

**THE IMPACT OF MACROECONOMIC VARIABLES ON THE
PERFORMANCE OF THE NAIROBI SECURITIES EXCHANGE**

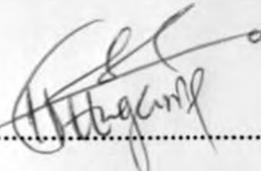
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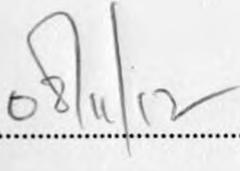
**A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILMENT
OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE
OF MASTER OF BUSINESS ADMINISTRATION, SCHOOL OF
BUSINESS, UNIVERSITY OF NAIROBI**

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DECLARATION

This research project is my original work and has not been submitted for examination in any other University.

Signature: 

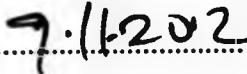
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DEDICATION

This work is dedicated to investors, both current and future, in the Nairobi Securities Exchange.

ACKNOWLEDGEMENTS

Glory to God, the Creator of Heaven and Earth. I thank Him for taking me this far and for the wisdom and courage to successfully complete this work. I would also like to acknowledge the following for their contributions, which facilitated the completion of this project.

I wish to acknowledge the effort and support of my supervisor, Mr Herick Ondigo. It was just a research topic but through his guidance I made it a complete project. I am grateful and may God bless you.

I also thank my family for supporting my idea to pursue the MBA course and it is my sincere hope that their effort has finally paid off.

Finally, I wish to express my gratitude to all those who, in one way or another, contributed towards completion of this project especially my fellow colleagues at work and students.

ABSTRACT

A number of macroeconomic variables such as changes in interest rate, inflation rates, and economic growth are believed to affect how stocks perform. The macroeconomic approach attempts to examine the sensitivity of stock prices to changes in macroeconomic variables. Under this approach, stock prices are influenced by changes in money supply, interest rate, inflation and other macroeconomic variables. This study sought to examine the impact of macroeconomic variables on stock market performance in the NSE.

The study used a descriptive research design. The population of this study comprised all the 59 listed companies in the Nairobi Securities Exchange as at 30th June 2012. In this study secondary data was used to investigate the relationship between independent and dependent variables. The data was analysed using descriptive analysis, correlation analysis and regression analysis.

The study found that there was a general rise in share prices, money supply, exchange rate, inflation, and interest rate over the period under study. The study also found that money supply and inflation rate had positive but insignificant effects on share prices while interest rate had a negative but insignificant effect on share prices. Further, exchange rate has a negative and significant effect on share prices. The variables jointly accounted for 95.6% of the variance in share prices. The F statistic was also significant suggesting that the model was fit to explain the determinants of share prices. The study concludes that exchange rate has a significant negative impact on stock market performance.

The study recommends that in order for the stock market performance in Kenya to improve, there is need for the Government to initiate measures that will control the exchange rate in

Kenya. The study also recommends that there is also need for the Government to control the broad money supply in Kenya as there is some evidence to suggest that higher money supply may lead to better stock market performance. The study further recommends that there is need for the government to initiate policies that will lower the interest rates in Kenya as lower interest rates may translate to higher stock market performance.

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LIST OF ABBREVIATIONS

APT	Arbitrage Pricing Theory
ASEAN	The Association Of Southeast Asia Nations
CPI	Consumer Prices Index
GDP	Gross Domestic Product
GNP	Gross National Product
NSE	Nairobi Securities Exchange
NZSE40	New Zealand Stock Market Index
PVM	Present Value Model
USA	United States of America
VAR	Vector Auto Regressive
VECM	Vector Error Correction Model

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

This study intends to determine the impact of macroeconomic variables on the performance of the Nairobi Securities Exchange. In this background of the study, the paper presents the concepts of macroeconomic variables, the stock market performance, the impact of macroeconomic variables on stock performance, a brief background of the Nairobi Securities Exchange. Then the chapter also presents the research problem, objectives of the study and the value of the study.

1.1.1 Macroeconomic variables

Macroeconomic variables are variables that control the macro-economy, that is, the whole economy (Olukayode and Akinwande, 2009). These variables include interest rates, economic output, employment and unemployment, inflation, government budget balances and finance, international trade balances and finance, and productivity. It is a known fact that the investment that promotes economic growth and development requires long term funding, far longer than the duration for which most savers are willing to commit their funds. The capital markets generally, are believed to be the heart beat of the economy given their ability to respond almost instantaneously to fundamental changes in the economy. It encourages savings and real investment in any healthy economic environment. Aggregate savings are channeled into real investment that increases the capital stock and therefore economic growth of the country.

Given this attribute they make it possible for the discerning minds to feed the impulse of such an economy. The external shocks are the macroeconomic fundamentals or indicators that are expected to cause variation in the stock prices movement. The changes are often reflected by the magnitude and direct of movement in stock prices, market index and liquidity of the market (Olukayode and Akinwande, 2009).

1.1.2 Stock Market Performance

An efficient capital market is one in which security prices adjust rapidly to the arrival of new information and, therefore, the current prices of securities reflect all information about the security. What this means, in simple terms, is that no investor should be able to employ readily available information in order to predict stock price movements quickly enough so as to make a profit through trading shares (Frimpong, 2009).

The stock market plays a major role in financial intermediation in both developed and developing countries by channeling idle funds from surplus to deficit units in the economy. As the economy develops, more resources are needed to meet the rapid expansion. The stock market serves as a veritable tool in the mobilization and allocation of savings among competing uses which are critical to the growth and efficiency of the economy (Alile, 1984). Through mobilization of resources the stock market promotes economic growth by providing avenue to pool large and long term capital through issuing of shares and stocks and other equities for industries in dire need of finance to expand their business. Thus, the overall development of the economy is a function of how well

the stock market performs and empirical evidences have proved that development of the capital market is sine qua non for economic growth.

1.1.3 Impact of Macroeconomic Variables on Stock Performance

Over the past few decades, the interaction of the capital market and the macroeconomics variables has been a subject of interest among financial economists and practitioners. It is often argued that stock prices are determined by some fundamental macroeconomic variables such as the interest rate, Gross Domestic Product (GDP), exchange rate, inflation and money supply. Anecdotal evidence from the financial press indicates that investors generally believe that monetary policy and macroeconomic events have a large influence on the volatility of the stock price. This implies that macroeconomic variables could exert shocks on share returns and influence investors' investment decision. This motivates many researchers to investigate the relationships between share returns and macroeconomic variable (Christopher et al., 2006).

Macroeconomic variables have significant effect on stock price movement and returns but the basis of the causal relationship between macroeconomic variables and stock prices is not known with certainty as indicated by Flannery and Protopapadakis (2002). Efficient market hypothesis attributes movement of stock prices to new information that affect the expected discount rates or future income. An efficient market, for example, incorporates all current market information in stock prices. Any new information is captured instantaneously to reflect all available information. Studies by Fama and Schwert (1977), and Jaffe and Mandelkar (1976) suggest that new information on

macroeconomic factors have an impact on stock prices. This affirms the belief that macroeconomic variables influence stock returns and thus proposes that stock markets are not efficient. Empirical evidence suggests that stock returns respond to monetary news but there is no theory on the relationship of stock returns with macroeconomic variables in one direction, even though stock prices are known to react to market forces. Uncertainty remained about relationships between macroeconomic variables and stock performance because of varying economic conditions of nations, different data set and different testing methods used to establish these relationships.

Economic factors that impact on changing investment opportunities; the pricing policies; and factors which affect dividends theoretically, impact pricing and performance of stock exchanges. Predictability of stock market returns using macroeconomic factors suggests that markets are not efficient. As indicated by Fama (1991), stock prices reflect expectations of earnings, dividends, interest rates and future economic activity. If stock prices reflect the underlying fundamentals, then we can say that there is a causal relationship between macroeconomic variables and stock prices.

One way of linking macroeconomics variables and stock market returns is through arbitrage pricing (APT) (Ross, 1976), where multiple risk factors can explain asset returns. While early empirical papers on APT focused on individual security returns, it may also be used in an aggregate stock market framework, where a change in a given macroeconomic variable could be seen as reflecting a change in an underlying systemic risk factor influencing future returns. Most of the empirical studies on APT theory,

linking the state of the macro-economy to stock market returns, are characterized by modeling a short run relationship between macroeconomic variables and the stock price in terms of first difference, assuming trend stationarity.

An alternative, but not inconsistent approach is the discounted cash flow or present value model (PVM). This model relates the stock price to future expected cash flows and the discount rate of these cash flows. Again, all macroeconomic factors that influence future expected cash flow or the discount rate by which these cash flows are discounted should have an influence on the stock price. The advantage of the PVM model is that it can be used to focus on the long run relationship between the stock market and macroeconomic variables. Campbell and Shiller (1988) investigated the relationship between stock prices, earnings and expected dividends. They found that a long term moving average of earnings estimate predict dividends and the ratio of this earning variables to current stock price was powerful in predicting stock returns over several years. They concluded that these facts make stock prices and returns much too volatile to accord with a simple present value model.

Stock prices have been investigated for their relation to domestic macroeconomic indicators which are represented by interest rates, the industrial production index and inflation. The relationship between stock prices and interest rate is the choice of investors in portfolio among bond and stock (Apergis and Eleftheriou, 2002). With higher interest rates, investors prefer bond as this implies that stock prices will decrease. On the

contrary, a decrease in interest rates leads to an increase in stock prices. This negative relationship has been proven by Puah and Jayaraman (2007) and Reilly et al. (2007).

On the other hand, a positive relationship was found by Lobo (2002). He explained that the main factor affecting stock market volatility is the change in Security Exchange's disclosure policy. When the Security Exchange raises more (less) interest rates than expected, it is considered bad (good) news to stock market. Both have a positive effect, but the bad news has a stronger impact on market volatility. Similar phenomenon was found in studies on developing market, for instance Istanbul stock market (Erdem et al., 2005). Bohl et al. (2007) suggested that the positive relationship relies on the heteroskedasticity in interest rates and stock returns. The covariance between interest rates and stock return is positive when shock creates great volatility in stock market. In addition, Apergis and Eleftheriou (2002) found a positive correlation between interest rates and stock prices in Athens stock exchange. However, this correlation is statistically insignificant because stock prices depend on inflation rather than nominal interest rate movement, despite the close relationship between inflation and nominal interest rates.

McMillan (2005) tested how stock prices respond to the volatility of industrial production and short-term interest rates in the US market. He found a significant positive causation between industrial production and stock prices. The main reason for this is the fact that an increase in the real sector raises the future cash flow that creates a higher future dividend. With the expectation of higher dividend, investors have always been willing to buy shares at higher prices. Studying a group of six European countries, Nasseh and Strauss (2000)

found similar results. Their study showed a positive relationship between stock prices and industrial production on the domestic market in these countries.

Another important variable that is used in prior research to examine the relationship between macroeconomic indicators and stock prices is consumer prices index (CPI). Prior studies argue that CPI is such a specific factor representing for several macroeconomic variables such as discount rate, inflation and goods market (Nasseh and Strauss, 2000). A negative effect was found between CPI and stock prices. This can be explained as the results of the higher risk of future profitability. An increase in prices level will increase the cost of production which, in turn, would reduce future profitability. However, there are still some other opinions that higher prices level can also have a positive effect on stock prices due to the use of equities itself as equipment for hedging inflation. In Nasseh and Strauss paper (2000), CPI was used as representative for discount rate because stock prices are always listed at nominal prices. Their research suggests that CPI is prices neutrality or its explanation as stock prices will react by one percentage for each percentile change in CPI. In this study, the researcher expected that the macroeconomic variables in the study will have a positive influence on stock market performance.

1.1.4 Nairobi Securities Exchange

The Nairobi Securities Exchange (NSE) re-classified the listed companies in 2011 into 12 sectors to align them with various sectors of the economy. These sectors are agricultural (7 companies), commercial and services (9 companies), telecommunication and technology (2 companies), automobiles and accessories (4 companies), banking (10

companies), insurance (5 companies), investment (4 companies), manufacturing and allied (9 companies), construction and allied (5 companies), and energy and petroleum (4 companies). The other two sectors are fixed income securities market segment which lists preference shares and bonds. In total, there are 59 companies currently listed and trading on the NSE. (Appendix A)

1.2 Research Problem

A number of macroeconomic factors such as changes in interest rate, inflation rates, and economic growth are believed to affect how stocks perform. The macroeconomic approach attempts to examine the sensitivity of stock prices to changes in macroeconomic variables. Under this approach, stock prices are influenced by changes in money supply, interest rate, inflation and other macroeconomic indicators. It employs a general equilibrium approach, stressing the interrelations between sectors as central to the understanding of the persistence and co-movement of macroeconomic time series, based on the economic logic, which suggests that everything does depend on everything else (Emenuga, 1994).

The stock exchange acts as the most important market for capital and a well-developed capital market is essential to promote economic development. The Kenyan economy has experienced mixed macroeconomic performance over the years. Likewise, the Nairobi Securities Exchange has also undergone a series of reforms to measure up with other emerging markets in the world and increase the influx of foreign investors. This is done to promote the key sectors of the economy, make the market accessible for raising capital

and attractive to both foreign and local investors. The Kenyan government has been offering a number of incentives to boost the stock market. Specially, foreign investors are granted substantial incentives to invest in Kenyan company shares. The government has taken several significant steps to boost the Kenyan Stock Market. Further, the capital market plays an important part in the economy and companies listed in the NSE are already involved in the development of infrastructure - the Power Sector, Telecom, Water and Health.

Most of the studies on the impact of macroeconomic indicators on stock market performance have covered developed economies, whereas much less studies covered emerging markets such as Kenya's economy. Some of these studies include Hussainey and Ngoc (2008) in Viet Nam, Frimpong (2009) in Ghana, Olukayode and Akinwande (2009) in Nigeria. Other studies have been conducted to determine the determinants of stock price movements Chen et al, (1986) and Fama and French, (1989). All the studies cited above suggest that strong relationships exist between macroeconomic variables and stock prices in developed as well as Emerging Stock Markets.

Studies on the impact of macroeconomic indicators on stock market performance in Kenya include Makiya (2011), Olweny and Omondi (2011), Bitok et al (2011), Gekone (2011), Kiptoo (2010), and Muriithi (2000). However most of these studies only focused on a few macroeconomic indicators as in the case of Gekone (2011) and Kiptoo (2010). There is therefore a gap in literature as far as the study on the impacts of macroeconomic indicators on stock performance in Kenya is concerned hence the need for this study. The

study sought to answer the following question: what is the impact of macroeconomic variables on stock performance in the NSE?

1.3 Research Objective

To establish the impact of macroeconomic variables on stock market performance of the Nairobi Securities Exchange.

1.4 Value of the Study

The study will be useful to all the companies listed in the Nairobi Securities Exchange. The management and board of governors of these companies will have an empirical basis upon which they can base their strategies to improve their stock performance.

The study will also be invaluable to investors as it will show the impacts of macroeconomic indicators on stock performance hence make it possible to determine the best time to buy or sell shares.

Researchers and academicians in the field of economics and finance will find this study a useful guide for carrying out further studies in the area.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents the literature review. First, a theoretical review is provided focusing on theories that explain the impact of macroeconomic indicators on stock performance. Secondly, the empirical review of the studies that have been done on the impact of macroeconomic indicators on stock performance is made. The research gap is then provided.

2.2 Theoretical Review

There are five schools of thought on stock price behavior. These are the fundamentalist schools, the technical school, the random walk hypothesis school, the Behavioral School of finance and macro-economic hypothesis school.

2.2.1 Fundamentalist View

In this view, the value of a corporation's stock is determined by expectations regarding future earnings and by the rate at which those earnings are discounted. The fundamentalists apply present value principles to the valuation of corporate stock, using dividends, earnings, assets and interest rate to establish the price of stock (Olukayode and Akinwande, 2009).

This theory can be applied to explain how macroeconomic variables such as interest rates influence the performance of stocks. From the fundamentalists view, stock prices can be influenced by macroeconomic variables.

2.2.2 Technicalist View

The technical school on the other hand, opposes the fundamentalists' arguments, and claims that stock price behaviour can be predicted by the use of financial or economic data. They submit that stock prices tend to follow definite pattern and each price is influenced by preceding prices, and that successive prices depend on each other. According to Smith (1993), technical analysts engage themselves in studying changes in market prices, the volume of trading and investors' attitude.

2.2.3 Random-Walk Hypothesis

Both the technical and fundamental analyses have been challenged by scholars who subscribe to the random-walk hypothesis, which sees stock price movements in terms of a probability distribution of different possible outcome. The random-walk hypothesis is based on efficient market assumption that investors adjust security rapidly to reflect the effect of new information. Believers in the efficient capital market hypothesis argue that stock prices are essentially random and therefore, there is no chance for profitable speculation in the stock market. An interesting feature of random walk is the persistence of random shocks. Empirical test of the random-walk hypothesis have been carried out by scholars like Moore (1962) and Fama (1965). These scholars independently tested the

statistical randomness of successive changes in stock prices. Their findings showed insignificant departures from randomness and were both inconclusive and insufficient.

2.2.4 Behavioural View

The behavioural school of finance holds that market might fail to reflect economic fundamentals under three conditions. When all three apply, the theory predicts that pricing biases in financial markets can be both significant and persistent. The first behavioural condition is irrational behaviour. It holds that investors behave irrationally when they don't correctly process all the available information while forming their expectations of a company's future performance. The second is systematic patterns of behaviour, which hold that even if individual investors decided to buy or sell without consulting economic fundamentals, the impact on share prices would be limited. Lastly, limits to arbitrage in financial markets ascertain that when investors assume that a company's recent strong performance alone is an indication of future performance; they may start bidding for shares and drive up the price. Some investors might expect a company that surprises the market in one quarter to go on exceeding expectations (Fama, 1965).

2.2.5 Macroeconomist View

The usual method of using factor analysis approach to determine the factors affecting asset returns, some scholars have measured macroeconomic factors to explain stock return and found that changes in interest rate are associated with risk premia. They interpreted the observation to be a reflection of changes in the rate of inflation, given the

finding of Fama (1977) that changes in the rate of inflation are fully reflected in interest rates (Emenuga, 1994). The macroeconomic approach attempts to examine the sensitivity of stock prices to changes in macroeconomic variables. The approach posits that stock prices are influenced by changes in money supply, interest rate, inflation and other macroeconomic indicators. It employs a general equilibrium approach, stressing the interrelations between sectors as central to the understanding of the persistence and co-movement of macroeconomic time series, based on the economic logic, which suggests that everything does depend on everything else.

2.3 Determinants of Stock Market Performance

There is a growing body of research on the determinants of equity market performance in emerging markets. Many researchers have examined macroeconomic and microeconomic variables, including the following financial and other non-financial variables like sovereign spreads (Gendreau and Heckman, 2003); country ratings (Bekaert et al, 1997); valuation ratios (Maroney et al, 2004); inflation rates (Hooker, 2004); exchange rates (Bailey and Chung, 1995); population demographics (Bekaert et al, 1998) and other.

Many of these studies find that there are underlying differences between developed and emerging markets. The main issue is that emerging markets have not been fully integrated with the world markets, but are becoming more integrated as barriers to international investors are being gradually abandoned. Unfortunately, despite the growing interest in emerging equity markets the research findings in this area remain patchy and do not always form a complete account of the situation in these markets. From the

analysis of determinants of stock market performance in emerging markets it appears that there are three main groups of determinants: risk factors (for instance, total risk, downside betas), macroeconomic factors (for instance, interest or exchange rates) and traditional valuation ratios (for instance, price/ earnings ratio or dividend yield).

For example, Harvey (2000) examines eighteen risk factors to find out their impact on the expected returns in forty-seven developed and emerging markets. These risk factors include total risk, idiosyncratic risk, size, semi-variance measures, value at risk measure, downside betas, skewness and coskewness, country risk ratings and other. The results show that emerging markets exhibit different characteristics in comparison to developed markets and the former appear to be impacted by total risk measures. Hooker (2004) criticises Harvey (2000) for not including any macro variables in the list of eighteen risk factors. However, the results of his analysis provide strong evidence against the significance of most of the macro variables such as interest rates, inflation rates, exchange rate and GDP change. Hooker (2004) confirms that valuation ratios and financial risks variables including momentum, price/earning ratio and downside risk respectively appear to be robust predictors of emerging market equity returns. Moreover, Bekaert and Harvey (1995, 1997) find that both macro factors and valuation ratios have been useful to predict equity returns in emerging markets up through the middle 1990s.

2.4 Empirical Studies

Several literatures now exist which investigate the relationship between stock market returns and a range of macroeconomic factors. One way of linking through Arbitrage Pricing Theory (APT) where multiple risk factors can explain asset returns (Ross, 1976). Empirical works based on the APT theory are characterized by modeling a short run relationship between macroeconomic variables and the stock price in terms of first differences assuming trend stationarity (Fama, 1981, 1990; Fama and French, 1989; Ferson and Harvey 1991; Black et al., 1997). Another approach is the discounted cash flow or Present Value Model (PVM). This approach relates the stock price to future expected cash flows and the future discount rate of the cash flows. Thus, the PVM can be used to focus on the long run relationship between the stock market and macroeconomic variables.

Fama and Gibbons (1982) examine the relationship between inflation, real returns and capital investment. Their finding is in confinement with Mundell (1963) and Tobin (1965) findings that expected real returns on bills and expected inflation are negatively correlated. Fama (1991) study also shows that expected inflation is negatively related to share price. Geske and Roll (1983) in their study of the United States confirm that stock price is negatively related to inflation rate and positively related to real economic activity. Gan et al. (2006) while investigating the relationships between New Zealand stock market index and a set of seven macroeconomic variables from January 1990 to January 2003 using co-integration and Granger causality test found out that there exists a long run relationship between New Zealand's stock market index (NZSE40) and the

macroeconomic variables tested. The Granger causality test result shows that NZSE40 is not a leading indicator for changes in macroeconomic variables.

Vuyyuri (2005) investigated the co-integrating relationship and the causality between the financial and the real sectors of the Indian economy using monthly observations from 1992 through December 2002. The financial variables used were interest rates, inflation rate, exchange rate, stock return, and real sector was proxied by industrial productivity. Johansen (1988) multivariate co-integration test supported the long-run equilibrium relationship between the financial sector and the real sector, and the Granger test showed unidirectional Granger causality between the financial sector and real sector of the economy.

Darrat (1990) examines the effect of monetary and fiscal policy on share returns in Canada and concludes that budget deficits, long term bond rates, interest rate volatility and industrial production determine share returns. Chen et al. (1986) while testing the validity of Arbitrage Pricing Theory affirm that macroeconomic variables are causally related to share returns. Najand and Rahman (1991) also applied the Schwetz (1989) volatility measure and found evidence of the existence of a causal relationship between share returns and inflation. Ajayi and Mougoue (1996) showed that an increase in stock prices has a negative short term effect on domestic currency but in the long term this effect is positive, while currency depreciation has short and long term effect on the stock market. Mukherjee and Naka (1995), Maysami and Koh (2000) and Kwon and Shin (1999) found that there is a positive relationship between money supply and stock

returns. Also, Kwon and Shin (1999) examined the Korean market and found that the Korean stock markets are co integrated with the production index, exchange rate, trade balance and money supply.

In an elaborate search for the macroeconomic variables that have effect on stock returns, Chen, et al (1986) identified interest rate, expected and expected rates of inflation and the spread between high and low-grade bond as the relevant variables. Chen, et al (1986) tested the multifactor model in the USA by employing seven macroeconomic variables. They found that consumption, oil prices and the market index are not priced by the financial market. However, industrial production, changes in risk premium and twists in the yield curve were found to be significant in explaining stock returns. Chen (1991) performed the second study covering the USA. Findings suggest that future market stock return could be forecasted by interpreting some macroeconomic variables such as default spread, term spread, one month t-bill rate, industrial production growth rate, and the dividend – price ratio.

A recent study by Flannery and Protopapadakis (2002) reevaluated the effect of some macroeconomic series on US stock. Among these series six macro variables, namely, balance of trade, housing starts, employment, consumer price index, M1 and producer price index seem to affect stock returns. On the other hand two popular measures of aggregate economic activity (real GNP and industrial production) do not appear to be related with stock returns.

Wongbangpo and Sharma (2002) explored the relationship between the stock returns for the ASEAN-5 countries of Indonesia, Malaysia, the Philippines, Singapore, and Thailand and five macroeconomic variables. By observing both short and long run relationships between respective stock indexes and the macroeconomic variables of gross national product (GNP), the consumer price index (CPI), the money supply, the interest rate, and exchange rate they found that in the long-run all five stock price indexes were positively related to growth in output and negatively to the aggregate price level. But a negative long-run relationship between stock prices and interest rates was noted for the Philippines, Singapore, and Thailand, and was found to be positive for Indonesia and Malaysia. In the end, causality tests detected an overall relationship between macroeconomic variables and stock prices for all five ASEAN equity markets.

Adam and Tweneboah (2008) examined the impact of macroeconomic variables on stock prices in Ghana using quarterly data from 1991 to 2007. They examined both the long-run and short-run dynamic relationships between the stock market index and the economic variables-inward foreign direct investment, Treasury bill rate, consumer price index, average oil prices and exchange rates using co integration test, Vector Error Correction Model (VECM). They found that there is co-integration between macroeconomic variable and stock prices in Ghana indicating long-run relationship. The VECM analysis shows that the lagged values of interest rate and inflation have a significant influence on the stock market. Also, the inward foreign direct investments, oil prices, and the exchange rate demonstrate weak influence on price changes.

In Nigeria, Amadi, et al (2000) employed multiple regressions to estimate the functional relationship between money supply, inflation, interest rate, exchange rate and stock prices. Their study revealed that the relationship between stock prices and the macroeconomic variables are consistent with theoretical postulation and empirical findings in some countries. Though, they found that the relationship between stock prices and inflation does not agree with some other works done outside Nigeria. Nwokoma (2002), attempted to establish a long-run relationship between the stock market and some of macroeconomic indicators. His results showed that only industrial production and level of interest rates, as represented by the 3-month commercial bank deposit rate have a long-run relationship with the stock market. He also found that the Nigeria market responds more to its past prices than changes in the macroeconomic variables in the short run.

Ologunde, et al (2006), examines the relationships between stock market capitalization rate and interest rate. They found that prevailing interest rate exerts positive influence on stock market capitalization rate. They also found that government development stock rate exerts negative influence on stock market capitalization rate and prevailing interest rate exerts negative influence on government development stock rate.

Liu and Shrestha (2008) investigated the relationship between the Chinese stock market indices and a set of macroeconomic variables, including money supply, industrial production, inflation, exchange rate and interest rates. They discovered the evidence of co-integration relationships between stock prices and macroeconomic variables.

Additionally, macroeconomic situation was found to be positively influenced by long-run stock-market performance.

The relations among stock returns, real activity, inflation and money supply changes were investigated by James et al. (1985), and their empirical results strongly support Geske and Roll's (1983) reversed causality model, which brings similar results with Solnik (1997) for other industrialized countries. Kaneko and Lee (1995) have re-examined the US and the Japanese markets and they employed the Chen et al. (1986) factors to evaluate the effects of systematic economic news on stock market returns. Using eight variable Vector Auto Regressive (VAR) system, they found that both the term and risk premiums, as well as the growth rate of industrial production, are significantly priced in the US.

Asprem (1989) examined the relationship between macroeconomic variables and stock prices in European countries and found a positive relation between Industrial production, money supply and stock prices and a negative effect between inflation, interest rate and stock prices. Bulmash and Trivoli (1991) found that interest rates influenced stock prices negatively, since higher interest rates attract another investment alternative. Abdullah and Hayworth (1993) found that stock returns are positively related with money growth and inflation rate while interest rates react negatively on stock returns.

2.5 Conclusion

The empirical review above has shown the impacts of macroeconomic indicators on stock market performance. But these studies were done in different environments and hence the results may not be generalized to developing countries such as Kenya. The studies so far done in Kenya have only focused on two or three macroeconomic variables in their models hence missing on other variables. In this study, several macroeconomic factors will be explored in the same model. There is therefore a gap in literature as regards the impacts of macroeconomic indicators on stock market performance among companies listed on Nairobi Securities Exchange. This is a gap the present study seeks to bridge.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the methods that were used in the collection of data pertinent in answering the research questions. It is divided into research design, population and sample design, data collection, and data analysis methods.

3.2 Research Design

The study used a descriptive research design. This a research design used to obtain information concerning the current status of the phenomena to describe what exists with respect to variables or conditions in a situation. The methods involved range from the survey to the correlation study which investigates the relationship between variables (Key, 1997). This method was selected because it most captures the objective of the study. In this manner, the study was able to establish the relationship between the variables in the study.

3.3 Population

The population of this study comprised all the 59 listed companies in the Nairobi Securities Exchange as at 30th June 2012. All the companies were surveyed since the population is not large. Further, most studies done on listed firms in Kenya did not sample the firms but concentrated on the entire population. This is attributed to the fact that secondary data on these firms is readily available and accessible to researchers. This was therefore a census study.

3.4 Data Collection

In this study secondary data was used to investigate the relationship between independent and dependent variables. The financial data from 2004-2011 was used in the study. The eight year period is long enough to capture fluctuations in time series data and is also recent hence very reliable for the study. The sample consisted of the 59 listed companies listed in the NSE. The dependent variable was the stock price and the independent variables were money supply, exchange rate, interest rate and inflation rate. This data was sourced from various sources including the World Bank website, Central Bank of Kenya website and the Nairobi Securities Exchange.

3.5 Data Analysis

The data was analysed using descriptive analysis, correlation analysis and regression analysis. The descriptive statistics were the minimum, maximum, mean, and standard deviation. Correlation analysis was used to test for any serial correlations between the independent variables.

3.5.1 Analytical Model

Based on the model employed by Bilson et al. (2001) the following multiple regression model was used. Based on the literature reviewed, this model was found applicable to the Kenyan context.

$$\ln SP_{it} = \beta_0 + \beta_1 \ln MS_{it} + \beta_2 \ln ER_{it} + \beta_3 \ln CPI_{it} + \beta_4 \ln LIR_{it} + \beta_5 \ln MS_{it-1} + \beta_6 \ln CPI_{it-1} + \beta_7 \ln MS_{it-2} + \beta_8 \ln CPI_{it-2} + \epsilon_{it}$$

Where,

\ln is the natural log, β_0i is the intercept and ϵ_{it} is the error term

SP_{it} is the stock price of i_{th} company at time t . this was collected from the NSE database as the price at the end of the year for the period 2004-2011.

MS_{it} is the Money supply measured by broad Money supply M_2 . This was collected from the Central Bank website for the period 2004-2011.

ER_{it} is the exchange rate measured as the nominal exchange rate. This was collected from the Central Bank website for the period 2004-2011.

CPI_{it} is the inflation rate measured by changes in the Consumer Price Index (CPI). This was collected from the World Bank website for the period 2004-2011.

LIR_{it} is the lending interest rate measured by the average lending interest rate. This was collected from the Central Bank website for the period 2004-2011.

The figures of interest rate and inflation rate were in natural logs in order to reduce errors and increase stability of the model.

Strength of the model was tested through ANOVA using significance of F statistic at 5% level as well as using coefficient of determination (R^2). The analysis was done using Statistical Package for Social Sciences (SPSS) version 20. The results were presented in tables and graphs where necessary.

CHAPTER FOUR

DATA ANALYSIS, FINDINGS AND DISCUSSIONS

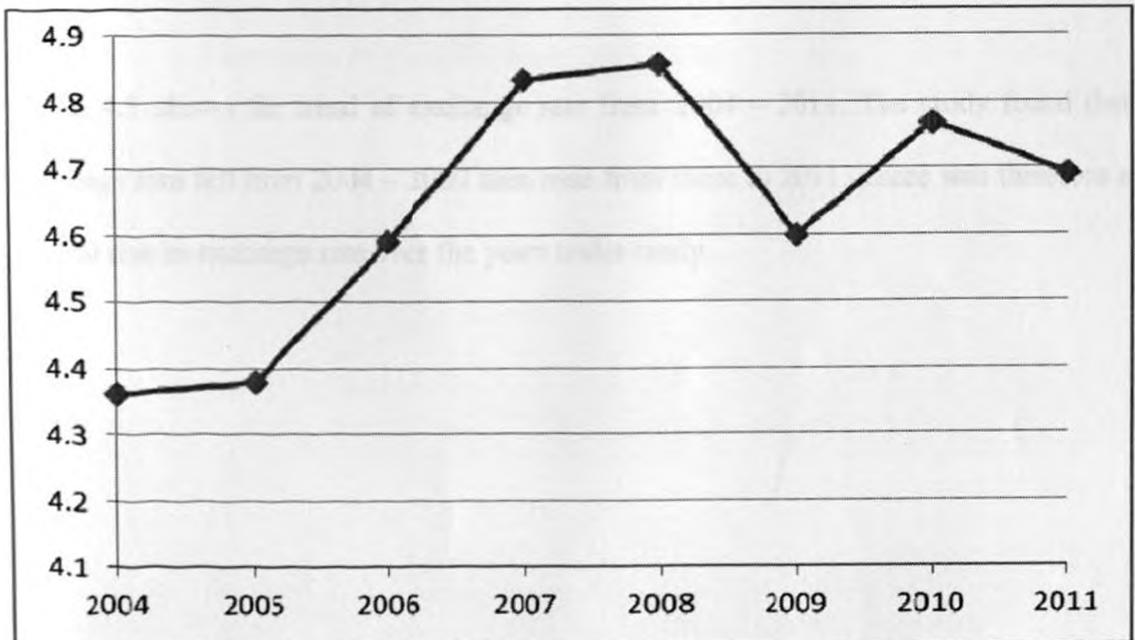
4.1 Introduction

This chapter presents the results of data analysis. The analysis is based on data collected from 2004 – 2011. The results are presented as follows: first, the descriptive results are presented in terms of trend analysis in graphs and a summary of descriptive statistics in a table in section 4.2.

4.2 Descriptive Analysis Results

Figure 4.1 shows the results of the trend in share prices for the listed firms from 2004 – 2011. The results show that there was a general rise in share prices over the period under study. The prices indicate the share prices of individual companies over the period of study

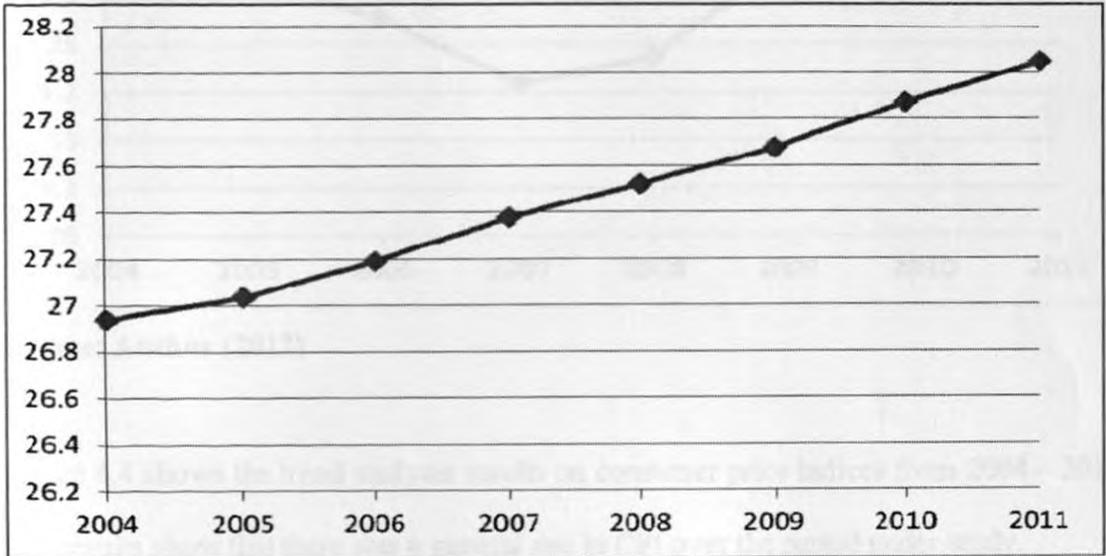
Figure 4.1: Trend in Share Prices (LnSP) 2004 – 2011



Source: Research findings

Figure 4.2 shows the trend analysis results on the broad money supply (M2) from 2004 – 2011. As shown, the results indicate that there was a general rise in money supply in the period under study.

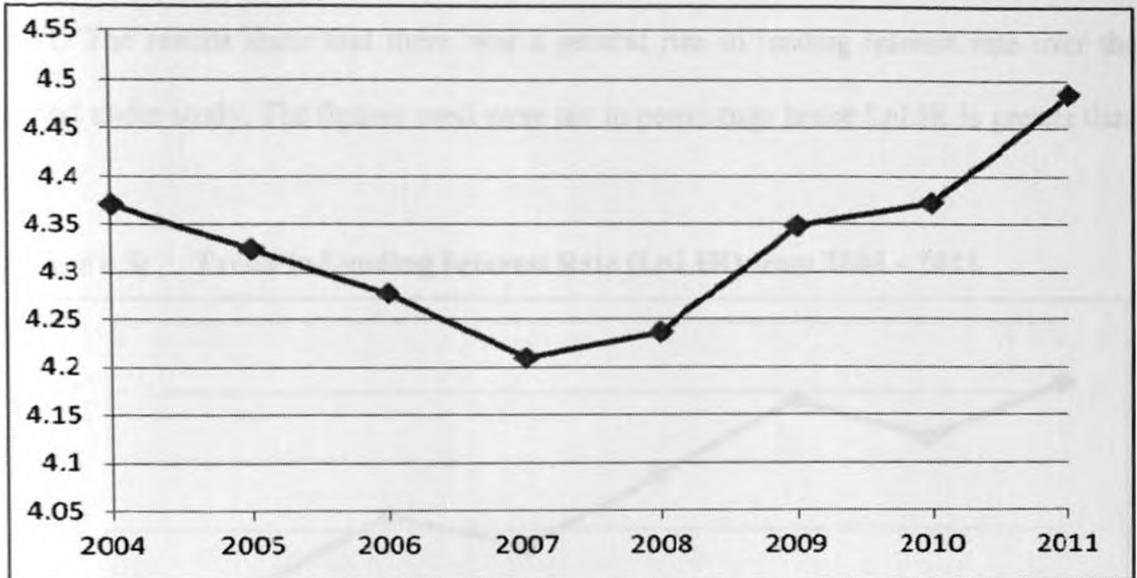
Figure 4.2: Trend in Money Supply (LnMS) from 2004 – 2011



Source: Research findings

Figure 4.3 shows the trend of exchange rate from 2004 – 2011. The study found that exchange rate fell from 2004 – 2007 then rose from there to 2011. There was therefore a general rise in exchange rate over the years under study.

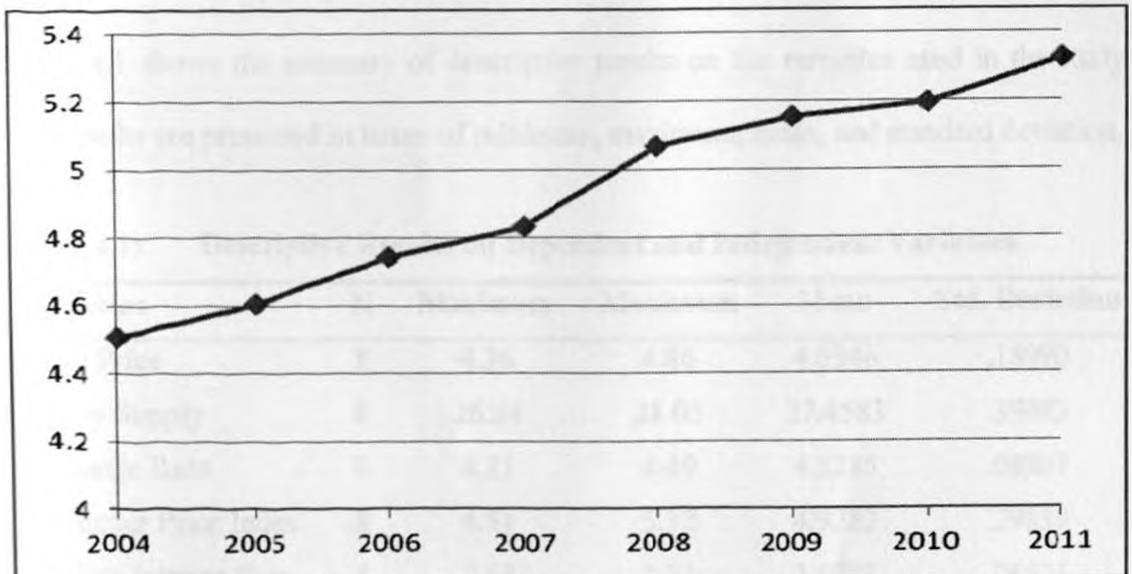
Figure 4.3: Trend in Exchange Rate (LnER) from 2004 – 2011



Source: Author (2012)

Figure 4.4 shows the trend analysis results on consumer price indices from 2004 – 2011. The results show that there was a general rise in CPI over the period under study.

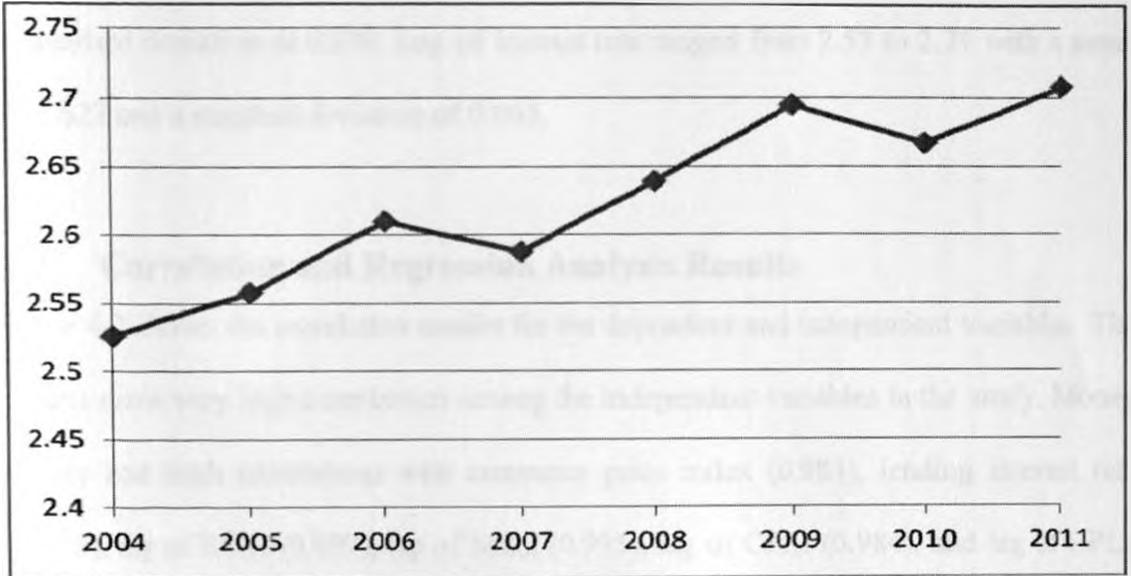
Figure 4.4: Trend in CPI (LnCPI) from 2004 – 2011



Source: Research findings

Figure 4.5 shows the results of the trend analysis on lending interest rate from 2004 – 2011. The results show that there was a general rise in lending interest rate over the period under study. The figures used were not in percentage hence LnLIR is greater than one.

Figure 4.5: Trend in Lending Interest Rate (LnLIR) from 2004 – 2011



Source: Research findings

Table 4.1 shows the summary of descriptive results on the variables used in the study. The results are presented in terms of minimum, maximum, mean, and standard deviation.

Table 4.1: Descriptive Results on Dependent and Independent Variables

Variables	N	Minimum	Maximum	Mean	Std. Deviation
Share Price	8	4.36	4.86	4.6346	.18990
Money Supply	8	26.94	28.05	27.4583	.39682
Exchange Rate	8	4.21	4.49	4.3285	.08807
Consumer Price Index	8	4.51	5.32	4.9282	.29839
Lending Interest Rate	8	2.53	2.71	2.6237	.06521

Source: Research findings

The study found that log of share prices ranged from a minimum of 4.36 to a maximum of 4.86 with a mean of 4.63 and a standard deviation of 0.189. Log of money supply ranged from 26.94 to 28.05 with a mean of 27.45 and a standard deviation of 0.396. Log of exchange rate ranged from 4.21 to 4.49 with a mean of 4.32 and a standard deviation of 0.088. Log of consumer price index ranged from 4.51 to 5.32 with a mean of 4.92 and a standard deviation of 0.298. Log of interest rate ranged from 2.53 to 2.71 with a mean of 2.623 and a standard deviation of 0.065.

4.3 Correlation and Regression Analysis Results

Table 4.2 shows the correlation results for the dependent and independent variables. The results show very high correlations among the independent variables in the study. Money supply had high correlations with consumer price index (0.984), lending interest rate (0.938), lag of MS,1 (0.997), lag of MS,2 (0.995), lag of CPI,1 (0.984), and lag of CPI,2 (0.994). The high correlations show that there were serial correlations among some of the independent variables. Based on the way Bilson et al. (2001) treated the serially correlated independent variables, all the lag variables were dropped in the final model that was used in the regression analysis.

Table 4.2: Correlation Matrix for Dependent and Independent Variables

		SP	MS	ER	CPI	LIRs	Lag(LnMS,1)	Lag(LnMS,2)	Lag(LnCPI,1)	Lag(LnCPI,2)
Share Price	Pearson	1								
	Correlation									
Money Supply	Pearson	.645	1							
	Correlation									
Exchange Rate	Pearson	.084		1						
	Correlation									
Consumer Price Index	Pearson	-.329	.461		1					
	Correlation									
Lending Interest Rate	Pearson	.426	.250	.380		1				
	Correlation									
Lag(LnMS,1)	Pearson	.672	.984**	.404	.968**		1			
	Correlation									
Lag(LnMS,2)	Pearson	.068	.000	.353	.000	.924**		1		
	Correlation									
Lag(LnCPI,1)	Pearson	.560	.938**	.709	.983**	.905*	.996**		1	
	Correlation									
Lag(LnCPI,2)	Pearson	.149	.001	.322	.000	.003	.000	.982**		1
	Correlation									
Share Price	Pearson	.448	.997**	.709	.983**	.924**	.996**	.982**	.966**	
	Correlation									
Money Supply	Pearson	.314	.000	.074	.000	.003	.000	.000	.000	.002
	Correlation									
Exchange Rate	Pearson	-.047	.995**	.891*	.973**	.905*	.996**	.982**	.982**	.966**
	Correlation									
Consumer Price Index	Pearson	.930	.000	.017	.001	.013	.000	.000	.000	.002
	Correlation									
Lending Interest Rate	Pearson	.436	.984**	.664	.975**	.933**	.982**	.982**	.982**	.966**
	Correlation									
Lag(LnMS,1)	Pearson	.328	.000	.104	.000	.002	.000	.000	.000	.002
	Correlation									
Lag(LnMS,2)	Pearson	.040	.994**	.867*	.953**	.846*	.989**	.991**	.991**	.966**
	Correlation									
Lag(LnCPI,1)	Pearson	.940	.000	.025	.003	.034	.000	.000	.000	.002
	Correlation									

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

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

Source: Research findings

Table 4.3 shows the regression results on the impact of macroeconomic variables on stock market performance.

Table 4.3: Impact of Macroeconomic Variables on Stock Market Performance

Dependent variable	Share Prices (SP)
Constant	-2.079
Money Supply (MS)	0.673 (0.229)
Exchange Rate (ER)	-1.723 (0.018)
Consumer Price Index (CPI)	0.145 (0.866)
Lending Interest Rate (LIR)	-1.916 (0.322)
R	0.978
R square	0.956
Adjusted R square	0.897
F statistic	16.279
Prob (F statistic)	0.022

Source: Research findings

The figures in brackets are estimated t-statistics.

The study found that money supply had a positive impact on share prices (0.673) but the impact was not significant at 5% level of confidence. Money supply did not therefore have a significant impact on stock market performance.

The study found that exchange rate had a negative impact on share prices (-1.723). The impact was significant at 5% level of confidence. Therefore, exchange rate had a significant impact on stock market performance.

The study found that consumer price index had a positive impact on share prices (0.145). The impact was however insignificant at 5% level of confidence. The results show that consumer price index did not have a significant impact on stock performance.

The study found that lending interest rate had a negative impact on share prices (-1.916). This impact was not significant at 5% level of confidence. The results therefore reveal that interest rates did not have a significant impact on stock market performance.

The results further show that the variables jointly accounted for 95.6% of the variance in share prices. The F statistic was also significant suggesting that the model was fit to explain the determinants of share prices.

4.4 Interpretation of Findings

This study sought to establish the impact of macroeconomic variables on stock market performance of the Nairobi Securities Exchange. The trend analysis showed that there was a general rise in share prices, money supply, exchange rate, inflation, and interest rate over the period under study. These results show that over the period of analysis, there was an improvement on one macroeconomic variable the money supply. The rest of the macroeconomic variables suffered over the period as exchange rates soared, inflation rose, and interest rates were very high.

The regression analysis showed that money supply and inflation rate had positive but insignificant effects on share prices. This means that as money supply rises, so does the stock market performance. Therefore money supply should increase over time in order to improve the stock market performance. The results also mean that as inflation rose, so did the stock market performance. This is not entirely unexpected since the rise in money supply also leads to rise in inflation rates. However, these results were not significant and

therefore it can be concluded that stock market performance in Kenya is not influenced by inflation or money supply.

The results also showed that interest rate had a negative effect on share prices. This means that as interest rates declined, the share prices rose. This further means that stock performance rises only when interest rates fall. This is consistent with theory as it is expected that lower interest rates improve credit market liquidity and therefore leads to more investment in the market that includes the stock market. These results were however insignificant and therefore it can be deduced that stock market performance in Kenya is not significantly influenced by interest rate.

The study further revealed that exchange rates have a negative and significant effect on stock market performance. This means that as exchange rates fall, stock prices rise. Thus, stock market performance improves when exchange rates fall. Since the results were significant, the results lead to the conclusion that stock market performance in Kenya is negatively influenced by exchange rates.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of the study in section 5.2, conclusion in 5.3, recommendations in 5.4, limitations of the study in 5.5, and suggestions for further research in 5.6.

5.2 Summary

This study sought to examine the impacts of macroeconomic variables on stock market performance in the NSE. The study used a descriptive research design. The population of this study comprised all the 59 listed companies in the Nairobi Securities Exchange as at 30th June 2012. In this study secondary data was used to investigate the relationship between independent and dependent variables. The data was analysed using descriptive analysis, correlation analysis and regression analysis.

The study found that there was a general rise in share prices, money supply, exchange rate, inflation, and interest rate over the period under study. The study also found that money supply and inflation rate had positive but insignificant effects on share prices while interest rate had a negative but insignificant effect on share prices. Further, exchange rate has a negative and significant effect on share prices. The variables jointly accounted for 95.6% of the variance in share prices. The F statistic was also significant suggesting that the model was fit to explain the determinants of share prices.

5.3 Conclusion

The study concludes that money supply does not have a significant impact on share prices. As far as the direction of effect is concerned, the results are consistent with Aspren (1989) who found that money supply had a positive effect on stock prices. But as the overall significance of the effect goes, the results were inconsistent with previous studies. Therefore, the stock market performance in Kenya is not influenced by the broad money supply in Kenya.

The study further concludes that exchange rate had a significant impact on stock market performance. This effect was negative meaning that as exchange rates fall the better the stock market performance. These results are consistent with the findings of Wongbangpo and Sharma (2002) who found that exchange rate was negatively related to the aggregate price level.

The study concludes that inflation as measured by CPI does not have a significant impact on stock performance. The impact was, however, positive and is inconsistent with the results of Wongbangpo and Sharma (2002) who found that inflation was negatively related to the aggregate price level.

The study concludes that interest rates do not have a significant impact on stock market performance in Kenya. The effect was negative and is consistent with the findings of Wongbangpo and Sharma (2002) who found that interest rate was negatively related to the aggregate price level.

5.4 Recommendations for Policy Makers

The study recommends that in order for the stock market performance in Kenya to improve, there is need for the Government to initiate measures that will control the exchange rate in Kenya. Lower exchange rates would be more appropriate for the stock exchange market to perform better.

The study recommends that there is also need for the Government to control the broad money supply in Kenya as there is some evidence to suggest that higher money supply may lead to better stock market performance. This may be attributed to the high liquidity in the market which gives investors more cash to invest in the stock market.

The study also recommends that there is need for the government to initiate policies that will lower the interest rates in Kenya as lower interest rates may translate to higher stock market performance. The lower interest rates help improve the liquidity in the market and therefore lead to more investments.

5.5 Limitations of the Study

The study only focused on four independent variables – interest rates, inflation, exchange rate, and money supply. The interpretation of these results as concerns the macroeconomic factors should be restricted to variables under study.

The study also used the stock market as the basis of analyzing the data. The results of this study should not be therefore generalized to other sectors of the economy without taking into consideration this assumption.

The study also suffers from the fact that it is country-specific therefore the results cannot be applicable to other countries with different operating environment from Kenya. Interpretations of these results outside Kenya should therefore be approached with care.

5.6 Suggestions for Further Research

This study can be replicated to other sectors of the economy in order to find out whether these factors influence performance of other firms. Thus it can be replicated in the manufacturing industry or the banking industry to determine what macroeconomic factors influence their performance.

Secondly, the study suggests that future studies should be done in order to establish whether and how macroeconomic variables affect the overall production in the country. This will be helpful especially for policy purposes as it will inform on what factors need to be considered in order to improve the productive capacity of Kenya.

Lastly, the study suggests that this study be done in the informal sector to determine what factors influence performance and production in the informal sector as this sector is very instrumental in the growth of the economy and is well anchored in Vision 2030.

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APPENDIX

Appendix A: Listed companies in the Nairobi Securities Exchange

AGRICULTURAL

1. Eaagads Ltd
2. Kapchorua Tea Co. Ltd
3. Kakuzi
4. Limuru Tea Co. Ltd
5. Rea Vipingo Plantations Ltd
6. Sasini Ltd
7. Williamson Tea Kenya Ltd

COMMERCIAL AND SERVICES

8. Express Ltd
9. Kenya Airways Ltd
10. Nation Media Group
11. Standard Group Ltd
12. TPS Eastern Africa (Serena) Ltd
13. Scangroup Ltd
14. Uchumi Supermarket Ltd
15. Hutchings Biemer Ltd
16. Longhorn Kenya Ltd

TELECOMMUNICATION AND TECHNOLOGY

17. AccessKenya Group Ltd
18. Safaricom Ltd

AUTOMOBILES AND ACCESSORIES

19. Car and General (K) Ltd
20. CMC Holdings Ltd
21. Sameer Africa Ltd
22. Marshalls (E.A.) Ltd

BANKING

23. Barclays Bank Ltd
24. CFC Stanbic Holdings Ltd
25. Diamond Trust Bank Kenya Ltd
26. Housing Finance Co Ltd
27. Kenya Commercial Bank Ltd
28. National Bank of Kenya Ltd
29. NIC Bank Ltd
30. Standard Chartered Bank Ltd
31. Equity Bank Ltd
32. The Co-operative Bank of Kenya Ltd

INSURANCE

33. Jubilee Holdings Ltd
34. Pan Africa Insurance Holdings Ltd
35. Kenya Re-Insurance Corporation Ltd
36. CFC Insurance Holdings
37. British-American Investments Company (Kenya) Ltd

INVESTMENT

38. City Trust Ltd
39. Olympia Capital Holdings Ltd
40. Centum Investment Co Ltd
41. Trans-Century Ltd

MANUFACTURING AND ALLIED

42. B.O.C Kenya Ltd
43. British American Tobacco Kenya Ltd
44. Carbacid Investments Ltd
45. East African Breweries Ltd
46. Mumias Sugar Co.
47. Unga Group Ltd
48. Eveready East Africa Ltd

49. Kenya Orchards Ltd

50. A.Baumann CO Ltd

CONSTRUCTION AND ALLIED

51. Athi River Mining Ord 5.00

52. Bamburi Cement Ltd Ord 5.00

53. Crown Berger Ltd Ord 5.00

54. E.A.Cables Ltd Ord 0.50

55. E.A.Portland Cement Ltd Ord 5.00

ENERGY AND PETROLEUM

56. KenolKobil Ltd Ord 0.05

57. Total Kenya Ltd Ord 5.00

58. KenGen Ltd Ord. 2.50

59. Kenya Power & Lighting Co Ltd

Source: Central Bank of Kenya (2012)