

**THE EFFECT OF SELECTED MACROECONOMIC VARIABLES ON THE
FINANCIAL PERFORMANCE OF FIRMS LISTED AT NAIROBI
SECURITIES EXCHANGE**

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DECLARATION

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

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DEDICATION

I dedicate this project to my loving wife Sophie, my children; Leila and Leonell and my parents for their immense support, motivation and prayers during the entire period of my work.

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LIST OF ABBREVIATIONS

| | |
|-------------|---|
| ARM | Athi River Mining |
| BRIC | Brazil, Russia, India and China |
| CBK | Central Bank of Kenya |
| CMA | Capital Markets Authority |
| CPI | Consumer Price Index |
| FX | Foreign Exchange |
| GDP | Gross Domestic Product |
| GSE | Ghana Stock Exchange |
| IFE | International Fisher Effect |
| IMF | International Monetary Fund |
| INF | Inflation Rate |
| KNBS | Kenya National Bureau of Statistics |
| KRA | Kenya Revenue Authority |
| M3 | Money Supply |
| MFI | Micro Finance Institution |
| NBFI | Non-bank Financial Institution |
| NSE | Nairobi Security Exchange |
| OLS | Ordinary Least Squares |
| PE | Private Equity |
| PPP | Purchasing Power Parity |
| ROA | Return on Asset |
| ROE | Return on Equity |
| SPSS | Statistical Package for Social Sciences |
| USD | US Dollars |
| VAR | Vector Autoregressive Model |
| VECM | Vector Error Correction Model |

ABSTRACT

The purpose of this study was to determine the effect of selected macroeconomic variable on financial performance of firms listed at NSE in Kenya. Studies that have been done previously on effect of macroeconomic variables on financial performance include commercial banks, microfinance Institutions, Non-Bank institutions, emerging economies (BRIC), Aviation sector etc. The measure for financial performance used was ROA measured against the macroeconomic variables; inflation rate, foreign exchange, GDP growth rate, interest rate and money supply. The study used annual secondary data on the macroeconomic variables and ROA figures spanning over a ten-year period between 2006-2015. The data on inflation (CPI) and GDP per capita was obtained from KNBS. Data on money supply (M3) was obtained from IMF and exchange rate (USD and Kenya Shilling) was obtained from the CBK. The data on Lending Interest Rates and ROA of the individual companies will be obtained from published financial statements. The data was analyzed using SPSS version 20. Given that the study model is a multivariate, the study used Vector Auto Regression Model (VAR) for multivariate time series to analyze the relationship between the selected macro-economic factors and the financial performance of companies listed at NSE. The results were analyzed using descriptive statistics and the relationships between the variables were investigated using correlation analysis, measures of central tendency and the trends analysis. The regression analysis obtained Coefficient of determination (R), Correlation Coefficient (R-Square), P-Value and F-test statistics which were; 0.915, 0.838, 0.026 and 4.137 respectively. Since R was positive (0.915) the relationship between the performance and the macro-economic variables was positive. Since, R-Square was way above 0.75 as it was (0.838) the relationship between NSE performances as measured by ROA is very strong. However, the study results established that the relationship between exchange rate and performance had a negative relationship. This study concludes that there is a strong positive relationship between the selected macro-economic variables (interest rates, inflation, money supply, and GDP per capita) together and performance of listed companies at NSE. Also, this study concludes that the relationship between exchange rate and performance is inversely related and significant. Further, the study concludes that the Money Supply, GDP, and interest have a weak and insignificant relationship with performance of firms listed at NSE. The study recommends that the central bank of Kenya and other regulators should plan in advance and influence the macro-economic variables such as inflation, money supply on the right direction.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Macroeconomics is an economic field that studies the behavior of the overall or whole economy. Macroeconomics is concerned inter alia with huge population, economy's total output, price levels, government budget and expenditure, the rate of inflation, employment/unemployment and exchange rates. It forms one of the external environments which firms have no control over, therefore they have to adjust to fit in it (Oxelhein, 2003). There has been increasing financial and economic integration, thus affecting firms operating in the global and domestic economic arena. The financial markets enhance economic growth through pooling of huge and long term capital. This is undertaken through issuance of shares and stocks to industries that need finances for startup or expand their operations. The study of the business cycles, fluctuations in aggregate economy and prices over periods of one to ten years constitutes macroeconomics.

In Kenya, a number of studies have been undertaken on macroeconomic variables and their effects on firm's financial performance though on varied context. Njau (2013) explored the correlation between macroeconomic variables and financial performance of PE firms in Kenya and establish varying extent of influence between the selected macro-economic variables and returns of private equity firms as measured by return on investment. Ongeri (2014) on the other hand examined the effect of macroeconomic variables on financial performance; evidence from NBFIs in Kenya measured by return on assets (ROA). He found out that there was difference in the effects of variables and according to the results only currency exchange rate has a strong positive relationship

with ROA. While Njau's study limited itself to private equity firms and Onger's study excluded non-bank institutions in Kenya, the current study aims at ascertaining the influence of selected macroeconomic variables on financial performance of all listed companies at NSE from the year 2006 to 2015.

1.1.1 Macroeconomic Variables

Macroeconomic variables are variables that control the whole economy (Olukayode and Akinwande, 2009). These variables include interest rates, economic output, employment and unemployment, huge population, inflation, government budget, GDP growth, international trade balances, and productivity (Muchiri, 2012). Macroeconomic variables are simulated with aggregate indicators usually affecting the overall economic environment in which organizations operate.

The study will use five main macroeconomic variables i.e., real exchange rate, GDP growth rate, money supply, interest rate and inflation rate with ROAs as a measure of financial performance of firms. Real exchange rate determines a country's international competitiveness. This is the index of competitiveness of local currency. There exists an inverse relationship between this index and competitiveness.

GDP is the main macroeconomic variable usually used when measuring the level of economic performance in an economy. The positive effect of GDP growth supports the argument of a positive association between growth and financial sector performance (Kosmidou, 2006). Money supply is total currency outside banks and deposit liabilities of commercial banks (CBK, 2012). Sellin (2001) argues that, the money supply will impact significantly on stock market return if only the change in money growth may change the expectations of stock market participant about the future monetary policy.

If there is information regarding excess money supply in the economy, tightening monetary policies will be applied by the relevant authorities in the future.

Interest rate is the proportion of money or asset lent/loaned or deposited which a lender charges the borrower (Crowley, 2007). It is the price that relates present to future claims on resources. Inflation is sustained increase in general price level of commodities and services in the market with subsequent effect of reducing the purchasing power of a country's currency. It is calculated using the consumer price index (CPI) annual percentage changes. Generally, high inflation rates translate to high loan interest rates and high incomes. Bashir (2003) states that expected inflation creates a positive impact while unexpected inflation creates a negative impact on profitability.

1.1.2 Financial Performance

Performance is a concept that suggests the degree to which objectives and obligations of an organization are attained over a given period of time. A firm objective is categorized into financial or non-financial and is performance too. Financial performance can be evaluated through analyzing accounting data or information by use of financial ratios. The company's financial position can properly be constructed from financial ratios calculated using the accounting data from company's balance sheet and other financial statements (Hassan & Bashir 2003).

Financial performance relates to profitability, which is a key component of performance. According to Helfert (1991), profitability is the effectiveness to which management has utilized the total assets and net assets from a company's balance sheet. The ROA is given by net income divided by average total assets. Thus the measure indicates how management is utilizing its real investment resources to generate profits.

It is also an important measure used to determine a company's efficiency and operational performance through the returns accruing from assets employed by the firm.

The second profitability measure is Return on equity (ROE); which is a measure that shows how management of a company can turn shareholders' equity into net profit. High ROA and ROE figures means high managerial efficiency and vice versa. In this study, ROA will be used to determine performance of companies listed at NSE.

1.1.3 Macroeconomic Variables and Financial Performance

According to Oliver (2000), macroeconomic variables are such variables which at either regional or national level are important to the broader economy and do affect a large population of people of a country. It is widely held in view that financial performance is decided upon by a number of primary macroeconomic variables that includes gross domestic product (GDP), rate of interest, exchange rate, money supply, and inflation which are closely monitored by governments, businesses and consumers (Crowley, 2007). Investors generally believe on anecdotal evidence within the confines of financial press suggests monetary policy and macroeconomic events contributing to the volatility of financial performance.

Cheechee & Herbeman (2002) explain that economic environments have a profound effect on the growth of financial markets; macro-economic variables are such factors at the regional or national level that are pertinent to a broad economy and affect large population of a country.

1.1.4 Firms Listed at Nairobi Securities Exchange

The Nairobi stock exchange (NSE, 2015) was established in 1954 through association of brokers. It has stand the test of time as today is poised to be one of the leading markets in east and central Africa in providing long term capital financingfor investment. It has played a pivotal role in increasing investor confidence and enhancing mobilization of resources and growth of the Kenyan economy The NSE is regulated by Capital Markets Authority (CMA, 2011) for policy and legal compliance. There are a total of 67 listed companies which are grouped into Agricultural, Automobiles and Accessories, Banking, Commercial and Services, Construction and Allied, Energy and Petroleum, Insurance, Investment, Investment Services, Manufacturing and Allied and Telecommunication and Technology (NSE, 2015).

International investment and portfolio diversification was created after the termination of controls on foreign exchange in the 1980s and 1990s in the emerging economies, including Kenya. The Kenyan government responded through expansion of foreign investment by offering motivational rewards for growth of financial markets. These rewards include avoidance of tax on venture capital, recognition of dealing firms through licensing as a measure to enhancing liquidity, exemption of capital gains tax on insurance firms and local brokerage firms fully owned by foreigners (Mutai, 2005). The performance of the listed companies thus depends on the macroeconomic variables in the market.

1.2 Research Problem

Listed companies are created and exist for economic and capital market development, which also reflects the relationship between macroeconomic variables and performance. The growth and development these firms is critical for capital market restructuring, improving the quality of products, enhancing management effectiveness, upscaling trade competitiveness between firms at international arena and fasttracking modernization in finance Wu et al. (2010). The precondition for listed firms to be sustained and develop is dependent on their financial performance. The poorer financial performance has been caused by series of problems associated with transitional economic background; including historical factors, higher risks of the listed firms affecting competitiveness and sustainable development of the firms (Peng, 2006). According to Gao (2010), capital markets are the foundation for national economic development. There are a number of macroeconomic indicators that do affect performance and includes; changes in interest rate, inflation rates, and economic growth (Emenuga, 1994).

Several studies have been conducted locally in Kenya on financial performance and key macroeconomic variables, but the variables taken were varying. Muchiri (2012) undertook a research on the effect of macroeconomic variables on stock market performance at NSE with stock prices as a performance measure. Ongeru (2014) did undertake an examination on the relationship of macroeconomic variables and financial performance; evidence from NBFIs with ROA as a measure of performance. Desaro (2012) undertook a study on the relationship between macroeconomic factors and the financial performance of commercial banks in Kenya. She established that ROA had a positive correlation with money supply, GDP, lending rate and inflation, but a negative correlation with exchange rate. Njuguna (2013) researched on the relationship of

macroeconomic factors and financial performance of deposit taking microfinance institutions in Kenya and concluded that increase in GDP led to an increased performance while increase in lending rates led to a reduction in performance as measured by ROA.

Studies on the impact of macroeconomic indicators on performance in Kenya include Makiya (2011), Olweny & 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 on the study on the effect of macroeconomic indicators on financial performance in Kenya, hence the need for this study. The study sought to answer the following question: what is the effect of selected macroeconomic variables on the financial performance of listed firms at NSE?

1.3 Research Objective

To determine the effect of selected macroeconomic variables on financial performance of firms listed at NSE.

1.4 Value of the Study

The study will be of importance to all stakeholders in the macro economy whose day to day operations/activities and transactions are affected in one way or another by the ever-changing effects of the forces in the wider and global market. This is not limited to companies listed at the NSE. The management and owners of firms will have an invaluable source of empirical data to forestall their strategies and policies in order to improve their performance. This will also provide an insight for planning and thus setting of the companies' objectives.

The study will be useful to investors since the findings on the effects of macroeconomic variables on financial performance will offer them an insight on when to venture the market and on the choice of the company.

To academicians, scholars and researchers, the study will add onto the knowledge already available on macroeconomic variables and their effects on financial performance at NSE. It will open up and suggest areas for further research using this study as an important point of reference for literature and research gaps.

Government agencies such as CBK, CMA, KRA and policy makers will find this work a useful guide when formulating policies such as fixing the rate of interest, control of inflation, tax collection, allocation of resources or budgeting and coming up with regulatory frameworks for doing business. This will be geared towards rightful decision making.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The chapter discusses the literature review. It will also undertake a review of theories explaining the relationship of macroeconomic variables on financial performance of firms. Moreover, the chapter will undertake empirical review of the previous works of other scholars that have been done on the relationship of macroeconomic variables. Finally, literature on the determinants of the financial performance of firms will be explored.

2.2 Theoretical Framework

This framework helps in the creation of a reasonable sense of connection between the variables and concepts that are relevant to the study. It defines the association between the variables chosen for the theorized relationship explaining them to be understood. It therefore guides the research in choosing the factors to be measured and statistical relationship to look for.

2.2.1 International Fisher Effect Theory

It was originated by Irving Fisher. It is contained in his book; *The Theory of Interest* (1896). It explains why exchange rates change over time using market interest rates as opposed to inflation rates. He postulated that exchange rates changes are balanced out by interest rate changes. The likelihood of existence of arbitrage opportunities between financial markets makes real interest rates across countries similar resulting to capital flows. A country with a higher interest rate has a higher inflation rate causing a decrease in a country's real currency value over time. Interest rate theory of exchange rate

expectations explains the relationship between relative interest rates and foreign exchange rates. The international Fisher effect is true when appreciating currencies' interest rates tend to be low and high with depreciating currencies for expected currency gains and losses to be offset.

Foreign currencies with relatively high interest rates will depreciate because high nominal interest rates reflect anticipated rate of inflation (Madura, 2010). Can interest rate differentials explain expected currency changes? There is mixed evidence with PPP theory. There seems to exist a relation between interest rate differentials and subsequent changes in spot exchange rate in the long run but with considerable deviations in the short run (Hill, 2004).

2.2.2 Foreign Exchange Exposure Theory

Contemporary foreign exchange exposure theory according to Shapiro (2003) is that the value of a multinational company should be affected by exchange rate fluctuations through foreign sales and foreign (net) assets, expressed in the domestic currency of the parent company. Early empirical studies on the topic (Jorion, 2010), focused on firms with substantial investments in foreign nations and didn't explain the outstanding effect of fluctuations in exchange rates on the stock price of multinational firms.

Jongen et al., (2006) and Gao (2000), are more recent studies that are in line with financial theory. Moreover, they establish exchange rate movements an important factor in determining firm value through their effect on sales and net assets values.

2.2.3 Purchasing Power Parity Theory

This theory states that the change in two countries' relative prices causes change in exchange rate between their currencies over a given period of time. It is also called inflationary theory of exchange rate. Thus exchange rate movements are caused by price level changes. There are two types of PPP: absolute and relative.

Coakley et, al., (2005) states that local currency converted to foreign currency in absolute terms would have same purchasing power and buying the same basket of goods as it could originally. National prices changes mirrors relative nominal price levels changes between countries. This theory is critical as far as this study is concerned since listed companies import some products from abroad which is paid using foreign currency hence have an effect on their performance.

2.2.4 Keynesian Economic Theory

Keynes (1930), argued on the importance of the economic growth; "credit becomes the pavement through which production moves; the bankers as their duty, should provide the transport facilities required so that the productive powers of the community can be employed to their full capacity". Keynes advocated for instant returns in economic theories. Policy concern on short -term needs and correction on a nation's economy. The government is the force behind an end to financial and economic downturns. This is undertaken through provision of prudent monetary and fiscal policies, and providing aggregate demand to increase the level of economic output, facilitated through a stable financial system that can spur continued economic stability. Keynes later in 1930s supported direct government control of investment and advanced that financial deepening occur results an increase in government expenditure.

2.2.5 The Monetarist Theory of Inflation

This theory postulates that excessive increase in the monetary supply causes a sustained and severe inflation. Inflation is a monetary phenomenon (M. Friedman, 1956). Quantity theory of Money according to Fischer has it that; $MV=PT$, where M = Money Supply, V= Velocity of cycle, P= Price Level. Since transactions (T) number cannot easily be ascertained, we substituted it with National Income (Y). Therefore the new equation becomes $MV = PY$. Expenses on goods and services always equals total output i.e. $E=O$.

Monetarists, postulates that an unjustified and uncontrolled increase in the money supply causes inflation. Velocity (V) becomes fixed in the short term as other factors like how often workers are paid dictates the rate at which money circulates in the market or the economy. The rise in the MS in the AD and AS model causes consumers to have more money; causing a shift of AD to the right, translating into an increase in output or production. National output exceeding the equilibrium level, creating an inflationary gap. Firms react by hiring more workers rising wages; thus subsequently leading to increase in costs and prices.

2.3 Determinants of Financial Performance

This part of literature explores determinant factors that contribute to performance. The main factors identified in this study are leverage, liquidity, size of company and age of the company in business.

2.3.1 Leverage

The common leverage is debt leverage which is given by total debt to equity. It indicates how much a business has borrowed compared to its equity. In the event a company is unable to pay back as a result of high leverage, a company will stand a risk of being declared bankrupt. Moreover, may lose opportunities for future and new lending. However, Leverage has its good side as it boosts the shareholders' return on their investment and secure tax advantages associated with borrowing (Kakani et al., 2001).

Neri, (2001) stated that an increase in leverage improves performance. This happens through improved management incentives creating motivation to invest optimally. High leveraged firms can also withstand aggressive strategies from their low leveraged rivals and expand market share under an oligopoly product market.

2.3.2 Liquidity

Liquidity refers to ease of converting an asset to cash and thus maintain working capital at recommended institutional level. It is explained by the current ratio figure ascertained by finding the ratio of current assets to current liabilities. In situations when external financing is expensive or is not available, a firm can result to its liquid assets to finance its operations and investments. A more liquid firm is safe since it can manage unexpected contingencies and other commitments hence there will be no effect on performance (Liargovas & Skandalis, 2008).

Liquidity is a measure of manager's ability to fulfill immediate obligations of their creditors without having to increase investment activities and liquidate financial assets (Chen & Wong, 2004). There is also a danger of a firm being highly liquid in that managers will tend to invest in projects having negative present value. They may also

undertake unnecessary exaggerated perquisite expenditures hence increasing agency costs.

2.3.3 Company Size

Firm size determines and affects its financial performance. The larger the firm the more likely to attract advantages of large scale operations compared to small one.

It is also difficult for small firms to compete with big ones specifically in competitive markets since small firms have less financial muscle. Interestingly, large firms have more inefficiencies thus prone to poor financial performance (Majumdar, 1997).

Large firms are more profitable, have more resources, have more accounting staff that can work with sophisticated systems (Chen & Wong 2004). This creates room for growth and increased efficiency. The size of a firm determines its vibrancy in the sense that large firms attract qualified staff and analysts who evaluate and release timely annual reports. This will help the company revise its expectations for present and future economic prospects.

2.3.4 Company Age

Batra (1999) postulated that firm age determine and affects its performance. He stated that organizational inertia existing with old firms makes them rigid and do not acknowledge new dimensions in the business environment. In spite of shortcomings by small and new firms that include lack of capital, brand names and corporate synergy which are being possessed by older firms, they are able to secure and expand their market shares (Kakani et al., 2001).

Regarding age, older firms experience and enjoy the advantages new challenges. They are not subjected to the limitations of new entrant, thus enjoy extraordinary performance. Moreover, older firms also gain from reputation effects, attracting high margins on sales. There is also the problem of old firms becoming liable to inertia and harbouring bureaucratic tendencies. They move and work along with established routines, which are illusive of real changes in market conditions (Liargovas & Skandalis, 2008).

2.4 Empirical Review

The relationship between macroeconomic factors and firm performances has been extensively investigated.

2.4.1 Global Studies

Zulfiqar and Din (2015) undertook a study on the relationship between macroeconomic variables and firm performance with textile industries in Pakistan. They used panel regression analysis. In their study, they ascertained that an insignificant positive relationship existed between the rate inflation and firm's financial performance. The data set was time series and thus the suitable analysis tool was Vector Error Correction Model (VECM) to examine the long-term relationship between macroeconomic variables and firm performance.

Oleka, Sabina and Ebue (2015) studied the relationship between inflation and firm performance in Nigeria. They used judgmental sampling technique to pick 18 commercial banks in Nigeria and they used Secondary data obtained from annual published financial statements from 2000 to 2014. The study employed Ordinary least squares (OLS) regression analysis technique and results indicate positive insignificant relationship between both earnings per share which was used as proxy measure of

financial performance and return on equity. OLS data analysis tool was not suitable for a time series data, thus Vector Auto Regressive Model (VAR) should have been employed instead.

Kumar (2013) examined the correlation between inflation and firm performance with Brasil, Russia, India and China states (BRICS) markets. He used panel co-integration test. Secondary data between January 2000 to September 2013 was collected in a quarterly basis and time series used to analyze the data and the results showed that there is no co-integration. The results depicted stationary data with the BRICS members. Correlation analysis indicated a significant positive relationship between inflation rate and returns and consequently a long term significant relationship between the two macroeconomic variables.

Eita (2011) examined the relationship between several macroeconomic variables among Namibia listed companies with significant influence on stock performance. The study inquired into the relationship between rate of interest, inflation rate, money supply and exchange rate and used VECM to analyze the data. The results showed the existence of a significant positive relationship between stock market prices, money supply and economic activity and an inverse relationship between stock prices and inflation rates; consequently, interest rate showing a positive significant relationship with stock performance.

An empirical study by Duca (2007) on the relationship between the stock market and the economy with international financial markets. He applied Granger causality to test the relationship between stock returns and GDP and confirms the existence of a positive significant relationship between GDP and stock returns.

2.4.2 Local Studies

There are various studies that have been undertaken in Kenya on the relationship of macroeconomic variables and financial performance and their findings are diverse. Kairuthi (2014) examined the relationship between inflation and interest rates on stock market performance of companies quoted at the NSE. Secondary monthly data was collected on the variables; stock returns, inflation rates, spot exchange rates and month end liquidity. Data was analyzed using descriptive time series correlation design and found an inverse negative relationship between inflation rates and stock returns. Furthermore, a positive significant relationship was found to exist between the study variables with Ordinary least squares regression approach being applied to ascertain the relationship of the variables used. Time series analysis ought to have been applied because of the nature of data employed.

Barasa (2014) undertook a study on the relationship between economic performance indicators and stock returns amongst listed firms at NSE and used exploratory research design. All the companies listed from 2008 to 2012 were chosen for study using Censussurvey. The study applied multi linear regression analysis to investigate the relationship and correlation analysis to ascertain the strength of the relationship between stock returns and economic performance indicators. His findings established a significant positive relationship between inflation, economic growth, interest lending rate and stock returns and to the contrary, an inverse relationship existed with exchange rate and stock returns. Multi linear regression analysis was not suitable for a time series data.

Wabita (2013) researched on the correlation between macroeconomic variables and financial performance of aviation industry in Kenya and had the objective of establishing the relationship between macroeconomic variables: real exchange rate, GDP growth, money supply, interest rate and inflation on financial performance. The period of study was between 2008 to 2012. The study employed descriptive, correlation and multiple regression analysis tools and established that the companies ROA in the aviation industry had a weak positive significant correlation with GDP and annual changes in money supply.

Njau (2013) did a study on relationship between macroeconomic variables and financial performance of private equity (PE) firms in Kenya and had the objective of establishing the effect of macroeconomic variables: inflation, lending interest rates, GDP growth, non - diversifiable risk and currency exchange rate and financial performance, between the periods January 2011 to March 2012. Regression analysis and time series were applied to examine the causal relationship between selected macroeconomic variables and financial performance. This study made use of various analysis software such as STATA version 11.0, advanced Microsoft Excel and SPSS version 16. The study findings indicated that the selected variables which GDP growth rate, inflation rate, foreign exchange rates and banking lending rates had the highest impact on financial performance of PE firms. The research recommended that future plans should consider inflation rate and GDP in particular since they have the highest effect on PE firm's earnings.

According to Njuguna (2013) who undertook a study on the relationship between macroeconomic factors and financial performance of MFIs in Kenya measured with ROA as the dependent variable. The study concluded that ROA is highly a function of

macroeconomic factors and more specifically GDP, Interest rates and Inflation and the three variables can be credibly used to predict MFIs expected ROA. This revelation offers regulators and those responsible over macroeconomic variables, vital information that if MFIs are to operate profitably and encourage growth in the sector, then; they have to offer favorable economic variables. That is, they should ensure high economic growth (GDP) and have low inflation and interest rates in the economy which will instead boost MFIs performance and therefore creating room for higher economic growth.

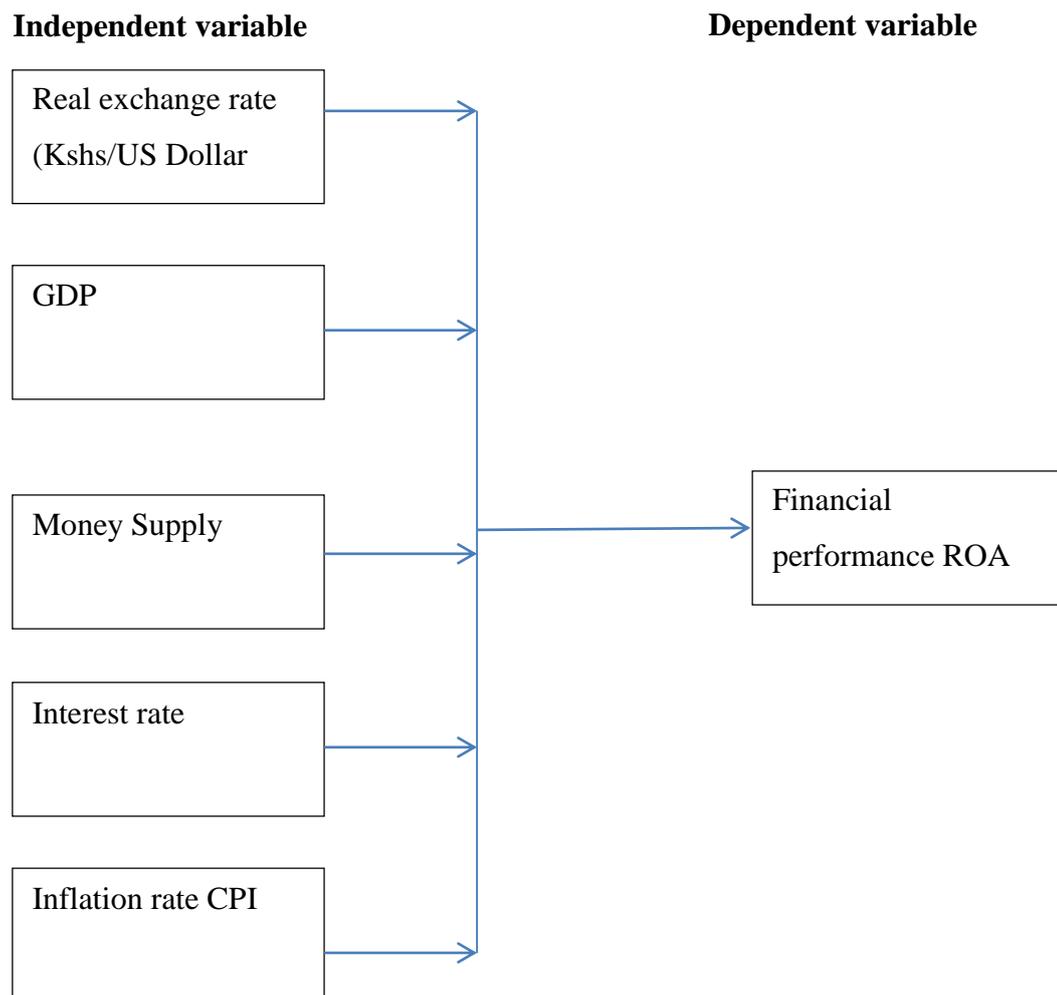
Ilo (2012) carried out a study to establish the relationship between macroeconomic factors and financial performance of commercial banks in Kenya. He identified interest rates, GDP growth rate, currency exchange rate, money supply and inflation as the main macroeconomic factors affecting commercial banks financial performance. A total of 10 commercial banks were sampled in the study from 2002 to 2012, a 10-year period. The author used regression analysis to analyze his data. Return on assets (ROA) was taken to be the dependent variable. Commercial banks financial performance was established to have a positive correlation with money supply, interest rates and GDP growth. A negative relationship was established between inflation and depreciation of the local currency. Though this study was carried out among 24 commercial banks, macro-economic variables remain the same and they affect every economic activity albeit with varying degree of proportions.

Kipngetich (2011) examined the relationship of interest rates and financial performance of commercial banks in Kenya. He established that interest rates was positively related to financial performance and advise on firm's need to wisely manage their interest rates to enhance their financial performance.

2.5 Conceptual Framework

According to Saunders (2007) are generated from a set of broad ideas and theories to assist the research correctly identify the problem, contextualize their questions and find suitable literature. Young (2009) defines conceptual framework as a figure that represents the relation between dependent variable and independent variables in form of a diagram. It will therefore show how macroeconomic variables will influence financial performance of listed companies at NSE. The independent variables are the macroeconomic variables while the dependent variable is the financial performance measured by ROA.

Figure 2.1: Conceptual framework



2.6 Summary of Literature Review

The chapter covered literature on macroeconomic variables on growth in various industries; agriculture, banking and aviation both internationally and locally. The empirical review above indicates that macroeconomics indicators are critical factors that determine the performance of various economic sectors. It is evident from the above empirical studies that different researchers have come up with different conclusions on the effect of macroeconomic variables on performance.

The review of literature clearly found a research gap in Kenya as most of the studies done in the area had focused on different sectors of the economy such as aviation, commercial banks and private equity firms. This study will narrow the gap by exploring the effect of macroeconomic variables on the financial performance of listed companies in Kenya.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter explores the methodology that this study will employ. The chapter will cover literature on research design, target population and sample size, data collection tools, analytical model, data analysis techniques and measurement of selected variables.

3.2 Research Design

Mugenda & Mugenda (2009) defines a research design as a one on one plan which demonstrates how a given study will be carried out. Descriptive correlation research design will be used in this study. Rijbarova (2005) defines descriptive correlational study as a measure of two or more variables existing naturally and aims at finding out if a relationship exists between them. Correlation research design was appropriate in the current study in exploring the relationship between macro-economic indicators and financial performance of companies quoted at NSE.

3.3 Target Population

It the entire set of individuals, cases or objects with similar visible features which are distinct from group (Mugenda & Mugenda, 2009). In this study, the population consists of 67 firms quoted at NSE for ten-year period from 2006 to 2015. This choice was informed by lack of pertinent data from companies that are not quoted on the NSE as their financial data are not easily available. The study will look at the census survey of 67 listed companies.

3.4 Data collection

Secondary data sources on the macroeconomic variables will be employed: Consumer Price Index for inflation, GDP growth, lending interest rate, exchange rate (Kenya Shilling and US Dollar) and money supply (M3). The data on inflation (CPI) and GDP growth will be obtained from KNBS while data on money supply (M3) and exchange rate (USD and Kenya Shilling) will be obtained from the CBK. The data is public data as it is published in the websites of the relevant government agencies including CBK and KNBS. The data on Lending Interest Rates and ROA of the individual companies will be obtained from published financial statements. The period of study for which data will be obtained is ten years from 2006 to 2015.

3.5 Data Analysis

This study will employ SPSS version 20 to analyze the data while Vector Auto Regression Model (VAR) to be applied when analyzing the relationship between macro-economic factors chosen for this study and the financial performance of companies listed at NSE. This approach will be most appropriate for time series data. The structure is that each variable is a linear function of its past lags of itself. The analyses will entail the computation of the various coefficients of correlation to ascertain the relationship between macro-economic factors and the financial performance of listed companies in Kenya.

3.5.1 Analytical Model

The variables of the study comprised of the ROA of listed companies, as the dependent variable and inflation, GDP growth, money supply (M3), lending interest rates and exchange rate as the independent variables. The macroeconomic variables coefficients are denoted as “ β ” in the model. The VAR regression model will be employed to

examine effect of these variables in determining performance. It is a multivariate model stating ROA as a function of the selected macroeconomic variables.

$$Y_t = \beta_0 + \beta_1 X_{t1} + \beta_2 X_{t2} + \beta_3 X_{t3} + \beta_4 X_{t4} + \beta_5 X_{t5} + \mu_t$$

Where;

Y = ROA; Financial performance

β_0 = Constant/y intercept

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$ = coefficients of macroeconomic variables

X_1 = Inflation Rate (CPI)

X_2 = GDP growth

X_3 = Lending interest rate

X_4 = Exchange rate

X_5 = M3 (Broad Money supply)

μ = error term.

ROA is obtained from published reports of specific companies. The study adopted CPI figures already computed by the KNBS for the period 2006-2015. The study will take GDP growth data from KNBS. The Money supply (M3) and Exchange rate between Kenya Shillings and US dollar will be obtained from the already compiled figures from the Central Bank of Kenya (CBK). The error term will represent the effect of factors other than selected macroeconomic factors influencing financial performance of listed and trading companies in Kenya.

Table 3.1: Measurement of the Variables

| No | Variable | Measurement |
|----|-----------------------|--|
| 1 | Return on Asset (ROA) | Measured as the Net income/ Average Total Assets |
| 2 | Real Exchange Rate | Measured as the nominal exchange rate between USD and KSh |
| 3 | GDP Growth Rate | Measured as change in total economic activity within an economy i.e. Measure of the final output of goods and services |
| 4 | Money supply (M3) | Measured as annual change in money growth of M3 |
| 5 | Interest Rate | Measured as the annual average lending interest rate as computed by CBK |
| 6 | Inflation Rate,CPI | Measured from the consumer price index (CPI) annual percentage changes. |

3.5.2 Test of Significance

Linear and correlation regression analysis implements a statistical model that, when relationships between the independent variable and the dependent variables are almost linear, cause and effect relationship is expected. To confirm the hypothesis of the study; the study will use F-test to determine the extent to which macroeconomic variables affect performance. The model of coefficients of the independent variables and there P-values will also be used. The tests will be performed at 95% confidence level and at 5% significance level.

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This chapter will present the outcome of data analysis and findings with respect to the objectives of Study. The general objective was to assess the effect of macroeconomic variables on the performance of listed companies at NSE. Statistical Program for Social Sciences (SPSS) version 20 was used to analyze data by use of both descriptive and inferential statistics. Descriptive measures involved mean, maximum, minimum, standard error of estimate, skewness and kurtosis were used. The results are based on all the listed and trading companies at NSE over a period of 10 years (2006-2015). The chapter presents the descriptive results as well as the regression analysis results. A discussion of findings is then made to establish the effect of selected macro-economic variables on the financial performance of companies listed at the Nairobi Securities Exchange.

4.2 Response Rate

The obtained data spanned the period between years 2006 to 2015. The study targeted a sample of 67 companies listed at the NSE between January 2006 and December 2015. The study only managed required data for 62 companies plus the data for macroeconomic variables. Though we had 67 listed companies; Hutchings Biemer, A. Baumann and Rea Vipingo are suspended and thus their information was not available. Stanlib Fahari and Kurwitu Ventures had data only for 2015. Therefore, the study attained 92.5% return rate.

4.3 Data Validity

Data validity refers to the correctness and reasonableness of the data. Soundness of data requires that all data sets fall within the same range as well as that the numeric should be digits. The data for this study was valid in that the data range was for the period of 10 years. The data was obtained from credible sources including NSE, CBK and KNBS. Furthermore, the data sets were all numeric. Moreover, the data sets ranged for the same period 2006-2015.

4.4 Descriptive Statistics

Descriptive measures that were used include mean, maximum, minimum, standard error of estimate, skewness and kurtosis. Mean describes the average value in a distribution. The standard error is the measure of accuracy within a data set. Skewness indicates the level of symmetry. A symmetric distribution looks the same to the left and right of the center point. Kurtosis is the peakness or flatness of a normal distribution (Cooper and Schindler 2008). The descriptive statistics for the study analysis is shown in table 4.1 below.

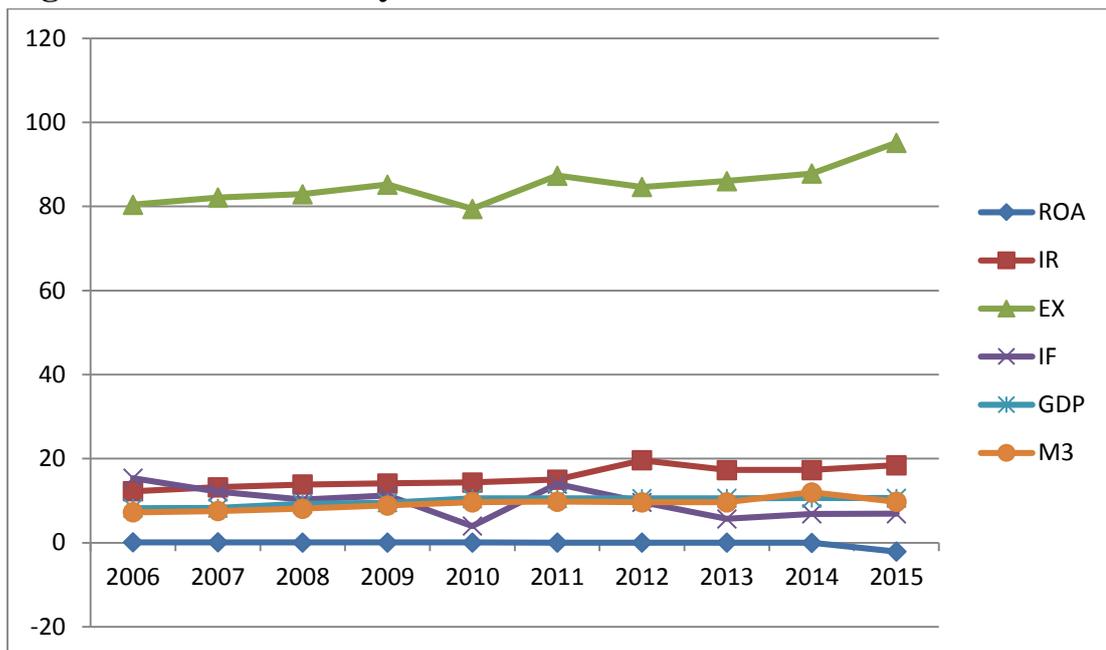
Table 4.1: Descriptive Statistics

| | N | Minimum | Maximum | Mean | Std. Deviation |
|-----------------------|----|-----------|-----------|-------------|----------------|
| ROA | 10 | -2.092331 | .125151 | -.14635608 | .684471517 |
| IR | 10 | 12.265400 | 19.648333 | 15.55780900 | 2.455235122 |
| EX | 10 | 79.46183 | 95.15147 | 85.1260062 | 4.49231105 |
| IF | 10 | 3.97167 | 15.40000 | 9.6161900 | 3.70889998 |
| GDP | 10 | 8.254120 | 10.651551 | 9.88504764 | .990817597 |
| M3 | 10 | 7.254889 | 11.989923 | 9.23179966 | 1.364006274 |
| Valid N (listwise) | 10 | | | | |

From table 4.1 the ROA of the companies listed at NSE stood at -.14635 with the maximum of .1251 and a minimum of -2.09. The standard deviation for ROA was 0.6844. This is an indication that there was a wide variation when it comes to returns of companies listed at NSE. The mean lending interest (IR) was 15.55% with the maximum of 19.648 and a minimum of 12.265. The standard deviation for lending interest rate was 2.4552. This is an indication that there was a wide variation when it comes to interest rates. The mean exchange rate (EX) was 85.126 during the period of study with the maximum of 95.1514 and a minimum of 79.461. The standard deviation for lending interest rate was 4.4923. This is an indication that there was a wide variation when it comes to exchange rates.

The mean inflation rates (IF) were 9.616 during the period of study and measured by CPI with the maximum of 15.40 and a minimum of 3.971. The standard deviation for lending interest rate was 3.7088. This is an indication that there was a wide variation when it comes to inflation rates. The mean gross domestic product (GDP) was 9.88 during the period of study with the maximum of 10.651 and a minimum of 8.254. The standard deviation for GDP was 0.9908. This is an indication that there was a small variation when it comes to inflation rates. The mean money supply (M3) was 9.231 during the period of study with the maximum of 11.989 and a minimum of 7.254. The standard deviation for money supply was 1.364. This is an indication that there was a small variation when it comes to inflation rates.

Figure 4.1: Trend Analysis



From figure 4.1 there is an indication that all the macroeconomic variables have been steadily increasing over the years except the period of 2010 to 2011 that there has been a small decline. The ROA on assets has been steady for the period 2006 to 2014 except in the year 2015 when there was a decline.

4.5 Correlation Analysis

Pearson correlation was performed to establish the extent of relationship between the study variables.

Table 4.2: Correlations Analysis

| | | ROA | IR | EX | IF | GDP | M3 |
|-----|---------------------|---------|--------|-------|--------|--------|----|
| ROA | Pearson Correlation | 1 | | | | | |
| | Sig. (2-tailed) | | | | | | |
| | N | 10 | | | | | |
| IR | Pearson Correlation | -.446 | 1 | | | | |
| | Sig. (2-tailed) | .196 | | | | | |
| | N | 10 | 10 | | | | |
| EX | Pearson Correlation | -.804** | .657* | 1 | | | |
| | Sig. (2-tailed) | .005 | .039 | | | | |
| | N | 10 | 10 | 10 | | | |
| IF | Pearson Correlation | .283 | -.527 | -.216 | 1 | | |
| | Sig. (2-tailed) | .428 | .117 | .548 | | | |
| | N | 10 | 10 | 10 | 10 | | |
| GDP | Pearson Correlation | -.310 | .785** | .539 | -.669* | 1 | |
| | Sig. (2-tailed) | .383 | .007 | .108 | .034 | | |
| | N | 10 | 10 | 10 | 10 | 10 | |
| M3 | Pearson Correlation | -.180 | .687* | .514 | -.604 | .858** | 1 |
| | Sig. (2-tailed) | .619 | .028 | .128 | .064 | .001 | |
| | N | 10 | 10 | 10 | 10 | 10 | 10 |

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

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

There was a significant strong negative relationship between ROA and exchange rate ($r = -0.804$, $P\text{-value} < 0.05$). The results also indicate an insignificant positive relationship between ROA and inflation rate ($r = 0.283$, $P\text{-value} < .05$). There is a strong positive correlation between rate of interest and money supply ($r = -0.687$, $P\text{-value} < .05$). It means that if there high interest rate then the money supply will also be high. The

Pearson correlation coefficient above indicates the following relationships; there was a negative significant relationship between ROA with some of the macroeconomic variables.

4.6 Regression Analysis

Regression analysis was used to establish the relationship among the selected macroeconomic indicators and performance of companies listed at NSE.

Table 4.3: Coefficients^a

| Model | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|--------------|-----------------------------|------------|---------------------------|--------|------|
| | β | Std. Error | Beta | | |
| 1 (Constant) | 9.846 | 3.255 | | 3.025 | .039 |
| IR | .028 | .102 | .101 | .276 | .796 |
| EX | -.162 | .043 | -1.064 | -3.809 | .019 |
| IF | .083 | .052 | .447 | 1.584 | .188 |
| GDP | -.013 | .336 | -.019 | -.039 | .971 |
| M3 | .294 | .200 | .585 | 1.471 | .215 |

a. Dependent Variable: ROA

Where X_1 = interest rate, X_2 = Exchange rate, X_3 = Inflation rate, X_4 = GDP and X_5 = Money supply. Using a significance level of 5%, any independent variable having a significant value greater than 5% is considered not statistically significant. This study found that X_2 was statistically significant.

$$Y = 9.846 + 0.028X_1 - 0.162X_2 + 0.083X_3 - 0.013X_4 + 0.294X_5$$

Table 4.4: Model Summary

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-------------------|----------|-------------------|----------------------------|
| 1 | .915 ^a | .838 | .635 | .413288697 |

a. Predictors: (Constant), M3, EX, IF, IR, GDP

The model summary (Table 4.4) indicated existence of a strong correlation between the dependent and the independent variables. The value of R Square was 0.915 indicating that 83.86 % of the changes in performance of companies listed at NSE are explained by the independent variables for the study i.e. GDP, interest rates, money supply, inflation rate and exchange rate.

Table 4.5: Analysis of Variance

| ANOVA ^b | | | | | | |
|--------------------|------------|----------------|----|-------------|-------|-------------------|
| Model | | Sum of Squares | df | Mean Square | F | Sig. |
| 1 | Regression | 3.533 | 5 | .707 | 4.137 | .026 ^a |
| | Residual | .683 | 4 | .171 | | |
| | Total | 4.217 | 9 | | | |

a. Predictors: (Constant), M3, EX, IF, IR, GDP

b. Dependent Variable: ROA

The Analysis of Variance (ANOVA) reveal the effect of variables and the performance of companies listed at NSE as measured by ROA is significant as indicated by the P values (0.026) i.e. less than 0.05 and F value (4.137).

4.7 Interpretation of the Findings

In summary, this study found that the macroeconomic variables affect the performance of companies listed at NSE. From the regression equation it was revealed that ROA through analysis of macroeconomic variables stood at 0.915. A unit increase in the macroeconomic variables causes an increase in profitability of companies listed at NSE to increase by 91.5%. At the 0.05 level of significance and 95% level of confidence.

Exchange rate has a negative relation with profitability of companies listed at the NSE hence the introduction of various exchange rate management practices to improve the

financial performance of companies listed at NSE. Many different claims by different authors explaining the impact of exchange rate on performance have been explored and analyzed vis-à-vis the findings of the study. Competing explanations to the various arguments have also been shown. It was not, however possible to state the relationship between financial performance of companies listed at NSE and some of the prepositions because of lack of relevant comparative data from other groupings of companies. Osoro & Ogeto (2014) and Olweny and Omondi (2011) in their studies on the effect of macroeconomic variables on performance of construction and manufacturing sectors and stock market respectively, established the same results.

Moreover, ROA and Inflation rate (CPI) had a positive impact in that a unit change in inflation rate causes a 0.281 change in ROA thus a positive relationship. This finding is inconsistent with empirical finding of Cheechee (2002), who in his study found out that inflation rate is hypothesized to be negatively related to performance.

Money supply had a negative relationship with ROA in that a unit increase in money supply causes a -0.180 decrease on ROA. This implies that when the CBK increases money supply, households get more money at their disposal and therefore households do not invest much in listed companies. This is consistent with other studies; Illo (2012) found that the variable significantly affects the bank's profitability. But inconsistency to the findings of Mwangi (2013) who found that money supply (M3) did not have a significant impact on return on assets of companies in aviation industry.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMENDATIONS

5.1 Introduction

This chapter undertakes the summary of results from the last chapter. It further provides the conclusions and recommendations of the study in line with the objectives of the research. This is enumerated in the following sections.

5.2 Summary

The results were analyzed using descriptive statistics and the relationships between the variables were investigated using correlation analysis, measures of central tendency and the trends analysis. From the analysis of descriptive statistics it was found that money supply and interest rate have the largest mean. Size of the company and expense ratio has the lowest mean respectively followed by gross domestic product mean and real exchange rate mean.

The study followed descriptive research design and used secondary data. The data spanned the period between 2006 and 2015. The data used for the analysis was the average annual figures and was obtained from; Nairobi Securities Exchange (NSE 20-Share), Central Bank of Kenya (CPI), Kenya National Bureau of Statistics (GDP per Capita) and International Monetary Fund website (Money Supply M3). The data was analyzed using SPSS version 20.

The regression analysis obtained Coefficient of determination (R), Correlation Coefficient (R-Square), P-Value and F-test statistics which were; 0.915, 0.838, 0.026 and 4.137 respectively. Since R was positive (0.915) the relationship between the performance and the macro-economic variables was positive. Since, R-Square was way

above 0.75 as it was (0.838) the relationship between NSE performances as measured by ROA is very strong. However, the study results established that the relationship between exchange rate and performance had a negative relationship.

Also, since P-Value (0.026) was less than 0.05, the established model describing the relationship between the study variables is statistically significant. Furthermore, P-Values associated with interest rate, inflation rate, GDP and money supply were all greater than 0.05 depicting that the selected macro-economic variables were individually statistically insignificant in predicting the performance of companies listed at NSE.

5.3 Conclusion

This study concludes that there exists a strong positive relationship between the study variables (interest rates, GDP per capita, inflation rate and money supply) together and performance of listed companies at NSE. But a significant inverse relationship between exchange rate and performance. In addition, the study concludes that the Money Supply, GDP, and interest had a weak and insignificant relationship with performance of firms listed at NSE.

5.4 Recommendations for Policy and Practice

The study recommends that the central bank of Kenya and other regulators should plan in advance and influence the macro-economic variables such as inflation, money supply on the right direction. For instance, the economy should have sufficient money supply to ensure that there is enough money to conduct trade in the economy.

Also, inflation should be curbed as it negatively affects stock market performance. However, the government should aim to grow the country's GDP as it positively influences stock market performance. The study established that all the selected macro-economic variables worsened just before, during or/and the immediate year following elections. The study recommends that the investment community should plan for the adverse effects of the changes before, during, and immediate years following an election. The situation was worse during the period 2007-2010. Notably, Kenya held national elections in the year 2007 and was marred by election mal-practices followed by a post-election violence. The situation in the country during the years 2008 worsened economic stock market performance as well as the selected macro-economic variables. The study further recommends that the government should ensure that contestants do not engage in bad politicking as this may deteriorate the effect of macro-economic variables and investments in real estate and possibly other sectors. Furthermore, the electoral body should tighten controls of politics and quality of election results.

5.5 Limitations of the Study

The study utilized secondary data, which had already been obtained and was in the public domain, unlike the primary data which is first-hand information. Possible errors in the process of measurement or during recording may have been carried along into the research results.

Also, the researcher was overwhelmed by the study because he had to conduct the study alongside official duty at the place of work and other personal and social commitments. Moreover, the study had to be conducted within a short period, hence the researcher had to work long-hours into the night. These made the researcher exhausted at times and could possibly affect the input into the study. However, these factors were catered

for by the fact that the researcher was carefully guided by the strong university academicians including the supervisor, moderator, and the project proposal discussion team.

5.6 Suggestions for Further Studies

The study suggests that further readings should explore on the specific factors that affect each of the study variables. For instance, further studies should aim to establish the determinants of money supply, CPI, and real GDP per capita.

Also, further studies can be conducted to establish other macro-economic variables as well as other factors that influence stock market performance. Establishing other macro-economic factors that influence stock market performance such as exchange rate inflations, international remittances etc can help the regulators to safeguard the market performance so that appropriate results are obtained for the good of investors and the listed corporate bodies. Also, future studies should include comparison of a simultaneous effect of the macro-economic variables on stock market performance. Comparison of different markets can help reach concrete conclusions as regards the subject of the study.

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APPENDICES

APPENDIX I: COMPANIES LISTED AT THE NSE USED IN THE STUDY

Agricultural

1. EaagadsLtd
2. KakuziLtd
3. Kapchorua Tea Co. Ltd
4. Limuru Tea co. Ltd
5. Sasini Ltd
6. Williamson Tea Co.(k) Ltd

Automobiles and Accessories

7. Car & General (K) Ltd
8. Marshalls (E.A.) Ltd
9. Sameer Africa Ltd

Banking

10. Barclays Bank of Kenya Ltd
11. CFC Stanbic of Kenya Holdings Ltd
12. Diamond Trust Bank Kenya Ltd
13. Equity Bank Ltd
14. Housing Finance Co. Kenya Ltd
15. I&M Holdings Ltd
16. Kenya Commercial Bank Ltd
17. National Bank of Kenya Ltd
18. NIC Bank Ltd
19. Standard Chartered Bank Kenya Ltd
20. The Co-operative Bank of Kenya Ltd

Commercial and Services

21. Atlas African Industries Development & Support Services Ltd
22. Deacons(E.A) Ltd
23. Nairobi Business Ventures Services Ltd
24. Express Kenya Ltd
25. Kenya Airways Ltd

26. Longhorn Kenya Ltd
27. Nation Media Group Ltd
28. Scangroup Ltd
29. Standard Group Ltd
30. TPS Eastern Africa(Serena) Ltd
31. Uchumi Supermarket Ltd

Construction and Allied

32. ARM Cement Ltd
33. Bamburi Cement Ltd
34. Crown Paints Kenya Ltd
35. E.A. Cables Ltd
36. E.A.Portland Cement Co. Ltd

Energy and Petroleum

37. KenGen Co. Ltd
38. KenolKobil Ltd
39. Kenya Power & Lighting Co Ltd
40. Total Kenya Ltd
41. Umeme Ltd

Insurance

42. British-American Investment(Kenya) Ltd
43. CIC Insurance Group Ltd
44. Jubilee Holdings Ltd
45. Kenya Re Insurance Corporation Ltd
46. Liberty Kenya Holdings Ltd
47. Pan Africa Insurance Holdings Ltd

Investment

48. Centum Investment Co Ltd
49. Home Afrika Ltd
50. Olympia Capital Holdings Ltd
51. Trans-Century Ltd

Investment Services

52. Nairobi Securities Exchange Ltd
- 53.B.O.C (K) Ltd
- 54.BAT(K) Ltd

55. Carbacid Investment Ltd

56. E.A. Breweries Ltd

57. Eveready E.A. Ltd

58. Kenya Orchards Ltd

59. Mumias Sugar Co. Ltd

60. Unga Group Ltd

61. Flame Tree Group Holdings Ltd

Telecommunication and Technology

62. Safaricom Ltd

APPENDIX II: SUMMARY DATA USED IN THE STUDY

| YEAR | ROA | IR | EX | IF | GDP | M3 |
|------|----------|----------|----------|----------|----------|----------|
| 2006 | 0.125151 | 12.2654 | 80.45158 | 15.4 | 8.25412 | 7.254889 |
| 2007 | 0.101548 | 13.2145 | 82.12546 | 12.152 | 8.2658 | 7.562478 |
| 2008 | 0.091251 | 13.8456 | 82.94581 | 10.256 | 9.25478 | 8.12547 |
| 2009 | 0.074515 | 14.12548 | 85.21566 | 11.251 | 9.51452 | 8.895471 |
| 2010 | 0.064681 | 14.35917 | 79.46183 | 3.971667 | 10.55335 | 9.664434 |
| 2011 | 0.05706 | 15.04917 | 87.34408 | 13.97583 | 10.57054 | 9.786914 |
| 2012 | 0.052908 | 19.64833 | 84.65417 | 9.64 | 10.57449 | 9.631817 |
| 2013 | 0.051702 | 17.30917 | 86.06417 | 5.715833 | 10.58219 | 9.650786 |
| 2014 | 0.009955 | 17.30917 | 87.84583 | 6.884167 | 10.62913 | 11.98992 |
| 2015 | -2.09233 | 18.45211 | 95.15147 | 6.9154 | 10.65155 | 9.755814 |