 and the kurtosis value was -0.6003. the findings depicts that the average mean was above 2,500 points which means the performance of the firm was adequate thus the stock return was good as depicted by 20 share index. The index reflects the simple arithmetic average of the prices relative of sample stocks on certain date in relation to the base date the equal weighted index assumes that the investor invests an equal amount of money in each stock included in the index. An example of such an index is the NSE 20 share index. The value-weighted index reflects the aggregate market capitalization of sample stocks of certain date in relation to the base date.

Skewness is a measure of the asymmetry of the probability distribution of a random variable about its mean. In other words, skewness tells you the amount and direction of skew (departure from horizontal symmetry). The skewness value can be positive or negative, or even undefined. If skewness is 0, the data are perfectly symmetrical, although it is quite unlikely for real-world data. As a general rule of thumb: If skewness is less than -1 or greater than 1, the distribution is highly skewed, If skewness is between -1 and -0.5 or between 0.5 and 1, the distribution is moderately skewed, If skewness is between -0.5 and 0.5, the distribution is approximately symmetric. The study found out the 20-share index was moderately skewed since the average value was -0.3779. The values for asymmetry and kurtosis between -2 and +2 are considered acceptable in order to prove normal univariate distribution (George & Mallery, 2010).

The figure below represents the trend analysis for the mean of NSE 20 share index.
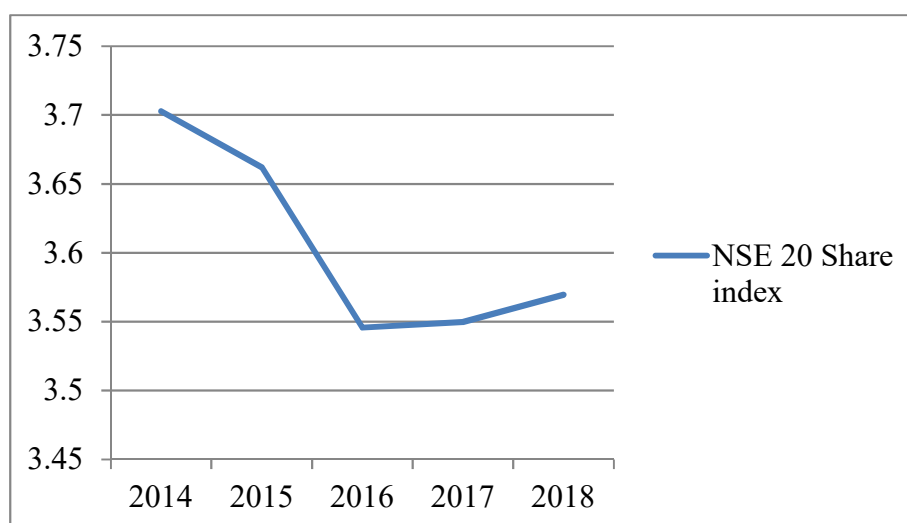
Figure 4.3 Stock Returns Trend Analysis

The study recorded a decrease of the stock returns measured by NSE 20 share index from the year 2014 at 3.702 to a value of 3.54 in the year 2016 and also picked an increase value to the last year. This implies the 20-share index performance was not constant because of political issues over that duration.

4.3.2 Money Supply

The figure below represents the mean, standard deviation, skewness, and Kurtosis for Money Supply.

Table 4.4 Money Supply

Year	Mean	SD	Skewness	Kurtosis
2014	1882333.0000	93231.2977	0.1952	-0.1966
2015	2161467.2500	90180.7314	0.5723	1.6758
2016	2357946.7500	33243.3998	-1.8438	3.4635
2017	2500160.0000	54910.2154	-1.0045	0.5412
2018	2670927.5000	80924.1593	-0.8950	1.9456
Average	**1762130.8000**	**68327.8824**	**-0.4366**	**0.1374**

Money supply refers to the total money flowing in the economy during a specific time of the year. Money supply consists of cash, coins, notes, and money that are in the savings accounts and deposits accounts for short – term payments and investments. This study also did a descriptive statistics for the money supply where, the average mean was 1762130 with the highest mean recorded on 2018 at 2670927.5 and the lowest mean recorded at 1882333 at 2014. The standard deviation was 68327.8824 and the skewness and kurtosis was -0.4366 and 0.1374 respectively.

Overall, an increase in the supply in an economy leads to lower interest rates and higher consumer spending because the disposable income of consumers is higher. For instance, when the FED reduces the interest rate, banks can borrow money cheaper than before and can issue loans to consumers less expensively than before. Thus, more consumers take out loans, purchase houses, and other goods. Since consumers spend more, firms increase their output to meet consumer needs and consequently, their profits. At the same time, employment rises as more workers are hired due to the increase in production. On the other hand, an increase in the

money supply often leads to higher inflation because as consumers spend more, the general level price rises. Findings are summarized in table 4.4.

The study also sought to establish the trend analysis for the money supply and it is depicted in figure 4.4 below.
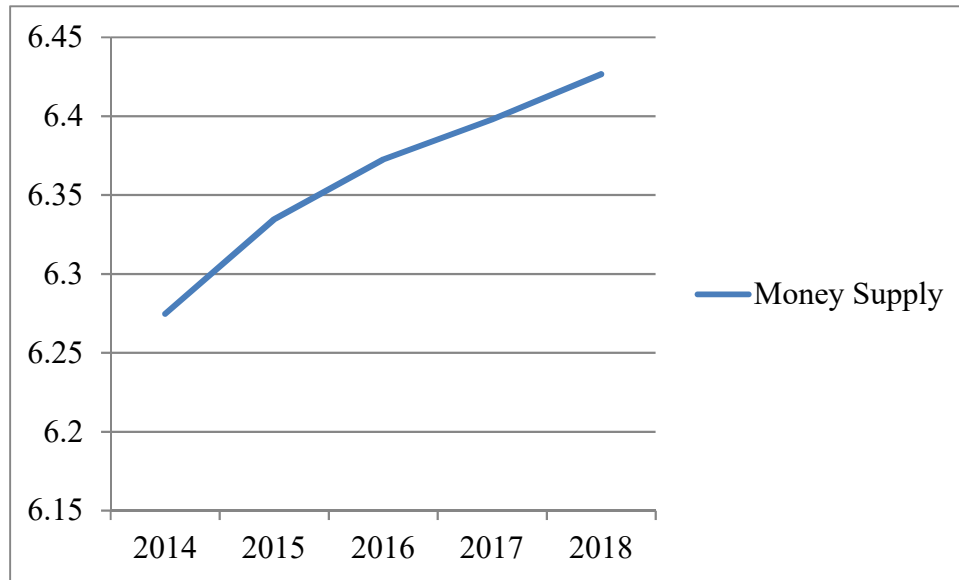
Figure 4.4 Money Supply Trend Analysis

The study recorded a constant increase in the money supply from the year 2014 at 6.27 to a value of 6.426 in the year 2018. This implies there was a constant release of the money by the government to the economy in order to cushion the inflation rates. Findings are summarized in figure 4.4.

4.3.3   Oil Prices

The figure below represents the mean, standard deviation, skewness and Kurtosis for oil prices.

Table 4.5 Oil Prices in Kenya Shillings

Year	Mean	SD	Skewness	Kurtosis
2014	14098.06	973.6304	-0.803615	-0.88091
2015	12412.95	422.7802	0.24561311	-3.3565
2016	12318.83	716.6355	-0.1128889	-2.44757
2017	13895.15	376.0447	1.5459927	2.118308
2018	15463.03	844.6612	0.77688955	0.404066
Average	**13637.6**	**666.7504**	**0.33039829**	**-0.83252**

In table 4.5 the study registered an average mean of 13637.6 Kenya shillings, the standard deviation was 666.7504 while the skewness was 0.3303 and the kurtosis was -0.8352, the findings depicts that oil prices influence the stock returns but to a small magnitude, the study also found out the skewness was normally distributed.

The trend analysis for the mean oil prices are recorded in table 4.5 below
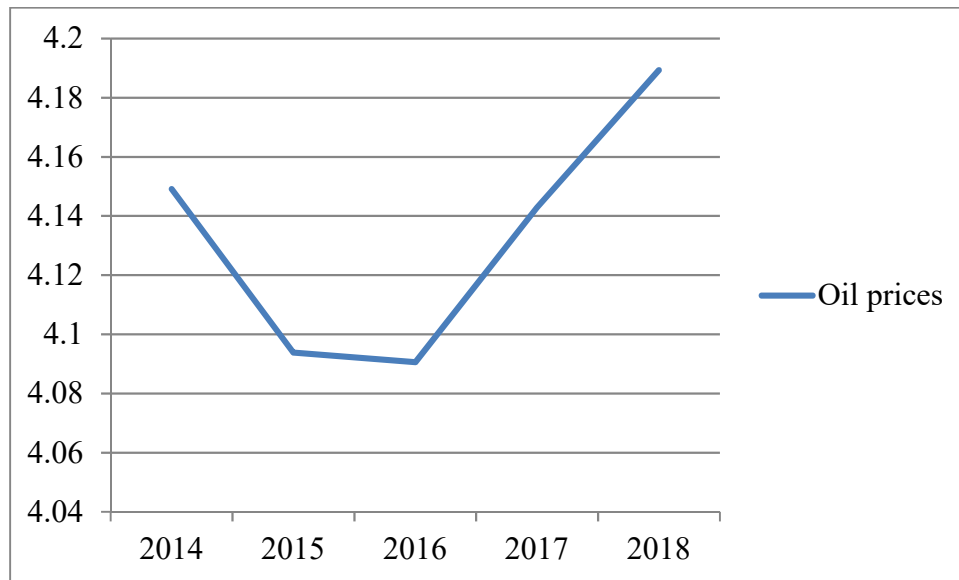
Figure 4.5 Oil prices Trend Analysis

The study registered a decrease in the oil prices from the value of 4.14 in the year 2014 to a value of 4.09 and now registered an increase in the prices to value of 4.189 in the year 2018. This was a result of fluctuation in the exchange rates more specifically the US dollar.

4.3.4   Gross Domestic Product

The figure below represents the mean, standard deviation, skewness, and Kurtosis for Gross Domestic Product.

Table 4.6 Gross Domestic Product

Year	Mean	SD	Skewness	Kurtosis
2014	125,027.67	1909.432	0.00016341	-1.19922
2015	141,785.45	21187.93	1.70026778	3.195116
2016	130,172.75	17216.14	1.85074074	3.435193
2017	318,639.59	24771.32	-0.666485	0.121867
2018	395,807.05	28429.16	0.25899731	-1.56117
Average	**222,286.50**	**18,702.80**	**0.63**	**0.80**

Gross domestic product is the total value of everything produced in the country. It does not matter if citizens or foreigners produce it. If they are located within the country's boundaries, their production is included in GDP. GDP affects personal finance, investments, and job growth. Investors look at a nations' growth rate to decide if they should adjust their asset allocation. They also compare country growth rates to find their best international opportunities. The average mean of the study was 222,286.50, the standard deviation was 18,702.80, the skewness, and kurtosis was 0.63 and 0.80 respectively.

The study determine the trend analysis of gross domestic product, it is summarized in figure 4.6
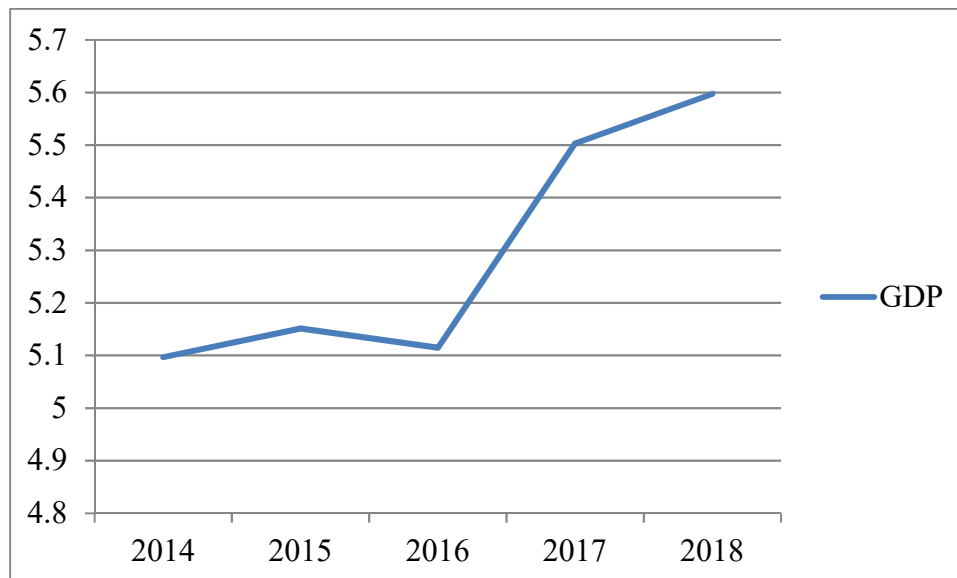
Figure 4.6 Gross Domestic Product Trend Analyses

In figure 4.7, the study recorded a fluctuating gross domestic product where there was an increase in 2014 to 2015 and a reduction for 1 year and a constant increase in the performance from the year 2016 to the year 2018 at a value of 5.59.

4.3.5 Interest rates

The figure below represents the mean, standard deviation, skewness, and Kurtosis for interest rates.

Table 4.7 Interest rate

Year	Mean	SD	Skewness	Kurtosis
2014	16.325	0.423045	1.22835734	0.686218
2015	16.66	1.226812	0.89218499	0.387952
2016	15.8925	2.467001	0.00796791	-5.88859
2017	13.65	0.033665	-1.494E-13	-0.1609
2018	12.97	0.462097	0.19664945	-3.92089
Average	**15.0995**	**0.922524**	**0.46503194**	**-1.77924**

The interest rate is the amount a lender charges for the use of assets expressed as a percentage of the principal. The interest rate is typically noted on an annual basis known as the annual percentage rate (APR). The assets borrowed could include cash, consumer goods, or large assets such as a vehicle or building. When the borrower is seen as a risk averse by the lender, the borrower will usually be charged a lower interest rate. If the borrower is considered high risk, the interest rate that they are charged will be higher. The average mean of 15.0095 was recorded; the mean of 16.325, the 0.9225, the skewness and kurtosis was 0.4650 and -1.7792.

High interest rates make loans more expensive. When interest rates are high, fewer people and businesses can afford to borrow. That lowers the amount of credit available to fund purchases, slowing consumer demand. At the same time, it encourages more people to save because they receive more on their savings rate. High-interest rates also reduce the capital available to expand businesses, strangling supply. This reduction in liquidity slows the economy. Low interest rates have the opposite effect on the economy. Low mortgage rates have the same effect as lower housing prices, stimulating demand for real estate. Savings rates fall. When savers find they get less interest on their deposits, they might decide to spend more.

The study also recorded fluctuation in the interest rate as shown in figure 4.7
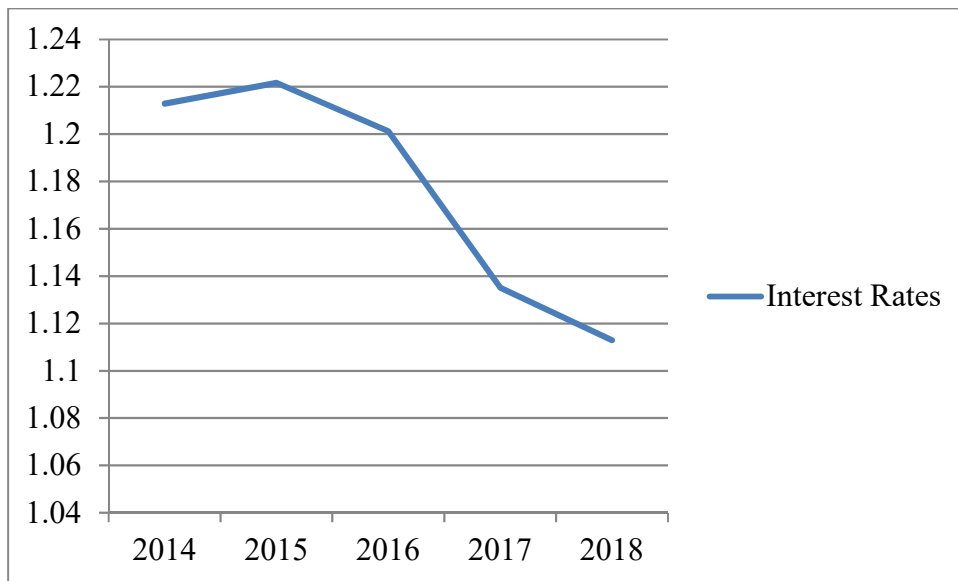
Figure 4.7 Interest Rate Trend Analyses

In figure 4.6, the interest income was fluctuating where there was an increase in 2014 at 1.21 to a value of 16.66 and recorded a constant decrease in the performance of the interest income to a value of 1.11 in the year 2018.

4.4 Inferential Statistics

4.4.1 Correlation Analysis

Table 4.8 Correlation Coefficient Matrix of stock returns and macro-economic factors

		Stock Returns	Money Supply	Oil Prices	Gross Domestic Product	Interest Rate
Stock Returns	Pearson Correlation	1	.697*	.518	.847**	.813**
	Sig. (2-tailed)		.037	.153	.004	.008
	N	5	5	5	5	5
Money Supply	Pearson Correlation	.697*	1	.378	.523	.491
	Sig. (2-tailed)	.037		.315	.149	.179
	N	5	5	5	5	5
Oil Prices	Pearson Correlation	.518	-.378	1	.306	-.439
	Sig. (2-tailed)	.153	.315		.424	.237
	N	5	5	5	5	5
Gross Domestic Product	Pearson Correlation	.747**	.523	.306	1	.746**
	Sig. (2-tailed)	.004	.149	.424		.004
	N	5	5	5	5	5
Interest Rate	Pearson Correlation	.713**	.491	.439	.746**	1
	Sig. (2-tailed)	.008	.179	.237	.004	
	N	5	5	5	5	5

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

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

Correlation analysis was conducted to check for any relation between the stock returns and the selected macroeconomic variables. The strength and direction of the relation between the stock returns and the selected macroeconomic variables was tested using the Pearson product – moment correlation coefficient (r) in this study. Testing the strength of the relationship between dependent and independent variables was necessary in order to determine the kind of association between the variables prior to proceeding with further analysis. The Pearson product – moment correlation coefficient (r) in this study, confirmed a linear association. Pearson product – moment correlation coefficient (r) ranges from -1 which depicts a perfect negative linear association, +1 which depicts a perfect positive linear association and zero which depicts no linear association between the variables (Saunders & Cornet , 2003).

Values vary between 0.0 and 1.0. The strongest correlation is depicted by a value which closer to value 1.0.A positive correlation indicates that the variables are directly proportional relationship while negative correlation indicates an inverse proportional relationship. A probability value of less than 0.05 represents a statistically significant correlation. (Saunders & Cornett , 2003). The results of correlation analysis are presented in table 4.8.

Correlation results showed that relationship between money supply and stock returns was positive and significant (r=0.697), oil prices and stock returns was positive and insignificant (r=0.518), gross domestic product, interest rates and stock returns was positive and significant (r=0.747 and 0.713 respectively). The correlation between the five variables was strong. Field (2009) stated If two predictor variables indicate a correlation coefficient of or more than 0.80 then the problem of multi-Collinearity exists and in the results. None exceeds 0.80 and hence none of them is highly correlated with each other and thus none of them was to be dropped hence, the study sought to analyse the regression analysis to establish further the magnitude of the relationships.

4.4.2   Regression analysis

Both simple and multiple regressions analyses were used in this study to determine the effect of selected macroeconomic variables on stock returns of companies listed in Nairobi Securities Exchange. Regression analysis is used to make inference about the study population using data drawn from the population itself, usually on the basis of sample analysis and observation. It enables a researcher to arrive at conclusions that extend beyond the immediate data alone; it compares tests and predicts data (Fabozzi & Modigliani, 2003). The coefficient of correlation

(R) shows the degree of relationship between two or more variables, it measures the nature and strength of the relationship between the variables.

The study used F – statistics together with the corresponding P – values at 0.05 significance level to reject or fail to reject the null hypotheses. Terms used include test statistic which means that the decision whether to accept or reject the null hypothesis is made based on this value; therefore, if the calculated test statistic value is less than the critical value, we reject the hypothesis; otherwise, we fail reject the hypothesis (Saunders & Cornett , 2003). Another term is the level of significance, the confidence at which a null hypothesis fail to reject or rejected, which is sometimes also referred to as test of significance of data. The study will use findings in coefficient tables in testing the hypotheses.

4.4.2.1 Effect of money supply on stock returns of companies listed in Nairobi securities Exchange

The first objective was to determine the effect of money supply on stock returns of companies listed in the Nairobi Securities Exchange. Simple linear regression was used in this study to test the first hypothesis, which is a state that there is no significant effect of money supply on stock returns for the companies listed in the Nairobi Securities Exchange.

Table 4.9 Model summary- money supply

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.697[a]	.486	.412	.83777

a. Predictors: (Constant), Money Supply

Table 4.10 ANOVA- money supply

Model		Sum of Squares	Df	Mean Square	F	Sig.
	Regression	4.643	1	4.643	6.615	.037[b]
	Residual	4.913	7	.702		
	Total	9.556	8			

a. Dependent Variable: Stock Returns

b. Predictors: (Constant), Money Supply

Table 4.11 Coefficients- money supply

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	5.174	.973		5.320	.001
Money Supply	-.674	.262	-.697	-2.572	.037
a. Dependent Variable: Stock Returns					

Research findings on table 4.9 shows R squared was 0.486 and it shows that the total variation 48.6% in stock returns can be explained by money supply. This means that other factors not included in the study accounted for 51.4%. The study also found a strong relationship between the money supply and stock returns as depicted by coefficient of correlation (R) of 0.697, which is higher than 0.5 thresholds.

The ANOVA (Analysis of Variance) results on table above shows that the F value 6.615 was statistically significant at 0.037, which was lower than 0.05. The model was a good fit for the data since the F statistics of 6.615 is greater than F critical of 5.32 that is, (6.615>3.84) and P value of 0.037 which is less than 0.05. Since the model was a good fit, it was therefore used for determination of the effect of money supply on stock returns for the companies listed in the Nairobi Securities Exchange. The above results also show that the independent variables (money supply) used was statistically significant in predicting the stock returns at 95% significance level.

Table 4.11 on regression coefficient shows that the constant coefficient was β = 5.174; P – value = 0.01 < 0.05 and money supply coefficient was β = -0.674; P – value = 0.037, hence the derived multiple regression equation from the data in the table 4.11 was:

$$Y = 5.174 - 0.674X_1$$

Holding money supply constant, the stock returns will be 5.174, also when holding the other factors constant, a unit increase in money supply, will lead to a reduction in stock returns by 0.674 units, this implies there is a negative relationship between the money supply and stock returns.

The regression coefficients results depict that there is a statistical significant relationship between money supply and stock returns of the companies listed in the Nairobi Securities Exchange. This is indicated by P –value = 0.037 < 0.05.The null hypothesis (Ho1) which states that there is no significant effect of money supply on stock returns of the companies listed in Nairobi Securities Exchange was rejected because the P value = 0.037 is lower than 0.05. These findings contradicted those of Muchiri (2012) study on the influence of macroeconomic variables on performance of Nairobi Securities Exchange that concluded that Money Supply positively and insignificantly influenced share prices in the Nairobi Securities Exchange.

4.4.2.2 Effect of oil prices on stock returns of companies listed in Nairobi Securities Exchange

The second objective of the study was to determine the effect of oil prices on stock returns of Nairobi Securities Exchange. Simple linear regression was used in this study to test the second hypothesis that is states that there is no significant effect of oil prices on the stock returns for the companies listed in the Nairobi Securities Exchange. The finding is summarized using the regression model in tables below.

Table 4.12 Model Summary- oil prices

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.518[a]	.268	.164	.99931

a. Predictors: (Constant), Oil Prices

Table 4.13 ANOVA-Oil prices

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	2.565	1	2.565	2.569	.153[b]
	Residual	6.990	7	.999		
	Total	9.556	8			

a. Dependent Variable: Stock Returns

b. Predictors: (Constant), Oil Prices

a. Dependent Variable: Stock Returns

b. Predictors: (Constant), Oil prices

Table 4.14 Coefficients- Oil prices

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.731	.733		2.360	.050
	Oil Prices	.471	.294	.518	1.603	.153
a. Dependent Variable: Stock Returns						

Research findings on table 4.12 shows R squared was 0.268 and it shows that the total variation of 26.8% in stock returns can be explained by variation in oil prices. This means that other factors not included in the study accounted for 73.2%. The study also found a strong relationship between the oil prices and stock returns as depicted by coefficient of correlation (R) of 0.518, which is higher than 0.5 thresholds.

The ANOVA (Analysis of Variance) results on table above shows that the F value 2.569 was statistically significant at 0.153, which was lower than 0.05. The model was not a good fit for the data since the F statistics of is less than F critical of 5.32 that is, (2.569>0.5.32) and P value of 0.153 which is less than 0.05. The above results also show that the independent variables (oil prices) used was statistically insignificant in predicting the stock returns at 95% significance level.

Table 4.14 on regression coefficient shows that the constant coefficient was $\beta = 1.731$; P – value $= 0.050 < 0.05$ and oil prices coefficient was $\beta = 0.471$; P – value $= 0.153$, hence the derived multiple regression equation from the data in the table 4.14 was:

$$Y = 1.731 + 0.471X_2$$

Holding oil prices constant the stock return would be 1.731 units and a unit increase in oil prices will lead to an increase in stock returns by 0.471 units. This implies a positive relationship between oil prices and stock returns.

The regression coefficients results depicted that there is a statistical insignificant relationship between oil prices and stock returns of the companies listed in the Nairobi Securities Exchange. This is indicated by P –value $= 0.153 > 0.05$. The null hypothesis (H02) which states that there is no significant effect of oil prices on stock returns of the companies listed in Nairobi Securities

Exchange was not rejected because the P value = 0.153 is greater than 0.05. These findings contracted those of Songole (2012) study on the relationship between the selected macroeconomic variables and stock returns in the Nairobi Securities Exchange that indicated a positive and significant relationship between oil prices and stock returns.

4.4.2.3 Effect of gross domestic product on stock returns of companies listed in Nairobi securities Exchange

Third objective sought to determine the effect of gross domestic product on stock returns of companies listed in Nairobi Securities Exchange. Simple linear regression was used in this study to test the third hypothesis that is states that there is no significant effect of gross domestic product on the stock returns for the companies listed in the Nairobi Securities Exchange. The finding is summarized using the regression model in tables below.

Table 4.15 Model Summary- Gross Domestic Products

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.847[a]	.718	.677	.62074

a. Predictors: (Constant), Gross Domestic Product

Table 4.16 Anova - Gross domestic products

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	6.858	1	6.858	17.799	.004[b]
Residual	2.697	7	.385		
Total	9.556	8			

a. Dependent Variable: Stock Returns

b. Predictors: (Constant), Gross Domestic Product

a. Dependent Variable: Stock Returns

b. Predictors: (Constant), gross domestic product

Table 4.17 Coefficients- gross domestic products

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	.945	.481		1.964	.090
Gross Domestic Product	.532	.126	.847	4.219	.004
a. Dependent Variable: Stock Returns					

R squared was 0.718 and it shows that the total variation of 71.8% in stock returns can be explained by variation in gross domestic products. This means that other factors not included in the study accounted for 28.2%. The study also found out a strong relationship between the gross domestic products and stock returns as depicted by coefficient of correlation of 0.847.

The ANOVA (Analysis of Variance) results on table above shows that the F value 17.799 was statistically significant at 0.004, which was lower than 0.05. The model was a good fit for the data since the F statistics of 17.799 is greater than F critical of 5.32 that is, (17.799>5.32) and P value of 0.04 which is less than 0.05. Since the model was a good fit, it was therefore used for determination of the effect of gross domestic product on stock returns for the companies listed in the Nairobi Securities Exchange. The above results also show that the independent variables (gross domestic product) used was statistically significant in predicting the stock returns at 95% significance level.

Table 4.17 on regression coefficient shows that the constant coefficient was $\beta = 0.945$; P – value = 0.090 and interest rates coefficient was $\beta = 0.532$; P – value = 0.004, hence the derived multiple regression equation from the data in the table 4.11 was:

$$Y = 0.945 + 0.532X_3$$

Holding Gross Domestic Product constant the stock return would be 0.945 units and a unit increase in Gross Domestic Product will lead to an increase in stock returns by 0.532 units. This implies a positive relationship between gross domestic product and stock returns.

The regression coefficients results depicted that there is a statistical significant relationship between gross domestic product and stock returns of the companies listed in the Nairobi Securities Exchange. This is indicated by P –value = 0.004 < 0.05. The null hypothesis (H03) which states that there is no significant effect of gross domestic product on stock returns of the companies listed in Nairobi Securities Exchange was rejected because the P value = 0.004 is lower than 0.05. The alternative hypothesis which states that, gross domestic has a significant effect on the stock returns for the companies listed in the Nairobi Securities Exchange was accepted. These findings conformed to those of Mwai (2011) study on the relationship between economic forces and share prices of the listed firms in the Nairobi Securities Exchange that indicated a negative and significant relationship between Gross Domestic Product and stock returns. However, these findings contracted those of Nasibu (2013) impact of macroeconomic variables on stock market return that indicated an insignificant relationship between Gross Domestic Product and stock returns. Also, these findings contracted those of Gatebi (2013) study on the effect of macroeconomic variables on volatility of common Stock returns that indicated a negative relationship between Gross Domestic Product and stock returns.

4.4.2.4 Effect of interest rates on stock returns of companies listed in Nairobi Securities Exchange

Fourth objective sought to determine the effect of interest rates on stock returns of Nairobi Securities Exchange. Simple linear regression was used in this study to test the fourth hypothesis that is states that there is no significant effect of interest rates on stock returns for the companies listed in the Nairobi Securities Exchange. The finding is summarized using the regression model in tables below.

Table 4.18 Model Summary- Interest rates

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.813[a]	.661	.613	.67977

a. Predictors: (Constant), Interest rate

Table 4.19 Anova-Interest rate

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	6.321	1	6.321	13.679	.008[b]
	Residual	3.235	7	.462		
	Total	9.556	8			
a. Dependent Variable: Stock Returns						
b. Predictors: (Constant), Interest rate						

Table 4.20 Coefficients- Interest Rates

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	4.358	.484		9.011	.000
Interest Rate	-.593	.160	-.813	-3.699	.008
a. Dependent Variable: Stock Returns					

R squared was 0.661 and it shows that the total variation of 66.1% in stock returns can be explained by variation in interest rates. This means that other factors not included in the study accounted for 33.9%. The study also found out a strong relationship between the gross domestic products and stock returns as depicted by coefficient of correlation of 0.813.

a. Dependent Variable: Stock Returns

b. Predictors: (Constant), interest rates

The ANOVA (Analysis of Variance) results on table above shows that the F value 13.679 was statistically significant at 0.08, which was lower than 0.05. The model was a good fit for the data since the F statistics of 13.679 is greater than F critical of 5.32 that is, (13.679>5.32) and P value of 0.08 which is less than 0.05. Since the model was a good fit, it was therefore used for determination of the effect of interest rates on stock returns for the companies listed in the Nairobi Securities Exchange. The above results also show that the independent variables (interest rates) used was statistically significant in predicting the stock returns at 95% significance level.

Table 4.11 on regression coefficient shows that the constant coefficient was $\beta = 5.174$; P – value = $0.01 < 0.05$ and interest rates coefficient was $\beta = -0.674$; P – value = 0.08, hence the derived multiple regression equation from the data in the table 4.11 was:

$$Y = 4.358 - 0.593X_4$$

Holding interest rates constant, the stock returns will be 4.358, also when holding the other factors constant, a unit increase in interest rates, will lead to a reduction in stock returns by 0.593 units, this implies there is a negative relationship between the money supply and stock returns.

The regression coefficients results depicted that there is a statistical significant relationship between money supply and stock returns of the companies listed in the Nairobi Securities Exchange. This is indicated by P –value = $0.00 < 0.05$.The null hypothesis (H04) which states that there is no significant effect of money supply on stock returns of the companies listed in Nairobi Securities Exchange was rejected because the P value = 0.08 is lower than 0.05. These findings contracted those of Mumo (2017) study on the effect of the selected macroeconomic variables on the share prices in the Nairobi Securities Exchange that indicated a positive and significant relationship between oil prices and stock returns. These findings again contracted those of Mwaore (2015) study on the effect of the macroeconomic variables on share prices of firms listed in the Nairobi Securities Exchange that indicated a positive and significant relationship between oil prices and stock returns. These findings contracted also, those of Wanjiku (2014) study on the relationship between macroeconomic variables and stock returns in the Nairobi Securities Exchange that indicated a positive and significant relationship between oil prices and stock returns.

4.4.2.5 Joint effect of money supply, oil prices, gross domestic product and interest rates on stock returns of the companies listed in the Nairobi Securities Exchange

The fifth objective sought to determine the joint effect of money supply, oil prices, gross domestic product, and interest rates on stock returns of the companies listed in the Nairobi Securities Exchange. Multiple regressions was used in this study to test the fifth hypotheses which are states that there is no significant joint effect of money supply, oil prices gross domestic product and interest rates on stock returns of the companies listed in the Nairobi Securities Exchange.

Table 4.21: Model summary for combined influence

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.924[a]	.854	.708	.59060

a. Predictors: (Constant), Money Supply, Oil Prices, Gross Domestic Product, and Interest Rate

Table 4.22: ANOVA for combined influence

Model		Sum of Squares	Df	Mean Square	F	Sig.
	Regression	8.160	4	2.040	5.849	.048[b]
1	Residual	1.395	4	.349		
	Total	9.556	8			

a. Dependent Variable: Stock Returns

b. **Predictors: (Constant), Money Supply, Oil Prices, Gross Domestic Product, Interest Rates**

Table 4.23: Regression Coefficients for combined influence

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	.646	.385		.333	.253
Money Supply	.274	.225	.283	.216	.021
Oil Prices	.166	.202	.183	.826	.045
Gross Domestic Product	.312	.236	.496	.321	.025
Interest Rate	.127	.279	.174	.454	.046
Dependent Variable: Stock Returns					

The ANOVA (Analysis of Variance) results in the table above shows that the F value 5.849 was statistically significant at 0.048, which was lower than 0.05. The model was a good fit for the data since the F statistics of 5.849 is greater than F critical of 3.44 that is, (5.849>3.44) and the P-value of 0.048 which is less than 0.05. Since the model was a good fit, it was therefore

used for the determination of the effect of interest rates on stock returns for the companies listed in the Nairobi Securities Exchange. The above results also show that the independent variables (interest rates) used was statistically significant in predicting the stock returns at a 95% significance level.

As per the SPSS generated table 4.23, the established regression equation was:

$$Y= 0.646 +0.274X_1 +0.166X_2 +0.312X_3 +0.127X_4$$

Holding Money supply, Oil Prices, Gross Domestic Product, and Interest rates constant the stock returns would be 0.646. Independent variables from the regression equation reveal that a unit increase in money supply led to an increase in stock returns by 0.274 units. A unit increase in oil prices led to an increase in stock returns by 0.166 units. In addition, a unit increases in interest rates led to an increase of stock returns by 0.127 units, also a unit increase in GDP led to an increase in stock returns by 0.312 units. These results are consistent with those of Obadan (1998) who found that economist and policymakers have put the stock market into focus because of the perceived benefits it provides for the economy as it is deemed the fulcrum for capital market activities and often, it is cited as a barometer of business direction. This has provided heightened interest in understanding the role of stock markets in economic growth. Obadan (1998) argued that an active stock market might be relied upon to measure changes in the general economic activities using the stock market index.

The ANOVA results depict that there is a statistically significant relationship between money supply and stock returns of the companies listed in the Nairobi Securities Exchange, and this is indicated by P-value = 0.048 < 0.05. The null hypothesis (H05) which states that there is no significant joint effect of money supply, oil prices, gross domestic product and interest rates on stock returns of the companies listed in the Nairobi Securities Exchange was rejected because the P-value = 0.048 is lower than 0.05.

CHAPTER FIVE
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1   Introduction

This chapter presents the following sections; Summary of the findings, the conclusion of the study and recommendations of the study based on the analyzed data. The study based its discussion on the specific objectives of the study.

5.2   Summary of the Findings

The main objective of this study was to determine the effect of selected macroeconomic variables on the stock returns of the companies listed in the Nairobi securities exchange. The study had several key findings on the effect of selected macroeconomic variables on the stock returns of the companies listed in the Nairobi securities exchange. The study found out that Money Supply, Gross Domestic Product, Oil Prices, and Interest Rates contributed to an 84.5% variation in the stock returns. This means that other factors not included in this study accounted for 15.5%. The study summarized its findings as per specific research objectives.

The first objective of the study was to determine the effect of money supply on the stock returns of companies listed in the Nairobi securities exchange. The null hypothesis tested in this study was that there is no significant effect of money supply on stock returns of the companies listed in the Nairobi Securities Exchange**.** Based on the results, the study found out that money supply had a significant effect on the stock returns of companies listed in the Nairobi securities exchange.

The second objective of the study was to determine the effect of oil prices on the stock returns of companies listed in the Nairobi securities exchange. The null hypothesis tested in this study was that there is no significant effect of oil prices on stock returns of the companies listed in the Nairobi Securities Exchange**.** Based on the results, the study found out that oil prices had no significant effect on the stock returns of companies listed in the Nairobi securities exchange. The third objective of the study was to determine the effect of the gross domestic product on the stock returns of companies listed in the Nairobi securities exchange. The null hypothesis tested in this study was that there is no significant effect of Gross Domestic Product on stock returns of the companies listed in the Nairobi Securities Exchange**.** Based on the results, the study found out that Gross Domestic Product had a significant effect on the stock returns of companies listed in the Nairobi securities exchange.

The fourth objective was of the study was to determine the effect of interest rate on stock returns of companies listed in the Nairobi securities exchange. The null hypothesis tested in this study was that there is no significant effect of interest rates on stock returns of the companies listed in the Nairobi Securities Exchange. Based on the results, the study found out that interest rates had a significant effect on the stock returns of companies listed in the Nairobi securities exchange.

The fifth objective was of the study was to determine the joint effect of money supply, oil prices, gross domestic product and interest rates on stock returns of companies listed in the Nairobi securities exchange. There is no significant joint effect of money supply, oil prices, gross domestic product, and interest rate on stock returns of the companies listed in the Nairobi Securities Exchange. Based on the results, the study found out that when combined, all the four variables namely; Money Supply, Oil Prices, Gross Domestic Product, and interest rates had a significant effect on the stock returns of companies listed in the Nairobi securities exchange.

5.3   Conclusions of the Study

The first objective of the study was to determine the effect of money supply on the stock returns of companies listed in the Nairobi securities exchange. Based on the findings of the study, the money supply has a negative effect on the stock returns of the companies listed in the Nairobi securities exchange.

The second objective of the study was to determine the effect of oil prices on the stock returns of companies listed in the Nairobi securities exchange. The study concluded that oil prices positively affect the stock returns of the companies listed in the Nairobi securities exchange. The study also concluded that oil prices had no significant effect of on the stock returns of companies listed in the Nairobi securities exchange.

The third objective of the study was to determine the effect of the gross domestic product on the stock returns of companies listed in the Nairobi securities exchange. The findings of the study revealed that there exists a positive and statistically significant effect of gross domestic products on the stock returns of companies listed in the Nairobi securities exchange.

The fourth objective of the study was to determine the effect of interest rate on the stock returns of companies listed in the Nairobi securities exchange. The study concluded that there exists a negative and statistically significant effect of interest rate on the stock returns.

The fifth objective of the study was to determine the joint effect of money supply, oil prices, gross domestic product, and interest rate on stock returns of companies listed in the Nairobi securities exchange. Based on the findings of the study, the selected macroeconomic variables had a positive and significant joint effect on the stock returns of the companies listed in the Nairobi securities exchange.

5.4   Recommendations of the Study
5.4.1   Policy Recommendations
The study recommends that the macroeconomic environment is very important and monitored closely to ensure stability. Regions with a stable macroeconomic environment benefit from increased stock market activity, resulting in increased performance. Share index performance is an indicator of stock market stability for foreign investors; it is therefore, recommended that good measures, such as investor-friendly policies, be put in place to promote stock market activities that increase stock market performance.

The central bank should formulate fiscal and monetary policies that will ensure stable interest rate and inflation rate are maintained to avoid suppressing the economy through increased cost of doing business that erodes profits, which would otherwise be invested in the stock market. Those approaches ought to be defined by CBK to defend the esteem of the Kenya shilling to guarantee that it increases in value against the major monetary.

The NSE 20 Share Index is used as a barometer of the state of the economy and therefore more insightful mechanisms and plans should be found to make it more efficient. It is imperative to note that the institutional and policy reforms of the 1990s and early 2000s have not achieved much of the objectives meant to address and therefore there is a need to address the challenges that made it difficult for better achievements.

5.4.2   Recommendation for practitioners
The findings of this study will help scholars with immense and current information. Academicians who engage in financial research will find it useful as one of the working

documents. They will be able to answer the question of whether or not CMA should intervene in stock prices management of the listed firms. Investors into the Nairobi securities exchange or related fields will be able to use this information before undertaking decisions for macroeconomic variables affecting the stock returns of companies listed in the Nairobi securities exchange.

5.4.3   Recommendation for Further Research

More macroeconomics elements should be incorporated in further research. There should be exemption of the four elements researched to bring out the different elements statistics on the influence of each variable. This study recommends that further research should investigate the effects of organizations characteristics on stock returns at the micro-level since this study was at the macro level. The study also utilized only four macroeconomic variables, which were enough to explain the outcomes of macroeconomic variables on firm value at the NSE. This project recommends that further studies should include others variables not used in this study.

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APPENDICES

Appendix 1: Data collection sheet

Year	Month	Nse 20 Share Index	Money Supply	Oil Prices	Gross Domestic Product			Interest Rates
2014	Jan				Year		Quarter	
	Feb				2014		Q1	
	Mar						Q2	
	Apr						Q3	
	May						Q4	
	Jun				2015		Q1	
	Jul						Q2	
	Aug						Q3	
	Sep						Q4	
	Oct				2016		Q1	
	Nov						Q2	
	Dec						Q3	
2015	Jan						Q4	
	Feb				2017		Q1	
	Mar						Q2	
	Apr						Q3	
	May						Q4	

					2018		Q1	
	Jun							
	Jul						Q2	
	Aug						Q3	
	Sep						Q4	
	Oct							
	Nov							
	Dec							
2016	Jan							
	Feb							
	Mar							
	Apr							
	May							
	Jun							
	Jul							
	Aug							
	Sep							
	Oct							
	Nov							
	Dec							
2017	Jan							
	Feb							
	Mar							
	Apr							

	May				
	Jun				
	Jul				
	Aug				
	Sep				
	Oct				
	Nov				
	Dec				
2018	**Jan**				
	Feb				
	Mar				
	Apr				
	May				
	Jun				
	Jul				
	Aug				
	Sep				
	Oct				
	Nov				
	Dec				

APPENDIX II: Correlation Matrix

		Stock Returns	Money Supply	Oil Prices	Gross Domestic Product	Interest Income
Stock Returns	Pearson Correlation	1	.697*	.518	.847**	.813**
	Sig. (2-tailed)		.037	.153	.004	.008
	N	5	5	5	5	5
Money Supply	Pearson Correlation	.697*	1	.378	.523	.491
	Sig. (2-tailed)	.037		.315	.149	.179
	N	5	5	5	5	5
Oil Prices	Pearson Correlation	.518	-.378	1	.306	-.439
	Sig. (2-tailed)	.153	.315		.424	.237
	N	5	5	5	5	5
Gross Domestic Product	Pearson Correlation	.747**	.523	.306	1	.746**
	Sig. (2-tailed)	.004	.149	.424		.004
	N	5	5	5	5	5
Interest Income	Pearson Correlation	.713**	.491	.439	.746**	1
	Sig. (2-tailed)	.008	.179	.237	.004	
	N	5	5	5	5	5

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

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

APPENDIX III: list of constituent firms – Nse 20 share index

COMPANIES	SECTORS
Sasini	Agricultural
Kenya Airways Limited	Commercial & Services
Nation Media Group	Commercial & Services
Scangroup Limited	Commercial & Services
Centum Investment Company Ltd	Investment
Kenya Commercial Bank Limited	Banking
The Cooperative Bank of Kenya Limited	Banking
Standard Chartered Bank Limited	Banking
Barclays Bank Limited	Banking
Equity Bank Limited	Banking
CFC Stanbic Holdings Limited	Banking
East African Breweries Limited	Manufacturing & Allied
British American Tobacco Kenya Limited	Manufacturing & Allied
Athi River Mining Limited	Construction & Allied
Bamburi Cement Limited	Construction & Allied
KenolKobil Limited	Energy & Petroleum
Kenya Power Limited	Energy & Petroleum
Kenya Electricity Generating Limited	Energy & Petroleum
British – American Investments Company (Kenya) Limited	Insurance
Safaricom Limited	Telecommunications & Technology

Source: (WWW.NSE.co.ke, 2019)

APPENDIX IV: List of listed companies in Nse

AGRICULTURAL

- Eaagads Ltd
- Kapchorua Tea Co Ltd
- Kakuzi
- Limuru Tea
- Rea Vipingo Plantations Ltd
- Sasini Ltd
- Williamson Tea Kenya Ltd

AUTOMOBILES AND ACCESSORIES

- Car and General (K) Ltd

BANKING

- Barclays Bank Ltd
- Stanbic Holdings
- I &M Holdings Ltd
- Diamond Trust Bank Kenya Ltd
- HF Group Ltd
- KCB Group Ltd
- National Bank of Kenya Ltd
- NIC Group
- Standard Chartered Bank Ltd
- Equity Group Holding
- The cooperative Bank of Kenya Ltd
- BK Group

COMMERCIAL AND SERVICES

- Express Ltd
- Sameer Africa
- Kenya Airways Ltd
- Nation Media Group
- Standard Group Ltd
- TPS Eastern Africa (Serena) Ltd
- Scangroup Ltd

- Uchumi Supermarket Ltd

- Longhorn Publishers Ltd

- Deacons (East Africa)

- Nairobi Business Venture Ltd

CONSTRUCTION AND ALLIED

- Athi River Mining

- Bamburi Cement Ltd

- Crown Paints Kenya

- E.A. Cables Ltd

- E.A. Portland Cement Ltd

ENERGY AND PETROLEUM

- KenolKobil Ltd

- Total Kenya ltd

- KenGen Ltd

- Kenya Power & Lighting Co Ltd

- Umeme Ltd

INSURANCE

- Jubilee Holdings Ltd

- Sanlam Kenya

- Kenya Re – Insurance Corporation Ltd

- Liberty Kenya Holdings Ltd

- Britam Holdings Ltd

- CIC Insurance Group Ltd

INVESTMENT

- Olympia Capital Holdings Ltd

- Centum Investment Co Ltd

- Trans – Century Ltd

- Home Africa Ltd

- Kurwitu Ventures

INVESTMENT SERVICES

- Nairobi Securities Exchange Ltd

MANUFACTURING AND ALLIED

- B.O.C Kenya Ltd

- British American Tobacco Kenya Ltd

- Carbacid Investments Ltd

- East African Breweries Ltd

- Mumias Sugar Co. Ltd

- Unga Group Ltd

- Eveready East Africa Ltd

- Kenya Orchards Ltd

- Flame Tree Group Holdings Ltd

  TELECOMMUNICATION AND TECHNOLOGY

- Safaricom

  REAL ESTATE INVESTMENT TRUST

- Stanlib Fahari I-REIT

  EXCHANGE TRADED FUND

- New Gold Issuer (RP) Ltd

APPENDIX VI: Research Authorization

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