# MACROECONOMIC DETERMINANTS OF STOCK MARKET PERFORMANCE IN KENYA

**BY**

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**A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF DEGREE OF MASTERS OF SCIENCE, FINANCE, FACULTY OF BUSINESS AND MANAGEMENT SCIENCES OF THE UNIVERSITY OF NAIROBI**

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# DECLARATION

I declare that this project is my original work and has not been submitted to any other college, institution or university other than the University of Nairobi for academic credit.

Sign: ___Kabiru_____ Date: _____16/11/2021_____

Amos Kabiru

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

Sign:  Date: 15 NOV 2021

Prof. Iraya Mwangi

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# DEDICATION

I dedicate this first to my Rebeca Wachia (my wife) and Rakim Kabiru (son) for their support and encouragement during the entirety of this project, secondly to Professor Cyrus Iraya (Chairman School of Business, University of Nairobi, Kikuyu campus) for his advice, consultation, direction and time to make this project a success. And lastly to the University of Nairobi fraternity and those people who directly or indirectly help us to achieve our objectives.

# TABLE OF CONTENTS

# LIST OF TABLES

# LIST OF ABBREVIATIONS AND ACRONYMS

| | |
|---|---|
| **ADF** | Augmented Dickey Fuller Test |
| **APT** | Arbitrage Pricing Theory |
| **ARDL** | Autoregressive Distributed Lag |
| **Bn** | Billion |
| **CAPM** | Capital Asset Pricing Model |
| **CAPM** | Capital Asset Pricing Model |
| **CMA** | Capital Market Authority |
| **CNX** | Crisil National Stock Exchange |
| **DOLS** | Dynamic Ordinary Least Square |
| **ECT** | Error Correction Term |
| **EMH** | Efficient Market Hypothesis |
| **FDI** | Foreign Direct Investment |
| **FDI** | Foreign Direct Investment |
| **FMOLS** | Fully Modified Ordinary Least Square |
| **FTSE** | Financial Times Stock Exchange |
| **GDP** | Gross Domestic Product |
| **GDP** | Gross Domestic Product |
| **KES** | Kenya Shillings |
| **KNBS** | Kenya National Bureau of Statistics |
| **KSHs** | Kenya Shillings |

| | |
|---|---|
| **LSE** | London Stock Exchange |
| **NARDL** | Nonlinear Autoregressive Distributed Lag |
| **NASI** | NSE All-Share Index |
| **NSE** | Nairobi Securities Exchange |
| **NYSE** | New York Stock Exchange |
| **PVM** | Present Value Model |
| **UNCTAD** | United Nations Conference on Trade and Development |
| **US** | United States |
| **USD** | United State Dollar |
| **VIF** | Variance Inflation Factors |

# ABSTRACT

The study sought to establish macroeconomic determinants of stock market performance in Kenya. This paper used a descriptive design. Target populace was firms under NSE 25 index. These firms were preferred as they represent a larger chunk of the best performing firms at the NSE and cover the largest contribution in the market performance. This investigation utilized secondary data sources. This was collected based on reports from NSE, CBK and KNBS. The data on exchange rate, inflation rate and GDP was mined from the CBK website. Data on capital inflows were mined from CBK economic reports. In the research, NSE reports provided information relating to stock market performance in Kenya. Aggregate quarterly data was collected in analysis for ten years spanning 2011 and 2020. This gave a total of 40 data points. The data was mined using a data collection schedule based on the various metrics used to measure the variables for the study. Data collection schedule was utilized as the data gathering tool per year and quarter. This research utilized quantitative data analysis methodologies. Analysis adopted regression and measures of central tendencies like mean, standard deviation, frequencies and percentages generated using SPSS 25. Regression was done to establish the effect the determinants on stock market performance. This was done by the use of multiple regression model. Diagnostics tests done for this study was normality test, homoscedasticity test and Multicollinearity. In order to test the significance of the model, f-statistics was used. The findings showed an R value of 0.775. Hence, the researcher concludes that macroeconomic determinants have a strong relationship with stock market performance in Kenya. Findings showed that that exchange rate, inflation rate, gross domestic product and foreign flows contributed to 60.1% to stock market performance. Hence, macroeconomic determinants are the major factors influencing stock market performance in Kenya. From the regression analysis, exchange rate showed a positive and significant regression coefficient. Hence, exchange rate has a positive and significant effect on stock market performance in Kenya. The findings also showed that inflation rate had a negative and significant regression coefficient. showing a negative and significant effect on the stock market performance in Kenya. Gross domestic product showed a significant and positive regression effect on the stock market performance in Kenya. Foreign capital flows showed a positive and significant regression coefficient. Foreign capital flows have a positive and significant effect on stock market performance in Kenya. The study recommends that in their attempt to improve their stock performance, the stock market in Kenya should consider the macroeconomic determinants in their key performance decisions.

# CHAPTER ONE: INTRODUCTION

## 1.1 Background to the Study

The securities market fosters development through allowing huge amounts of long-term investment to be pooled by issuing more shares, securities, as well as other equities to corporations in desperate need of funds to expand their operations. As a result, how well the stock exchange operates affects the entire growth of the economy, and scientific research has shown that financial market development is crucial for economic progress (Asaolu & Ogunmuyiwa, 2010). The empirical research has identified variables including foreign direct investment (FDI), foreign capital flows, economic growth, financial deepening, infrastructural development, savings, inflation, trade openness, rate of interest, currency exchange, and stock market liquidity as factor that affect stock market performance. What, on the other hand, are the most important factors that influence market performance?

The study was based on four theories of stock market performance. Arbitrage Pricing Theory (Ross, 1976) states that there are multiple risk factors that explain asset returns. The Present Value Model connects the share price to anticipated prospective cash flows and their discount rate. Any elements which affect future predicted cash flow or even the discount rate used to discount such cash flows must possess an impact on its share price. According to Fama's (1970) Efficient Market Hypothesis, excessively high profits are impossible to achieve due to competition amongst profit-maximizing investors. Investors do seem to be rational as well as risk averse, the markets seem to be perfect, but also, at the risk-free rate, investors may send or receive a limitless amount of money., according to Capital Asset Pricing Model (CAPM).

Kenya's stock market performance has been declining for the past five years. For example, the market experienced a heavy foreign investors net outflow valued at KES 28.67Bn compared to an inflow of KES 1.78Bn in 2019 with total foreign activity stood at 64.5%. The stock market

performance has been influenced by various factors. However, no key determinants have been identified to influence stock market performance.

### 1.1.1 Macroeconomic Determinants

A fundamental goal of every securities market was assisting in expansion of the state's growth and industries, and to act as a tool for assessing industrial growth and stabilization of the economics of a country by looking at overall performances. A healthy economy is indicated by rising macro indices or a consistent growth in the indices; conversely, if the macro indices and stock prices are declining or the swings are larger, it indicates that the economy inside this nation is volatile (Garza-Garsia & Yu, 2010).

However, both theoretical and empirical literature reviews maintain that a nation's development is meticulously tangled to the economic standing, that comprises various macrofactors like Gross domestic products, foreign investments, remittances, inflation, interest rate, monetary policy, and real exchange, among others (Aduda, Masila & Onsongo, 2012). Variations mostly in nation's economic fundamentals, as well as projections about prospects for the future of such fundamental concepts, influence price fluctuations in the stock market. Securities markets indexes are instruments used in tracking overall performance of a market. Investors as well as the fund managers who want to match the performance to a market might use these indexes as a comparison.

Furthermore, while some previous empirical research from established economies have provided information on the impact of numerous parameters on firm share prices, very few centered on developing markets (Aduda, Masila & Onsongo, 2012). The results show that the factors that influence share price are numerous and contradictory. There are various ideologies ranging with basic philosophical through economic modelling (Garza-Garsia & Yu, 2010). This study primarily addressed the exchange rates, inflation rates, money supplies, and real

GDP when examining determinants of stock market performance (macroeconomic). Money supply and inflation have a mutually beneficial connection. Money supply and inflation, on the other hand, have a dual impact on share prices. According to theory, increasing the money supply raises inflation, which raises the expected rate of return.

### 1.1.2 Stock Market Performance

Most capital markets provide as a means for investors and businesses to share risk and profit on a nationwide and worldwide level (Erdugan, 2012). The stock market facilitates the movement of cash from investors to productive industries, hence assisting in the creation of nationwide prosperity, increased jobs, and economic stability (Kazi, 2004). Investors can trade shares, debt instruments, and futures in the securities markets. For most economy, such markets serve as a vital route for the inflow of foreign equity investors, linking a country in relation to world economics (Tursoy et al, 2008).

In the securities markets, investors examine markets that deals with equities depending on price volatilities together with the convenience relating to cash flow trade-offs available at the stock market. Whenever the markets are favourable, that is, when they are bustling, on rising trends, and investors are confidence in the capital markets, they are much more ready to engage in the NSE since it is both an investment opportunity and a liquidity trade-off technique. Whenever the market is negative, prices fall, putting a stop to any hopes of stocks returning to an upward trajectory, at least in a short run. Most investors sell the shares in order to get out of the market even before prices decline any further (Patra & Poshakwale, 2006).

The evaluation of an efficient market is based on stock market performance. Consistent liquidity, as well as a simple technique for investors to enter and exit, is a key component of an efficient capital market. This necessitates a sufficient volume and quantity of commercial transactions (Yartey & Adjasi, 2007). In any economy, the securities market is an important

part of the financial sector. The securities markets are significant segments of capital market of any economy. Securities markets operating optimally are designed to reduce the cost of capital on firms while also allowing individuals to better pricing and manage risks. Financial marketplaces assist developing nations attract international portfolio capital and mobilize domestic resources, increasing the amount of money available for investment.

Dobbs and Koller (2005) notes that an aggregate performance of a stocks market is got through a combination of performance metrics of individual firms. To accomplish this, the total shareholder returns (TRS) are computed. It relates to increases stock price and as well as its dividend payout across a given time period. TRS's short-term nature makes it potentially deceptive as a gauge of stock exchange success.

Shares do not routinely record high total return to stockholders. In the finance world, use of stock indexes to monitor securities trading market performance has gained widespread popularity. Average indices are used by both local and foreign investors to predict the trend of prospective market performance. The FTSE and NYSE are two widely recognized indicators which measure stock market performance.

### 1.1.3 Macroeconomic Determinants and Stock Market Performance

In securities market, there are two sorts of investors: bullish and bearish. A bearish investor expects stock prices to rise. A bullish investor, on the other hand, assumes unfavourable market conditions for profitable investments as well as trading stocks. They both expect profits from price changes in stocks (Mehwish, 2013). The performance of a company, the movements of important macroeconomic factors, and government interventions are all intimately tied to the stock price volatility (Karitie, 2010).

According to McKinnon and Shaw's (1973) thesis, macroeconomic factors like real interest rates, money supplies, as well as inflation are expected to be closely watched since they impact a variety of economic fundamentals and, as a result, economic position. They argue, for instance, that keeping interest rates under equilibrium point can stimulate demand for investment but not actual investments. Nevertheless, as per efficient market concept, all indicators' prices ought to be unaffected by factors other than demand and supply (Fama, 2000). Market efficiency, according to him, is defined as a market wherein prices constantly properly represent all information available.

Although some researchers have confirmed that macroeconomic factors have an influence on securities markets performances, some have found that there is no meaningful impact or association across macroeconomic variables and securities markets performance. Aduda, Masila, and Onsongo (2012), for example, looked into the factors that influence the development of NSE. They discovered that macroeconomic stability (as measured by inflation) and private capital inflows had little effect.

### 1.1.4 Stock Market in Kenya

The NSE is Kenya's main stock exchange, with an automatic podium for the entry and transaction of a variety of stocks. The National Stock Exchange was established in 1954 with goal of establishing investments and managing trading activities. In unison with evolving business and markets, the market experienced significant alterations over the years. The Capital Market Authority regulates the NSE (CMA, 2011). The CMA's mission is to guarantee that solid regulatory frameworks are in place and to monitor the NSE's performance ensuring securities trading conduct following prudent and fair procedures (Mwaniki, 2015).

In the context of Africa, Kenya's securities market is comparatively established. After the Johannesburg market in South Africa, it is positioned second within Africa. Since its beginning, the performance of NSE has indeed been volatile. Overall performance of stocks has been volatile, making it difficult for investors to precisely anticipate or forecast return expectation (Barnor, 2014). The market gradually grew investor valuation, boosting speculation component relating to the markets, while in other time frames, bullish markets whipped up the returns, causing panic among investors.

The volatility of stocks in the marketplace is of interest to rational investors (Najaf, 2016). That's for reason that amount as well as trajectory relating to the changes will affect returns related to assets owned together with prospective selections for stocks to buy (Joseph, 2012). The NSE, like other emerging markets, reacts to news on systematic key risks, such as policy decisions, in their weak or semi-strong efficiency. Systematic risks that change the course of the NSE's stocks pricing. Interest rate fluctuations, foreign currencies alterations, inflations, and adjustments in GDP all influence on progress of price fluctuations at the Nairobi Securities Exchange. Most regular risks show links to assets volatility; however, competent investors have differing perspectives and anticipations for the connection (Lee & Rui, 2002).

The performance of stock market experienced problems in 2020. From the statistics, NSE 20 Share Index declined by 29.6% while NSE 25 share dipped 16.7%. NASI shed 8.6% with market cap shrinking by 8.0% with 11 counters gaining while 47 counters lost. Volumes traded increased by 8.8% while value traded declined by 3.5% on price deterioration especially in the banking and manufacturing sectors.

## 1.2 Research Problem

For generations, financial markets have been at the heart of nations' economic standing (Demir, 2019). In such markets, whatever instability or shocks entail partial or overall consequences on

economy. Several pressures beyond the area of capital markets are predicted to impact stock market performance (Issahaku, Ustarz & Domanban, 2013). It's these fundamentals or indications that influence the securities market's volatility of stock. The magnitude and volatility of share prices, market indexes, and market liquidity frequently indicate variations in factors (Maku & Atanda, 2010).

Recently, Kenya has been experiencing dwindling performance in the stock markets. The Kenyan stock exchange's stock market turnover declined 6.6 percent in 2020, as international investors, which constitute the majority of trade, left the market (CMA, 2020). The turnover dropped from 1.5 billion in 2019 to 151 bn shillings (about 1.4 billion dollars) in 2020 (NSE, 2020). Except for a few firms, such as Safaricom, the remainder of the stocks fell by up to 36%. Stock markets enable companies to get publicly listed and generate funds (Khalid & Khan, 2017). Individuals are encouraged to trade in the stock market. Generating funds enables companies to extend their entire operations, expand their enterprises, and create jobs in the community. This investment is essential for economic growth, income, and trade.

Various researchers have focused on stock market performance. Globally, Agrawal and Sangeetha (2019) looked at the influence of macroeconomic determinants on Indian's market performance; Kwong et al (2017) focused on the factors relating to performance of Malaysian securities' market; Su, Bui and Nguyen (2017) aimed to investigate variables relating to development of the Vietnam's market; Tetteh, Adenutsi and Amoah (2019), in Ghana, studied stock returns and their determining factors; while in their Nigerian research, Ogunsakin and Awe (2020) studied the macroeconomic determinants relating to the performance of the Nigerian stock market. These studies established macroeconomic determinants as key influencers of stock market performance but with contradictory outcomes.

Locally, Rachael and Moses (2017) looked at impact of interest controls on stock markets.; Osoro (2020) studied that capital inflows from the diaspora and the development of the

financial markets; while Muriuki (2019) focuses on financial development indicators and stock markets performance. Additionally, Lakhani (2019) studied macroeconomic considerations have an impact on the stock market performance of NSE 20 component firms; while Musembi (2020) studied the effect of inflation on performance of equity market in Nairobi Securities Exchange, Kenya. Despite these studies having focused on NSE firms, they have focused on other concepts other than macroeconomic determinants and stock market performance. For example, Muriuki (2019) focused on financial development indicators while Osoro (2020) focused on stock market development. Further, the studies have used different measures of stock performance. For example, Musembi (2020) used NSE 20 with the current research using NSE 25 index. What are macroeconomic determinants of stock market performance among firms in Kenya?

## 1.3 Research Objective

To establish macroeconomic determinants of stock market performance in Kenya

## 1.4 Value of the Study

This investigation creates value to numerous stakeholders. In theory, the paper will create value to scholars and researchers in the field of stock performance. The paper will provide more literature on the macroeconomic determinants of stock performance which would be useful to scholars in their academic assignments. Other researchers would also find the literature provided by this paper as the basis for research on the topic of stock performance in developing nations like Kenya.

For policy, the paper would form a basis for policy formulation in the field of stock performance. The policy makers like Capital Market Authority (CMA) would use recommendations and findings from this research to get an understanding on the macroeconomic determinants of stock performance. This understanding would facilitate the

development of feasible and practical policies to boost stock performance at the NSE.

Practically, conclusions of this investigation will be beneficial to NSE investors and management. Investors, by understanding the macroeconomic determinants of stock performance, makes feasible decisions on their investment depending on market performance. The management of NSE would also find this research valuable in that it would create an understanding on this topic. Research's recommendations would also be used by the management in coming up with strategies that would enhance stock performance.

# CHAPTER TWO: LITERATURE REVIEW

## 2.1 Introduction

In this part, researcher gives the works reviewed. It included the theories and the empirical works. Theoretical foundation of this research is indicated. Empirical literature is grounded on macroeconomic determinants relating to stock market performance both internationally and locally. The conceptualization of variables is indicated in this chapter with a summary of research gaps concluding the chapter.

## 2.2 Theoretical Review

This part gives theoretical hypotheses forming the foundation for this research. Arbitrage pricing theory, present value concept, the efficient market model, and also capital asset pricing model are among them. These hypotheses bring in macroeconomic determinants of stock market performance and the theoretical basis of their relationship with stock market performance.

### 2.2.1 Arbitrage Pricing Theory

When several risk factors might describe asset returns, arbitrage pricing (APT) (Ross, 1976) is used to relate stock market performance to its determinants. It is based on the assumption that the returns on an asset may be forecasted by looking at the link between that asset and a number of different risk factors. By a linear mixture of several distinct macro variables, the model says a link of return of a portfolio together with single asset returns (Ross, 1976). It's employed in a stock market collective paradigm, in which a variation in a given macroeconomics factors could be interpreted as representing a shift in a fundamental systemic risk factors determining prospective market returns.

The majority of empirical research linking status of macroeconomic conditions to performance of the stock markets are defined through modelling shorter-term connection of determinants and share prices, based on the assumption of stationarity trends (Andrew & Peter, 2007). This theory relates to the research in establishing the multiple key factors influencing stock market performance as it states that returns of a portfolio is determined by various variables.

### 2.2.2 Present Value Model

The present value model (PVM) connects share prices to predicted future cash flows together with the discounted rates. All predictors influencing future predicted cashflows or even discounting rate used to discount those cash flows must have a bearing on stock prices. The PVM model concentrates on lasting link across the securities markets and macro variables. Connection amongst stock prices, earnings, and predicted dividends is investigated by Campbell and Shiller (1988).

Campbell and Shiller (1988) revealed that a long-term moving average of pays approximations can accurately anticipate dividends together with ratios of these earnings to existing securities. The connection of the share prices to predicted cashflows would mean that the investors consider stock performance when making their decisions. This shows that consideration of key determinants of stock performance in terms of share prices in the stock markets.

### 2.2.3 Efficient Market Hypothesis

This concept was postulated by Fama in the year 1970. According to the hypothesis, extremely huge profit is difficult to attain due to rivalry amongst profit-maximizing shareholders. Fama (1970) distinguished the three types of EMH: the weak, a semi-strong, as well as the strong form. The semi-strong version of EMH, on the other hand, has served as the foundation for the majority of investigations.

This hypothesis postulated that any necessary info was available to market participants with share prices completely mirror any changes in macroeconomic factors. Several academics have identified various macroeconomic factors. The EMH allows researchers conclude that variations in such indicators have a direct impact on share prices. As a result, the report's goal is to figure out what the anticipated link is performance in Kenya.

### 2.2.4 Capital Asset Pricing Model

In the financial research, pricing common stocks is a major topic. Sharpe (1964) developed the hypothesis. In attempt to elucidate a particular common stock performance, CAPM only considers one factor: the stock market index. Investors remain rational yet risk averse, markets is perfect, as well as investors could borrow as well as lend limitless quantities at the risk-free rate, among other assertions inside the basic model of CAPM. Each of these assertions was subjected to harsh criticism, prompting the model's refinement through the introduction of successive CAPM versions.

The model's distinctive role of the market was a major point of contention. The addition of new variables to the model resulted in multifactor models. Merton (1966) and King (1966) were the first to use multifactor models (1973). Despite the fact that their research added to stock valuation concepts, the stock index, together with the various elements, was once again the most important price element in the model. The APT hypothesis (Ross, 1976) established a link between macroeconomic conditions and common stock returns.

## 2.3 Determinants of Stock Market Performance

There are various determinants of stock market performance. Main determinants are macro in nature with very few operating in the microenvironment. The macroeconomic determinants include exchange rate, inflation, growth rate and foreign capital flows. Other determinants include solvency ratio, and market to book ratio.

### 2.3.1 Macroeconomic Determinants

Macroeconomic determinants are factors operating outside the business environment. They relate to exchange rate, GDP, foreign capital flows, and inflation. The valuation of one currency in terms of conversion to another is known as the exchange rate. Because of the relevant information to investors, exchange rate swings had a significant impact on share markets return and volatility. If there are large swings in exchange rates, or when the exchange rates fluctuate, there are large variations in market volatility. Some studies have found a considerable link, while others have found none. Movement of exchange rate, in particular, would be transferred to the security's business.

Inflation has a wide range of beneficial and negative consequences on the economy. On the other hand, these negative effects are the most apparent, to include a decrease in the true value of capital or other financial parameters with time. As a result, uncertainty about expected inflation rates can inhibit investors from investing, although if inflationary rates go up fast, there may well be shortage of commodities as individuals' stockpile in anticipation of future price increases.

The Gross Domestic Product (GDP) is an important factor in determining stock market success. The entire monetary price relating to final products in a specific nation every year is referred to as Gross Domestic Product. It is regarded as a fundamental metric in macroeconomics, and many experts use it to assess the condition of a nation's economy (Wachira, 2012). GDP has shown a positive influence on stock performance. Wachira (2012) established that a higher GDP led to more disposable income which led to investment in the stock market.

Foreign capital flows are described as a rise in overall volume of available money for acquisition of local capital assets such as property and machineries from foreign sources (Obstfeld & Taylor, 2004). The acquisition of domestic financial instruments and physical

assets by aliens, or the loan of foreign money by domestic inhabitants, are both examples of direct investment into the domestic market (UNCTAD, 2012). The acquisition of funds by one nation, the hosting, from one or even more overseas nations, the origin nations, is referred to as capital inflows. Capital inflows comprise foreign investment in tangible assets by multinational corporations (Lane & Gian).

### 2.3.2 Other Determinants

Apart from the macroeconomic determinants there are other determinants that influence stock market performance. Aduda, Masila, and Onsongo (2012) discovered that securities markets liquidity, institutional factors, capita income, domestic savings, and bank growth all influence securities market devlopment. Buigut, Soi, Koskei, and Kibet (2013) revealed that debt, equity, and gearing ratios were important predictors of share prices in the industry studied.

Other determinants of stock performance include liquidity as measured by solvency ratio and leverage as measured by debt to equity ratio. Solvency ratio quantifies firm's capacity to pay their long- and short-term liabilities based on its assets. Analyzing financial accounts from a solvency standpoint impacts on investor anticipation, that further influence price index movement. The debt-to-equity ratio (DER) is used to assess a business's capacity to meet all of its obligations by determining how much of its capital is utilized to service debt. The market to book ratio is a market statistic that measures the performance of a stock by comparing its market price to its book value. The greater a firm's market to book ratio is, the better the investor's opinion of the firm. When the stock market price rises, the stock's capital gain rises with it. Indrayono (2019) indicated that market to book value had a substantial impact on stock return in their studies. The market to book ratio had no effect on stock performance, according to different studies (Asmirantho & Somantri, 2017; Gunadi et al, 2020).

## 2.4 Empirical Studies

The empirical studies relating to determinants of stock market performance are reviewed in this section. This is in an attempt to establish whether there is enough literature to support this research. The studies will be classified into international and local studies. International studies are studies done outside Kenya with the local studies being done in Kenya. The review will enable the researcher to establish the gaps existing of determinants of stock market performance.

### 2.4.1 International Studies

Agrawal and Sangeetha (2019) looked at the impact of macroeconomic determinants on the performance of the Indian stock market. The study takes ten variables into consideration, i.e., gold prices, silver prices, oil prices, interest rates, industrial production, exchange rate, inflation, money supply, forex reserve and trade balance. The study investigates effect of macroeconomic factors on the performance of the Indian Stock Market using monthly data over the period April 2008 to March 2018 for ten variables taken into study, and one stock market index namely CNX Nifty. Various statistical techniques are used in the study to analyze the input data like Co-relation analysis, and multi-regression analysis. Only exchange rate significantly influenced performance.

Kwong et al. (2017) investigated the factors that influence stock market performance in Malaysian firms. Multiple linear model analyses are conducted using Ordinary Least-Square regression approach in E-views 7 to explore hypothesis and statistically associations on a monthly basis between January 2009 and June 2016. The findings revealed that the performance of the US stock market and the rate of inflation displayed a positive and negative association with the performance of the Malaysian share market, correspondingly. However, this analysis revealed that exchange rate together with oil price had substantially impact on the

performance of the Malaysian financial markets.

Su, Bui, and Nguyen (2017) analyzed development factors of Vietnam's stock markets and other developing nations, highlighting disparities between them. They used panelized data from thirty-seven emerging economies from 2003 to 2014 to do so. The results of our investigation are intriguing. First, growth rate, localized lending, and liquidity related to the stock market are all favorable predictors of the development of the stocks. Capital availability has a detrimental influence, institutional characteristics like government performance and rule of law, in contradiction to corruption control and political stability, have a major positive influence. Second, macroeconomic aspects of economic development, domestic investment, foreign investment, lending rate and inflation have substantial and adverse impacts on the stock markets in Vietnam. As a result, well-established institutions are critical for encouraging stock market demand and performance in Vietnam.

Tetteh, Adenutsi, and Amoah (2019) examined influencers of stock market performance in Ghana. Research utilized monthly stock returns as well as lags of stock returns, price index, 91-day treasury bill, exchange rate, GDP, and LSE indicators. To achieve efficient, sturdy, and trustworthy outcomes, FMOLS and DOLS equations were utilized. While GDP showed direct influence on stock market returns, exchange rate and LSE displayed an inverse influence. The study's findings include the strong impact of LSE all-share index on market performance.

The macroeconomic factors of Nigerian stocks markets performance were investigated by Ogunsakin and Awe (2020). Between 1985 and 2018, this study looked into the macroeconomic factors that influenced stock market performance. This research's data was sourced from World Bank's Development Indicator and Central Bank of Nigeria. As an estimating tool, the study used the ARDL co-integration approach. The study found that the key predictors were inflation, real interest rate, real effective exchange rate, and global oil prices. The investigation that there are endogenic and exogenic macroeconomically skewed

predictors influencing the performance of Nigerian stock market.

### 2.4.2 Local Studies

Rachael and Moses (2017) investigated impact of interest rate controls upon NSE performance. All 61 firm stocks were included in the study's target population. Secondary data was acquired from NSE, CBK and the KNBS over a 5 years' timeframe, from Jan 2012 to January 2017. As a representation for the broader stock market, NASI was used. Tables and figures were used to show data quantitatively. The data was described using descriptive statistical indicators. In meeting the study's goals, SPSS was utilized in regressing the predictors against dependent. An event analysis technique was utilized. controls on interest rates displayed an inverse influence on stock market performance, according to the study. Controls on interest rates was projected to increase market performance from lower rates, but this was not the case. It's possible that the findings are attributable to a reduction in credit availability as commercial banks make fewer loans.

At the Nairobi Securities Exchange in Kenya, Osoro (2020) investigated diaspora remittance as well as stock market development. Co-relation analysis and ARDL were used to analyse data from 2008 to 2018. As indicated by negative ECT, money remitted by Kenyans abroad display an inverse short run and direct long run effect on development of the stock market.

Muriuki (2019) investigated the link between Kenya's financial development metrics and stock market performance. Spanning from 2004 through to 2018, study looked at the association. It wanted to see if there was a link between financial development indices (depth, accessibility, and openness) and stock market performance as evaluated by the NSE-20. Quarterly secondary data was gathered and sampled from the KNBS and the CBK statistical yearly reports. Vector was used to create and test hypotheses. The Vector error correction technique modelling was used to develop and test hypotheses. Financial development metrics have a considerable

influence on stock market performance, that is a crucial driver of economic growth in Kenya.

Lakhani (2019) looked at how macroeconomic issues affected the stock market performance of Kenya's NSE 20 component businesses. The target demographic was NSE 20 component businesses, and descriptive research was performed. Data on the stock market, foreign direct investment, and technological adoption was gathered through secondary data. Between 2000 and 2018, data was collected from KNBS, National Treasury and CBK throughout a 19-year period. The primary goal is to determine how political events affect stock market performance. There was a considerable difference between the mean of the stock p and the mean of the stock price, according to the findings. There was a substantial difference in the mean of stock prices before, during, and after the election period, according to the data. According to a Pearson correlation, a direct but small connection of NSE performance and election existed. Second goal was to see what impact technology adoption has on stock market performance. The study found that NSE share constituent businesses performed better after technology adoption than before, demonstrating that technology adoption impacted greatly on NSE performance. The third goal was to look at the impact of foreign direct investment on the NSE 20 constituent businesses' stock market performance. There was a direct but insignificant association of NSE performance and foreign direct investments, according to the Pearson correlation.

Musembi (2020) investigated inflationary effect on NSE's equities market performance. Fisher's hypothesis was used to guide the research. The study used a positivist paradigm as well as an explanatory research approach. Between 2008 and 2018, monthly data derived from Kenyan Central Bank, KNBS, CMA, and NSE. The Nairobi Securities Exchange All Share Index was used to represent all sixty-seven listed firms. Document review guides were used as data gathering tools. For data analysis, the researchers used the ARDL and NARDL models. According to the study's findings, there is a considerable inverse association of inflation rates and performance of equities. According to the report, capital markets authorities should keep

an eye on fluctuations in inflation in the market because it has a substantial impact on equities market performance.

## 2.5 Conceptual Framework

The paper had the variables' relationship through a framework shown below (Figure 2.1). The independent variables included exchange rate, inflation rate, gross domestic product and foreign capital flows. Dependent variable is stock market performance gauged by the NSE index.

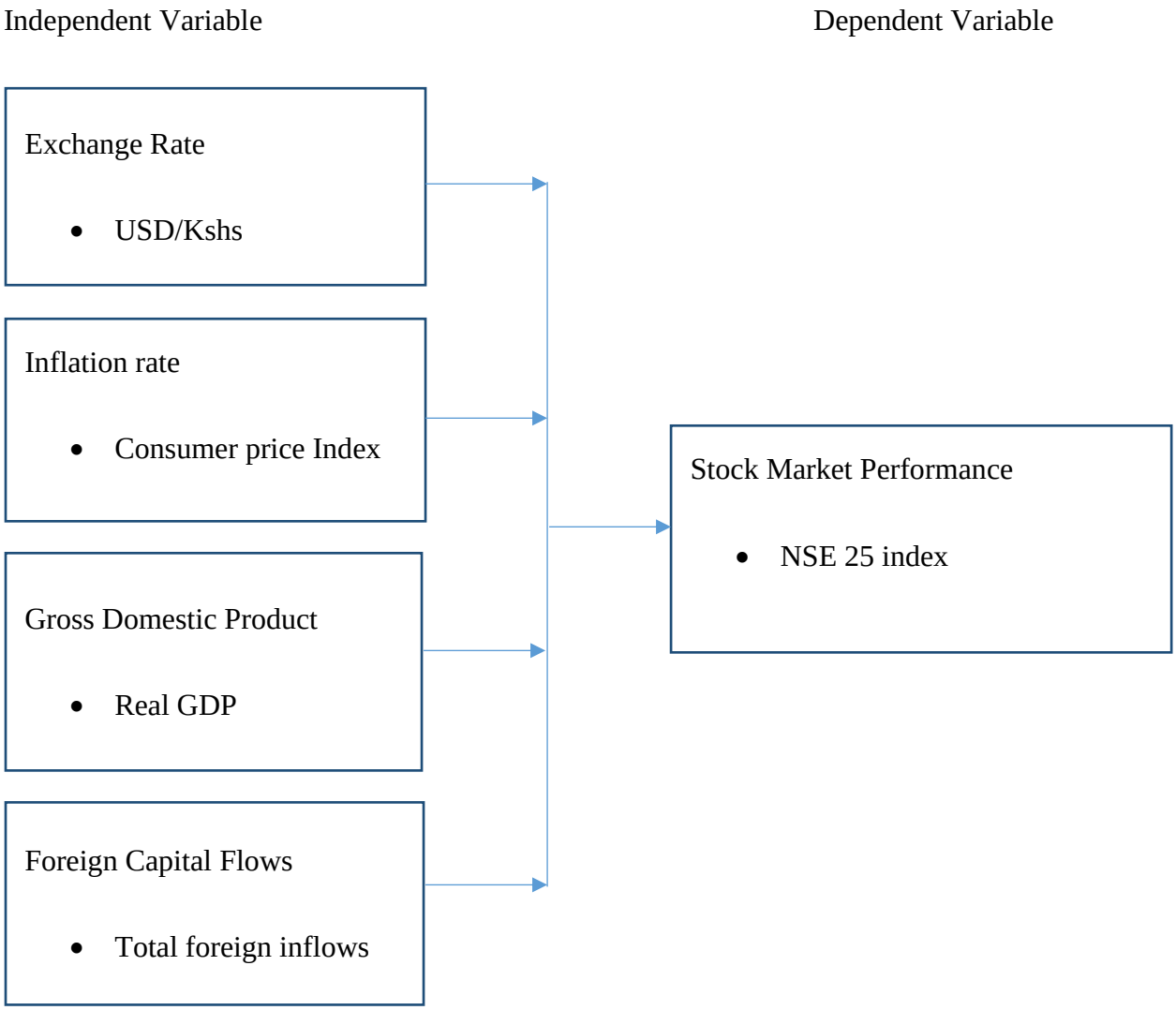


Figure 2.1: Conceptual Framework

## 2.6 Summary of Literature Review

This research reviews the works for research area. The international and local studies are reviewed with the various gaps established. From the review majority of the studies that focused on macroeconomic determinants of stock market performance were international ones. Despite this the reviewed papers showed conflicting results on the determinants. For the local ones, the main focus was on different variables other than stock market performance with the ones stock performance basing their analysis on other measures other than NSE 25 index adopted in this paper. This show that knowledge and research gaps existed on macroeconomic determinants of stock market performance and mostly within Kenyan space.

# CHAPTER THREE: RESEARCH METHODOLOGY

## 3.1 Introduction

This part concentrates on key scientific methodologies used in the investigation. It has to do with overall research design, sample size, collection of data, and analysis. It was determined by the survey's factors. This part additionally included a list of diagnostic tests.

## 3.2 Research Design

This paper made use of a descriptive design. This design allowed for the researcher to provide a description of the variables without any manipulations of the outcome (Siedlecki, 2020). This design also allows the researcher to establish how specific parameters influence another parameter (Atmowardoyo, 2018). This made the design relevant in that the research seeks describe macroeconomic determinants and establish how they influence performance of stock market.

Target populace was firms under NSE 25 index. According to NSE (2020), there are 25 firms under the NSE 25 index. These firms are preferred as they represent a larger chunk of the best performing firms at the NSE and cover the largest contribution in the market performance. Hence, this enabled the researcher to establish the performance of the stock market based on the performance of the 25 firms under the NSE-25 index.

## 3.4 Data Collection

This investigation utilized secondary data sources. This was collected based on reports from NSE, CBK and KNBS. The data on exchange rate, inflation rate and GDP were mined from the CBK website. Data on capital inflows were mined from KNBS economic reports. In the research, NSE reports provided information relating to stock market performance in Kenya.

Aggregate quarterly data was collected in analysis for ten years spanning 2011 and 2020. This gave a total of 40 data points. The data was mined using a data collection schedule based on the various metrics used to measure the variables for the study. Data collection schedule was utilized as the data gathering tool per year and quarter.

## 3.5 Data Analysis

This research utilized quantitative data analysis methodologies. Analysis adopted regression and measures of central tendencies like mean, standard deviation, frequencies and percentages generated using SPSS 25. Regression was done to establish the effect the determinants on stock market performance. This was done by the use of multiple regression model.

### 3.5.1 Diagnostic Tests

This research was based on various tests to diagnose the data for modelling suitability. Diagnostics tests done for this stud was normality test, homoscedasticity test, and Multicollinearity. Normality test is need as it established whether the data is normally distributed. The null hypothesis is that the data is normally distributed. This was tested using Shapiro Wilk test. Where the value is less than 5% the data does not follow a normal distribution. Where the value is above 5%, the data is assumed to follow a normal distribution. Homoscedasticity test was done using Breusch Pagan test. According to the homoscedasticity test considers a significance level of over 0.05 as an indicator that there is no heteroscedasticity issue has been found in the data. Multicollinearity was done to establish whether the predictor variables considered in the research are significantly correlated with each other making use of variance inflation factors (VIF). Where the value of VIF is less than 2, it is assumed that there are no Multicollinearity issues in the data.

### 3.5.2 Analytical Model

The regression model took the form of:

$Y=\alpha+\beta_1X_1+\beta_2X_2+ \beta_3X_3 +\beta_4X_4 + \varepsilon$

Where:

$Y_{it}$ is stock market performance as gauged by NSE 25 index at time, t;

$\alpha$ is a constant term;

$\beta_1$-$\beta_4$ is regression coefficients;

$X_1$ is exchange rate as gauged by USD/KSHs;

$X_2$ is inflation rate as gauged by the consumer price index;

$X_3$ is gross domestic product as gauged by real GDP;

$X_4$ is foreign flows as gauged by total foreign inflows;

$\varepsilon$ = error term

### 3.5.3 Significance Tests

In order to test the significance of the model, f-statistics was used. It is assumed that where the F-calc is bigger than F-critical, then the model is assumed to fit the data. Where the significance value is less than 5%, then the model is assumed to be significant and vice versa.

# CHAPTER FOUR:

# DATA ANALYSIS, RESULTS AND DISCUSSION

## 4.1 Introduction

This chapter presents the findings from the data analysis. The chapter also provides a discussion of the findings based on the variables and objective of the study. The findings were based on the objective that sought to determine the effect of macroeconomic determinants on stock market performance in Kenya.

## 4.2 Descriptive Statistics

Table 4.1: Descriptive Statistics

| | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| NSE index | 40 | 92.56 | 237.41 | 175.7188 | 39.20415 |
| exchange rate | 40 | 82.24 | 109.49 | 96.0227 | 8.27734 |
| Inflation rate | 40 | 3.53 | 19.19 | 7.2210 | 3.59174 |
| Gross domestic product | 40 | -4.70 | 6.00 | 4.1825 | 2.02774 |
| Foreign flows | 40 | 65485.03 | 273455.27 | 154905.3475 | 61491.86298 |
| Valid N (listwise) | 40 | | | | |

The researcher used descriptive statistics to describe the variables in the study. The findings showed that NSE 25 index averaged at 175.7188. This indicates that the NSE 25 firms showed an average index of 175.7 for the period between 2011 and 2020. The firms showed a standard deviation of 39.20415. This shows that the quarterly NSE 25 index varied greatly across the period between 2011 and 2020. The quarterly index showed a range between 92.56 and 237.41.

Exchange rate showed a mean of 82.24. This shows that the period between 20111 and 2020 had an average exchange rate of 96.02 Kshs/USD. The quarterly exchange rate was 8.27734

which shows a high variation of across the period between 2011 and 2020 ranging between 82 and 109.49. The quarterly inflation rate averaged at 7.221% in the study period. The quarterly inflation rate ranged between 3.53 and 19.19 with a standard deviation of 3.59174. This shows that the inflation rate didn't differ much across the period. The gross domestic product showed a mean of 4.183 with a standard deviation of 2.028. This shows that the growth rate across the period between 2011 and 2020 was about 4%. The growth rate ranged between -4.70 and 6.00.

Finally, foreign flows showed a mean of USD. 154905.34 with a standard deviation of 61491.86 USD. The foreign capital flows showed a range between USD 65485.03 and USD 273455.27.

## 4.3 Diagnostics

Table 4.2: Tests of Normality

| | Statistic | df | Sig. |
|---|---|---|---|
| NSE index | .927 | 40 | .013 |
| exchange rate | .870 | 40 | .000 |
| Inflation rate | .747 | 40 | .000 |
| Gross domestic product | .660 | 40 | .000 |
| Foreign flows | .953 | 40 | .099 |

In testing the assumption of normality, Shapiro Wilk statistics were used to establish whether the data were normally distributed. The assumption is that the data is flows a normal distribution. It assumes that where the p-value is less than the 0.05 level, then the null hypothesis is rejected and the data are not normally and vice versa. From the Shapiro Wilk statistics, foreign capital flows showed a significance value greater than 0.05. This shows that the data follows a normal distribution. However, NSE index, exchange rate, inflation rate and gross domestic product displayed a p-value less than the critical 0.05 value. Hence, the

researcher rejected the null hypothesis that data is normally distributed and assume that the data for the variables was not normally distributed.

Table 4.3: Multicollinearity

| | Collinearity Statistics | |
|---|---|---|
| | Tolerance | VIF |
| exchange rate | .698 | 1.432 |
| Inflation rate | .621 | 1.608 |
| Gross domestic product | .863 | 1.159 |
| Foreign flows | .667 | 1.499 |

Multicollinearity, which shows linearity among predictor variables was tested using VIF. The outcomes showed that the data had VIF values less than 5. Therefore, the researcher concludes that the inflation of variance was low and no issue existed as far as Multicollinearity was concerned. The tolerance statistics were also less than 2, hence there are no relationship among predictor variables.

Table 4.4: Heteroscedasticity

OLS Output

| | b | se | t | sig |
|---|---|---|---|---|
| | -386.219 | 201.337 | -1.918 | .063 |
| X1 | .620 | .901 | .688 | .496 |
| X2 | -4.295 | 1.421 | -3.024 | .005 |
| X3 | 3.871 | 2.136 | 1.812 | .079 |
| X4 | 43.562 | 21.454 | 2.030 | .050 |

------- Breusch-Pagan and Koenker test statistics and sig-values --------

| | LM | Sig |
|---|---|---|
| BP | 5.000 | .287 |
| Koenker | 5.423 | .247 |

To test the heteroscedasticity of the Breusch-Pagan test was used. This is a large sample test and assumes the residuals to be normally distributed. The null hypothesis, is that heteroscedasticity is not present in the data. The test assumes that if sig-value less than 0.05, reject the null hypothesis. From the output, the Breusch-Pagan statistics show a significance value of 0.287. This shows that it is greater than 0.05. This the researcher does not reject the null hypothesis and assumes that heteroscedasticity was not present in the data.

## 4.4 Regression Analysis

Table 4.5: Model Summary

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .775[a] | .601 | .556 | 26.12999 |

a. Predictors: (Constant), Foreign flows, Gross domestic product, Inflation rate, exchange rate

The model summary shows the relationship and contribution of the predictor variables (macroeconomic determinants) to the dependent variable (stock market performance). From the model summary, the model showed R value of 0.775. This indicates that the predictor variables (exchange rate, inflation rate, gross domestic product and foreign flows) have a strong relationship with stock market performance in Kenya. Coefficient of determination (R square) was used to establish the contribution of exchange rate, inflation rate, gross domestic product and foreign flows to stock market performance. From the output, the model showed an R square of 0.601. This indicates that exchange rate, inflation rate, gross domestic product and foreign flows contributed to 60.1% to stock market performance in Kenya between 2011 and 2020. Other factors contributed 39.9% of the stock market performance in Kenya.

Table 4.6: ANOVA[b]

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 36044.480 | 4 | 9011.120 | 13.198 | .000[a] |
| | Residual | 23897.165 | 35 | 682.776 | | |
| | Total | 59941.645 | 39 | | | |

a. Predictors: (Constant), Foreign flows , Gross domestic product , Inflation rate , exchange rate

b. Dependent Variable: NSE index

The researcher, at 5% significance, found that the model was significant. This was shown by a significant F-statistics with a significance value of 0.000. The statistics were generated through the ANOVA model. This shows that the regression model fits the research data and it's the best model to use for the data.

Table 4.7: Regression Coefficients[a]

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | t | Sig. |
| 1 | (Constant) | 42.186 | 7.191 | | 5.867 | .000 |
| | exchange rate | 1.391 | .649 | .994 | 2.143 | .038 |
| | Inflation rate | -5.199 | 1.388 | -.476 | -3.745 | .001 |
| | Gross domestic product | .806 | .274 | .797 | 2.942 | .005 |
| | Foreign flows | .275 | .131 | .168 | 2.099 | .042 |

a. Dependent Variable: NSE index

From the data analysis,

$Y= \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + \epsilon$

was fitted into;

$Y= 42.186 + 1.391 X_{1it} - 5.199 X_{2it} + 0.806 X_{3it} + 0.275 X_{4it}$

From the fitted regression, when all the predictor variables are held constant, the stock performance as measured by NSE 25 would stand at 42.186. Exchange rate showed a regression coefficient of 1.391. The coefficient has a significant value of 0.038 which is less than 0.05. This shows that a unit increase in exchange rate would increase the stock market performance in Kenya by 1.391. This indicates that the stock market performance in Kenya improves with exchange rate.

Inflation rate showed a regression coefficient of -5.199. The coefficient has a significant value of 0.001 which is less than 0.05. This shows that a unit increase in inflation rate would decrease the stock market performance in Kenya by 5.199. This indicates that the stock market performance in Kenya would decrease in terms of the NSE 25 index with increased rate.

Gross domestic product showed a regression coefficient of 0.806. The coefficient has a significant value of 0.005 which is less than 0.05. This shows that a unit increase in GDP would increase the stock market performance in Kenya by 0.806. This indicates that the stock market performance in Kenya would increase in terms of the NSE 25 index with an increase in GDP.

Foreign capital flows showed a regression coefficient of 0.275. The coefficient has a significant value of 0.042 which is less than 0.05. This shows that a unit increase in capital inflows would lead to increased stock market performance in Kenya by 0.275. This indicates that the stock market performance in Kenya would experience an improvement in NSE 25 index when the capital inflows increase.

## 4.5 Discussions

The study found that exchange rate showed a significant positive regression coefficient. This shows that exchange rate has a positive significant effect on stock market performance. Stock market performance would benefit from increased exchange rate through a higher NSE 25 index. The findings are the same as those of Kwong et al. (2017) who found that exchange rate

had a significant effect on stock market performance. However, they are different from those of Tetteh, Adenutsi, and Amoah (2019) who found that exchange rate had inverse influence on stock market performance.

The findings found that inflation rate had a negative and significant regression coefficient. This showed that increased inflation had a negative effect on stock market performance. The stock market performance in Kenya would decrease in terms of the NSE 25 index with increased inflation. The study findings are similar to those of Kwong et al. (2017) who found that inflation displayed a negative effect on stock market performance. They differed with those of Agrawal and Sangeetha (2019) who found that inflation had an insignificant effect on stock market performance.

Gross domestic product showed a positive and significant regression coefficient. This shows that increase in GDP would increase the stock market performance in Kenya. The findings are the same as those of Su, Bui, and Nguyen (2017) who found that growth rate had favorable predictors of the development of the stocks. Agrawal and Sangeetha (2019) found no significant effect of GDP on stock market performance.

Foreign capital flows showed a positive and significant regression coefficient. This shows that increased capital inflows would lead to increased stock market performance in Kenya. The findings are the same as those of Osoro (2020) who found that foreign capital had a direct effect on stock market performance. However, they differed with those of Lakhani (2019) who noted that there was an insignificant association of stock market performance and foreign direct investments.

# CHAPTER FIVE:

# DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

## 5.1 Introduction

This chapter presents summary of the findings, conclusions, recommendations, and areas for further research. The summary, conclusions and recommendations were based on the objective of the research was determining the effect of macroeconomic determinants on stock market performance in Kenya.

## 5.2 Summary

The researcher used to describe the variables in the study. The findings from descriptive statistics showed that NSE 25 index averaged at 175.7188 between 2011 and 2020. In the same period, exchange rate showed a mean of 82.24 Kshs/USD. The quarterly inflation rate averaged at 7.221% in the study period. The gross domestic product showed a mean of 4.183 between 2011 and 2020. Finally, foreign flows showed a mean of USD. 154905.34.

The model summary showed an R value of 0.775 indicating the predictor variables (exchange rate, inflation rate, gross domestic product and foreign flows) have a strong relationship with stock market performance in Kenya. Coefficient of determination (R square) was used to establish the contribution of exchange rate, inflation rate, gross domestic product and foreign flows to stock market performance. From the data, the model showed an R square of 0.601. indicating exchange rate, inflation rate, gross domestic product and foreign flows contributed to 60.1% to stock market performance in Kenya between 2011 and 2020.

From the regression analysis, when all the predictor variables are held constant, the stock performance as measured by NSE 25 would stand at 42.186. Exchange rate showed a positive and significant regression coefficient indicating that increase in exchange rate would increase

the stock market performance in Kenya. Inflation rate showed a negative and significant regression coefficient. This shows that increase in inflation rate decrease the stock market performance in Kenya. Stock market performance in Kenya would decrease in terms of the NSE 25 index with increased inflation rate.

Gross domestic product showed a significant and positive regression coefficient. This shows that increase in GDP would increase the stock market performance in Kenya. This indicates that the stock market performance in Kenya would increase in terms of the NSE 25 index with an increase in GDP. Foreign capital flows showed a positive and significant regression coefficient. This shows that increase in capital inflows would lead to increased stock market performance in Kenya.

## 5.3 Conclusions

The findings showed an R value of 0.775. Hence, the researcher concludes that macroeconomic determinants have a strong relationship with stock market performance in Kenya. Findings showed that that exchange rate, inflation rate, gross domestic product and foreign flows contributed to 60.1% to stock market performance. Hence the study concludes that macroeconomic determinants are the major factors influencing stock market performance in Kenya.

From the regression analysis, exchange rate showed a positive and significant regression coefficient. An increase in exchange rate would increase the stock market performance in Kenya. Hence, the researcher concludes that exchange rate has a positive and significant effect on stock market performance in Kenya. The findings also showed that inflation rate had a negative and significant regression coefficient. Hence, the researcher concludes that inflation rate has a negative and significant effect on the stock market performance in Kenya as measured by NSE25 index.

Gross domestic product showed a significant and positive regression coefficient. This indicated that increase in GDP would increase the stock market performance. Hence, the study concludes that gross domestic product has a positive and significant effect on the stock market performance in Kenya. Foreign capital flows showed a positive and significant regression coefficient. This indicates that increase in capital inflows would lead to increased stock market performance. Foreign capital flows have a positive and significant effect on stock market performance in Kenya.

## 5.4 Recommendations

The findings showed that macroeconomic determinants had a strong relationship with stock market performance and contributed a larger portion to stock market performance. Hence the study recommends that in their attempt to improve their stock performance, the stock market in Kenya should consider the macroeconomic determinants in their key performance decisions.

From the regression analysis, exchange rate showed a positive and significant regression coefficient. Hence, the study recommends that the government come up with favourable policies that would increase the exchange rate of the Kenya shilling against the dollar.

The findings also showed that inflation rate had a negative and significant regression coefficient. Hence, this study recommends that the government reduce the inflatory pressures through favourable monetary policies. The government through central bank of Kenya should increase the interest rates which would reduce the inflation across the country. This would hence increase stock market performance through increased NSE 25 index.

Gross domestic product showed a significant and positive regression coefficient. This indicated that increase in GDP would increase the stock market performance. Hence, the study recommends that the government reduce the taxation rate which would enable the businesses to prosper and increase their contribution to the economy. Foreign capital flows showed a

positive and significant regression coefficient. This indicates that increase in capital inflows would lead to increased stock market performance. Hence the study recommends that the government encourage foreign capital inflows into the country by creating a favourable business environment for foreign investors. The government should also create investment opportunities for the Kenyans living abroad. This would encourage them to invest locally which would increase foreign capital inflows for improved stock market performance.

## 5.5 Limitations

This research was limited by the variables adopted in this research. This research used exchange rate, inflation rate, gross domestic product and foreign flows as the predictor variables. The use of different predictor variables and measures of the variables may give differing findings. The study also used NSE 25 index as a measure of stock market performance. This also limits the study. The use of NSE 20 index or other measures of stock market performance may not give similar results.

The study was done for the period between 2011 and 2020. This limited the study in that different period may gave different findings from study done on a period like 5 or 20 years. This limits the generalizability of the findings given. The study was limited to stock market in Kenya. The stock market may not give findings that can be generalized to other markets. The

The study used regression analysis to establish the effect and relationship between macroeconomic determinants and stock market performance. The study also used descriptive statistics to describe the data. The adoption of different methods in research may give different results on the effect of macroeconomic determinants on stock market performance. The study was also based on secondary quarterly data. The use of annual or monthly data may overcome this limitation.

## 5.6 Recommendations for future studies

This research used exchange rate, inflation rate, gross domestic product and foreign flows as the predictor variables. This research recommends that other researcher do similar study based on different predictor variables contributing to the remaining change in stock market performance in Kenya. The study also used NSE 25 index as a measure of stock market performance. Future studies can use NSE 20 index or other measures of stock market performance on a similar research.

The study was done for the period between 2011 and 2020. Future studies should base their research on a period 2, 5 or 20 years. This would enable the comparison of findings. The study was based on quarterly data. Other researchers can use annual or monthly data to do a similar research. The study was also based on secondary data. The use of primary data should be the focus of future research.

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# APPENDICES

## Appendix I: Data Collection Sheet

| | | Exchange rate | Inflation rate | Gross Domestic Product | Foreign capital flows | Stock Prices |
|---|---|---|---|---|---|---|
| | | Kshs. '000 | Kshs. '000 | Kshs. '000 | Kshs. '000 | Kshs. |
| Year | Quarter | | | | | |
| 2011 | Q1 | | | | | |
| | Q2 | | | | | |
| | Q3 | | | | | |
| | Q4 | | | | | |
| 2012 | Q1 | | | | | |
| | Q2 | | | | | |
| | Q3 | | | | | |
| | Q4 | | | | | |
| 2013 | Q1 | | | | | |
| | Q2 | | | | | |
| | Q3 | | | | | |
| | Q4 | | | | | |
| 2014 | Q1 | | | | | |
| | Q2 | | | | | |
| | Q3 | | | | | |
| | Q4 | | | | | |
| 2015 | Q1 | | | | | |
| | Q2 | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Q3 | | | | | |
| | Q4 | | | | | |
| 2016 | Q1 | | | | | |
| | Q2 | | | | | |
| | Q3 | | | | | |
| | Q4 | | | | | |
| 2017 | Q1 | | | | | |
| | Q2 | | | | | |
| | Q3 | | | | | |
| | Q4 | | | | | |
| 2018 | Q1 | | | | | |
| | Q2 | | | | | |
| | Q3 | | | | | |
| | Q4 | | | | | |
| 2019 | Q1 | | | | | |
| | Q2 | | | | | |
| | Q3 | | | | | |
| | Q4 | | | | | |
| 2020 | Q1 | | | | | |

## Appendix II: Raw Data

| Year | Quarter | NSE index | exchange rate | Inflation rate | Gross domestic product | Foreign flows |
|---|---|---|---|---|---|---|
| 2011 | Q1 | 120.340 | 82.237 | 7.050 | 5.900 | 65485.030 |
| | Q2 | 122.965 | 86.123 | 13.160 | 5.400 | 70027.713 |
| | Q3 | 100.100 | 93.017 | 16.507 | 5.400 | 79071.643 |
| | Q4 | 92.557 | 93.870 | 19.187 | 3.800 | 82452.430 |
| 2012 | Q1 | 96.560 | 84.140 | 16.870 | 3.900 | 99974.673 |
| | Q2 | 106.504 | 84.120 | 11.777 | 4.800 | 98702.720 |
| | Q3 | 115.027 | 84.277 | 6.383 | 5.000 | 93358.143 |
| | Q4 | 125.513 | 85.577 | 3.530 | 4.500 | 98262.587 |
| 2013 | Q1 | 147.270 | 86.723 | 4.077 | 3.600 | 102911.237 |
| | Q2 | 161.317 | 84.610 | 4.367 | 4.700 | 104983.537 |
| | Q3 | 163.350 | 87.253 | 6.997 | 3.700 | 109111.553 |
| | Q4 | 177.530 | 85.907 | 7.423 | 3.200 | 113185.140 |
| 2014 | Q1 | 174.133 | 86.327 | 6.780 | 4.900 | 113658.260 |
| | Q2 | 195.327 | 87.247 | 7.033 | 5.900 | 116376.623 |
| | Q3 | 207.387 | 88.240 | 7.543 | 5.100 | 124441.960 |
| | Q4 | 212.873 | 89.877 | 6.180 | 4.300 | 121683.783 |
| 2015 | Q1 | 228.097 | 91.527 | 7.350 | 4.800 | 121379.317 |
| | Q2 | 220.383 | 95.847 | 6.143 | 5.000 | 129845.877 |
| | Q3 | 188.150 | 102.970 | 6.993 | 4.700 | 130829.310 |
| | Q4 | 183.100 | 102.383 | 5.817 | 5.300 | 133956.227 |
| 2016 | Q1 | 179.917 | 101.910 | 7.023 | 3.800 | 138526.517 |
| | Q2 | 182.660 | 101.037 | 5.357 | 3.800 | 145647.927 |
| | Q3 | 171.367 | 101.337 | 6.333 | 4.400 | 141531.330 |
| | Q4 | 169.250 | 101.733 | 6.500 | 4.800 | 149061.937 |
| 2017 | Q1 | 155.010 | 103.413 | 8.770 | 5.400 | 144199.553 |
| | Q2 | 184.440 | 103.360 | 10.797 | 3.300 | 151660.353 |
| | Q3 | 211.860 | 103.520 | 7.523 | 3.200 | 164939.720 |
| | Q4 | 213.347 | 103.353 | 4.983 | 3.500 | 188168.297 |
| 2018 | Q1 | 237.407 | 101.833 | 4.490 | 5.200 | 213835.230 |
| | Q2 | 227.660 | 100.757 | 3.987 | 6.000 | 245674.030 |

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|---|---|---|---|---|---|---|
| | Q3 | 209.007 | 100.703 | 4.697 | 5.300 | 211986.553 |
| | Q4 | 181.743 | 101.910 | 5.607 | 6.000 | 227658.317 |
| 2019 | Q1 | 198.233 | 100.723 | 4.397 | 4.800 | 221944.227 |
| | Q2 | 196.723 | 101.303 | 5.590 | 5.900 | 261289.943 |
| | Q3 | 194.220 | 103.420 | 5.033 | 4.800 | 217818.327 |
| | Q4 | 221.930 | 102.520 | 5.443 | 4.400 | 231149.893 |
| 2020 | Q1 | 199.597 | 101.873 | 6.263 | 4.400 | 235731.807 |
| | Q2 | 183.287 | 106.497 | 5.310 | -4.700 | 251637.390 |
| | Q3 | 182.600 | 107.940 | 4.307 | -2.100 | 270599.507 |
| | Q4 | 190.010 | 109.493 | 5.263 | 1.200 | 273455.267 |