

**ECONOMIC PERFORMANCE INDICATORS AND STOCK
RETURNS AT THE NAIROBI SECURITIES EXCHANGE**

BY

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DECLARATION

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

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DEDICATION

This Research Project is lovingly dedicated to my late Dad Chrisant, who passed on during the course of my program and Mum Elizabeth who have been my constant source of hope and inspiration. They have always given me the drive and discipline to tackle any mission with enthusiasm and determination. Assuredly, without their invaluable tender care, parental love and support this project would not have been made successful.

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ABSTRACT

The study is an assessment of the economic performance indicators and stock returns at the Nairobi Securities Exchange. Stock market activities play a major role in determining the level of economic activities in both emerging and developed economies, by providing and efficiently allocating capital for investment, providing appropriate platform to engender best corporate practices that will result in growing investment and further growth of the economy.

The study adopted an explanatory research design. The population of this research consists of all the 62 listed companies in the Nairobi Securities Exchange. A census methodology was employed since all the listed firms were studied for a period of five years (2008 to 2012). The main source of data was the NSE Handbooks. The study used Statistical Package for Social Sciences (SPSS) to generate the descriptive statistics and also to generate inferential results. Regression analysis was used to demonstrate the relationship between the macroeconomic factors and stock returns in the NSE.

Results show that there is a positive relationship between stock returns and underlying inflation, overall inflation, economic growth, interest lending rate. Results also revealed that there is a negative relationship between stock returns and exchange rate. However, the only statistically significant variables in the study were exchange rate and economic growth. Sectoral analysis results further showed that different sectors stock returns are mainly influenced by three economic indicators namely economic growth, exchange rates and overall inflation. From sectoral analysis, it was concluded that economic growth and exchange rates are main determinants of stock returns.

It is recommended that investors should take into account economic growth when predicting stock returns. This is because periods of high economic growth lead to an increase in stock returns. In addition, it is recommended that investors should factor in the exchange rates when making investments (making stock return predictions). This is because an increase in exchange rates leads to a decrease in stock returns.

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LIST OF ABBREVIATIONS AND ACRONYMS

AIMS	Alternative Investment Market Segment
APT	Arbitrary Pricing Theory
CAPM	Capital Asset Pricing Model
CMA	Capital Markets Authority
FIMS/FISMS	Fixed Income Market Segment
GEMS	Growth and Enterprise Market Segment
GLS	Generalized Least Squares
IFC	International Finance Corporation
MIMS	Main Investment Market Segment
MPT	Modern portfolio Theory
NSE	Nairobi Securities Exchange
NYSE	New York Stock Exchange
SPSS	Statistical Package for Social Sciences
VAR	Vector Auto Regression

CHAPTER ONE

INTRODUCTION

1.1 Background

The stock market promotes economic growth by providing avenue to pool large and long term capital through issuing of shares and stocks and other equities for industries in dire need of finance to expand their business. Thus, the overall development of the economy is a function of how well the stock market performs and empirical evidences have proved that development of the capital market is essential for economic growth (Asaolu and Ogunmuyiwa, 2010). No doubt, a relationship exists between stock market development and growth of the economy and stock prices are generally believed to be determined by some fundamental macroeconomic variables such as lending rate, inflation, money supply and the exchange rate. Empirical evidences have shown that changes in stock prices are linked with macroeconomic behavior in advanced countries (Muradogluet *al.*, 2000).

Stock markets are a vital component for economic development as they provide listed companies with a platform to raise long-term capital and also provide investors with a forum for investing their surplus funds. Stock markets therefore encourage investors with surplus funds to invest them in additional financial instruments that better matches their liquidity preferences and risk appetite. Better savings mobilization may increase the savings rate, and which in turn spurs investments and earns investment income to the owners of those funds. As economies develop, more funds are needed to meet the rapid development and the stock markets serve as a veritable tool in the mobilization and allocation of savings among competing uses which are critical to the growth and efficiency of the economy (Hayford, 2010). Stock market liquidity again helps to reduce the downside risk and cost of investing in projects that do not pay-off for a longtime. With a liquid market, the initial investors do not lose access to their savings for the duration of their investment project because they can quickly and easily sell their stake in a company as noted by (Bencivenga and Smith, 2009).

1.1.1 Stock Returns

The use of stock market indicator for the prediction of future economic growth or vice versa has been a debatable issue in finance and economics. It is commonly believed that large decreases in stock prices are reflective of future recession, and increasing stock prices are leading indicators of future economic growth (Mun, Siong & Thing, 2008). For instance, the uncertainty embedded in the recession of 2009 triggered a large-scale drop in stock prices that was reflected in the Dow Jones and the S&P 500 (Fuentes, 2010).

Stock market plays a major role in the growth and development of any economy. It provides companies with facility to raise capital for expansion and growth through the selling off of shares to the public or offering additional shares to shareholders through a rights issue. This is very crucial for the business as it offers them a cheaper and a competitive way of raising additional capital. The market also assist in the mobilization of resources especially savings and redirecting the same to productive activities in the economy thereby facilitating growth and development. For the Government, the market plays a twofold role; it provides the Government with an avenue through which it can raise the much needed resources especially for the long term projects such as infrastructure development through the sale of bonds, and also act as an economic barometer in that by looking at the movement in share prices and the stock market index, the Government can be able to gauge the performance of the economy at large and thereby initiate either monetary or fiscal measures that can assist in facilitating growth and development (Munga, 2004).

1.1.2 Economic Performance Indicators

African Stock Markets are really no more than equity exchanges as the bond markets are essentially non-existent (Osaze, 2007). Over 50% of the 54 African countries operate stock exchanges. The rapid expansion of these stock exchanges in the continent has contributed to economic development in various ways such as facilitating long term capital mobilization, the provision of alternative investment opportunities, attracting foreign capital inflows and serving as a signal of economic performance (Munga, 2009). Well-functioning stock markets, along with well-designed institutions and regulatory systems will foster economic growth.

The principal channel for the linkage between stock market development and economic performance is the liquidity provision of the market (Senbet&Otchere, 2008). Yartey&Adjasi (2007) found out that, stock markets contribute to financing of corporate investments and hence growth of listed firms in Africa as they are required to keep best practices.

The prices of stocks around the world do not move together in an exact manner. This is because the economic systems in which stock markets are located have dissimilar environments in terms of taxation, industrial growth, political stability and monetary policies among other factors. Stock markets may experience a general increase in price level referred to as a bull market or general decrease in price level referred to as bear market. Stagnant prices or sudden big price movements downward is referred to as stock market crash. Among the main measures of stock market performance include; stock market indexing, market capitalization and stock turnover (Kibuthu, 2005).

Stock market indexing is one of the most widely used measures of stock performance. Investors hold portfolios of many assets but it is cumbersome to follow progress on each security in the portfolio. Thus it is prudent to observe the entire market under the notion that their portfolio moved in the same direction as the aggregate market. The market index such as the NSE index is used to observe total returns for an aggregate market and these computed returns are to judge performance of individual portfolios. The assumption is that randomly selecting a large number of stocks from the total market should enable the investor to generate a rate of return comparable to the market (Simiyu, 2002).

One commonly used measure is the total value of shares traded on a country's stock exchange as a share of GDP. This indicator complements the market capitalization ratio and signals whether market size is matched by trading activity. In other words, if it is very costly or risky to trade, there will not be much trading. Second, another measure is the value of traded shares as a percentage of total market capitalization (the value of stocks listed on the exchange). This turnover ratio measures trading relative to the size of the stock market (market capitalization). The third measure is the value-traded-ratio divided by stock price volatility. Markets that are liquid should be able to handle heavy trading without large price swings. Empirically, it is not the size or volatility of the stock

market that matters for growth but the ease with which shares can be traded (Levine and Zervos, 2006).

1.1.3 Economic Performance Indicators and Stock Returns

Stock market has been associated with economic growth through its role as a source of new private capital. On the other hand, economic growth may be the catalyst for stock market growths. According to Osamwonyi (2005), a stock exchange is an arrangement for trading financial securities and where one can raise long-term capital. It seeks the efficient allocation of available capital funds to the diverse uses in the economy and through its extreme sensitive pricing mechanism, ensures that the available capital resources are allocated to firms with competitive returns. Stock markets are seen as enhancing the operations of the domestic financial system in general and the capital market in particular (Capasso, 2006). According to Yartey&Adjasi, (2007) and Singh, (2007), the establishment of stock markets in Africa is expected to boost domestic savings and increase the quantity and quality of investment.

Towards the end of the year 2011, Kenyan economy experienced very unpredictable movement of macroeconomic variables like very high lending interest rates and high rates of inflation that led to several industrial actions by domestic workers. Foreign currency rates were very volatile and led to importers losing a lot of funds in imports since the foreign currency rates were not favourable while farmers and exporters were beneficiaries of the same. This led to Central Bank of Kenya increase the base lending rates in a bid to stabilize the Kenyan currency that had performed poorly as compared to the major world currencies. All these however did have an effect on the returns of various investments in the country since more funds were being channeled towards consumption rather than investments (Ngugi, 2001).

Adjasi and Biekpe (2006) study the effect of stock market development on economic growth in 14 countries in a dynamic panel data modeling setting. The results indicate a positive relationship between stock market development and economic growth. Further investigations, based on the level of economic development and stock market capitalization reveal that the positive influence of stock market development on economic growth is significant for countries classified as upper middle income

economies. The general trend in results shows that low income African countries and less developed stock markets need to grow more and develop their markets to achieve economic gains from stock markets. According to Nzue (2006), the relationship between the development of the Ivorian stock market and the country's economic performance is positive.

El-Wassal (2005) investigates the relationship between stock market growth and economic growth, financial liberalization, and foreign portfolio investment in 40 emerging markets between 1980 and 2000. The result shows that economic growth, financial liberalization policies, and foreign portfolio investments were the leading factors to the emerging stock markets growth.

Patra and Poshakwale (2006) examined the short-run dynamic adjustments and the long-run equilibrium relationships between selected macroeconomic variables, trading volume and stock returns in the Greek stock market during the period of 1990 to 1999. They reach results showing that short run and long run equilibrium relationship exists between inflation, money supply and trading volume and the stock prices in the Athens stock exchange. No short run or long run equilibrium relationship is found between the exchange rates and stock prices. Coleman and Tettey (2008) while examining the impact of macroeconomic variables on Ghana Stock Exchange using quarterly data for the period 1991 to 2005 concluded that market lending rates from deposit money banks have adverse effect on stock market performance. The study also found inflation to be negatively related to stock market performance and this effect takes time because of the presence of a lag period.

Olweny and Kimani (2011) conducted a study on the causal relationship between stock market performance and economic growth in Kenya for the period 2001-2010, using quarterly secondary data. The authors concluded that variables were found to be cointegrated with at least one co-integrating vector. Ochieng and Oriwo (2012) conducted a study on the relationship between macroeconomic variables on NSE All share index (NASI) and goes further to determine whether changes in macroeconomic variables can be used to predict the future NASI and the three key macroeconomic variables are examined and they include lending interest rate, inflation rate and 91 day Treasury bill (T-bill) rate. The study concluded that 91-day T-bill rate has a negative

relationship with the NASI while inflation has a weak positive relationship with the NASI.

1.1.4 The Nairobi Securities Exchange

The NSE was constituted as a voluntary association of stockbrokers registered under the Societies Act in 1954 with the mandate to develop and regulate trading activities. This was necessitated by the need to accelerate economic development and offer private firms access to long term capital in addition to providing an opportunity to the Government to access the much required resources through long-term bonds (Ngugi, 2001)

During the first year of operation, the NSE experienced low activities due to the uncertainty surrounding the future of Kenya after its independence and the fact that most of the people had no knowledge of the market operations. In 1996, the Government offered one of the largest share issues in the history of NSE, the privatization of Kenya Airways which saw the Government reduce its shareholding from 74% to 23% and where more than 110,000 shareholders acquired a stake in the airline. This together with the increased knowledge of the market operation provided a new window of investment to both institutions and individuals. The increased activities experienced in the 90's and in the mid 2000's led to tremendous growth of the stock market with the NSE 20-Share Index recording an all-record high of 5774 points in 2007. A dip in the index between 2007 and 2009 was attributed to the political instability in the country after the general elections of 2007 and the general market recession of 2008/09 (Nairobi Securities Exchange, 2010).

A lot of reforms have been instituted to promote growth and improve performance of the stock market to encourage wider participation by both private sector and individual investors. Among the reforms initiated include the establishment of a regulatory authority i.e. Capital Markets Authority (CMA) to regulate the functions of the stock market and removal of tax differences between debt and equity to achieve diversity in stock market (Kemboi and Tarus, 2012). In 1997 CMA issued guidelines to govern the issuance of corporate bonds and commercial papers and also issued guidelines outlining significant changes to listed firms corporate governance systems intended to build investors' confidence in the securities market (Kemboi and Tarus, 2012).

The NSE has grown to be the largest market in East and Central Africa, with its market capitalization soaring to approximately KES.1.176 trillion as at 19th October 2012 from KES.112.05 Billion in December 2002, likewise within the same period the NSE Stock index has increased by over 260% to 4034.07 points (NSE website www.nse.co.ke). Currently the NSE has 24 listed members and about 62 trading firms within the four trading segments, Main Investment Market Segment (MIMS); Alternative Investment Market Segment (AIMS); Fixed Income Market Segment (FIMS/FISMS) and the Growth and Enterprise Market Segment (GEMS). The AIMS is an alternative method of investment in capital by small, medium sized and young companies that find it difficult to meet the more stringent listing requirements of the MIMS. It is geared towards responding to the changing needs of issuers and facilitates the liquidity of companies with a large shareholder base through 'introduction' that is, listing of existing shares for marketability and not for raising capital. It also offers investment opportunities to institutional investors and individuals who want to diversify their portfolios (Nairobi Securities Exchange, 2010).

The stock market plays a pivotal role in the economic growth and development of a country. It performs a wide range of economic and political functions while offering trading, investment, speculation, hedging, and arbitrage opportunities to various investors (Munga, 2012). It also provides an alternative and important platform through which, institutions and the Government can mobilize capital for investment and assess economic growth and stability.

Nairobi Securities Exchange (NSE) is an example of an emerging stock market characterized by humble beginnings but which has grown considerably over time. It stands out as an average stock market with great potential for growth, one that is making considerable effort to be a more significant driver of economy in Kenya and the East African Region. In 1994, it was rated by the International Finance Corporation (IFC) as the best performing emerging market in the world with a return of 179% in dollar terms. The NSE accounts for over 90% of market activity in the East African region and is a reference point in terms of setting standards for other markets in the region (Nairobi Securities Exchange, 2010).

1.2 Problem Statement

Stock market activities play a major role in determining the level of economic activities in both emerging and developed economies, by providing and efficiently allocating capital for investment, providing appropriate platform to engender best corporate practices that will result in growing investment and further growth of the economy. What may not be clear is whether there is a long-run bi-directional causality between financial development and economic growth or not. Another grey area is the relationship between stock market indicators and the proxy for economic growth (real gross domestic product) in the emerging economies. Other studies show that while there is some consensus on the positive relationship between stock market development and economic growth, there is also disagreement on the direction of causal relationship with some suggesting that it is from finance to economic growth and others suggesting the opposite that the link is bidirectional. Some contend that there is no link between stock market development and economic development (Sililo, 2010).

Patra and Poshakwale (2006) examined the short-run dynamic adjustments and the long-run equilibrium relationships between selected macroeconomic variables, trading volume and stock returns in the Greek stock market during the period of 1990 to 1999. They reach results showing that short run and long run equilibrium relationship exists between inflation, money supply and trading volume and the stock prices in the Athens stock exchange. No short run or long run equilibrium relationship is found between the exchange rates and stock prices. Coleman and Tettey (2008) while examining the impact of macroeconomic variables on Ghana Stock Exchange using quarterly data for the period 1991 to 2005 concluded that market lending rates from deposit money banks have adverse effect on stock market performance. The study also found inflation to be negatively related to stock market performance and this effect takes time because of the presence of a lag period.

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(NASI) and goes further to determine whether changes in macroeconomic variables can be used to predict the future NASI and the three key macroeconomic variables are examined and they include lending interest rate, inflation rate and 91-day Treasury bill (T-bill) rate. The study concluded that 91-day T-bill rate has a negative relationship with the NASI while inflation has a weak positive relationship with the NASI. However these recent studies failed to incorporate key economic indicators like foreign exchange rate and did not decompose the inflation rate. This current study will address these gaps from past studies. These previous studies use very aggregate indicators for NSE performance. This study will use company specific data which will provide knowledge on which trading segments or trading counters were sensitive to changes in economic indicators.

Empirical literature points out that a growing and stable stock market is an indicator of a stable and a growing economy. This is true because the stock market plays an important role in mobilizing funds and allocating resources to the most productive areas of the economy. Over the past years, the Nairobi Securities Market had been experiencing an upward trend till recently when the economic indicators showed negative growth and the market indicator too was on a decline move to its lowest point in 2009. The decline in the stock market is a signal of a shrinking economy and as such this study attempts to establish the relationship between macroeconomic performance indicators and stock returns at the Nairobi Securities Exchange.

1.3 Objectives of the Study

This main objective of the study was to establish the relationship between macroeconomic performance indicators and stock returns at the Nairobi Securities Exchange. In specific terms the study reviewed whether overall inflation, underlying inflation, economic growth, foreign exchange rate, and interest rate have any effect on stock returns.

1.4 Significance of the Study

Various parties may benefit from this study including the Government, individual and institutional investors, financial analysts, CMA and scholars. The Government may benefit from the study as they can use the findings in policy development especially in directing the stock market growth and indirectly stimulating economic growth, individual and institutional investors may benefit from the study as the study results will highlight the sensitivity of factors that influence stock returns and as such need to be monitored and forecasted if returns are to be maximised. Financial analysts may use the result of this study to construct portfolios for their clients if the portfolio constructed results to improve returns while the Capital Markets Authority as an institution may use the study results to develop guidelines and policies to hedge investors and investments.

Future researchers will have a reference point from the information gathered that will contribute to understanding the factors that influence stock returns. It forms a basis for and stimulates research in order to develop a better understanding of macroeconomic factors influencing stock returns at the Nairobi Securities Exchange.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter discusses theories relevant to the study. Literature related to the study is also reviewed with the aim of identifying literature gaps. The literature review also guides the relevance of the study findings.

2.2 Theoretical Review

This study is guided by the Arbitrage Pricing Theory, as well as, the Capital Asset Pricing Model (CAPM) and Inter-Temporal Capital Asset Pricing Model (ICAPM).

2.2.1 Capital Asset Pricing Model

Sharpe (1964) formalized the Capital Asset Pricing Model (CAPM). This makes strong assumptions that lead to interesting conclusions. Not only does the market portfolio sit on the efficient frontier, but it is actually Tobin's super-efficient portfolio. According to CAPM, all investors should hold the market portfolio, leveraged or de-leveraged with positions in the risk-free asset. CAPM also introduced beta and relates an asset's expected return to its beta.

The risk and return model that has been in use the longest and is still the standard in most real world analyses is the Capital Asset Pricing Model. There are several assumptions made by the model. While diversification reduces the exposure of investors to firm specific risk, most investors limit their diversification to holding only a few assets. Even large mutual funds rarely hold more than a few hundred stocks and many of them hold as few as ten to twenty. There are two reasons why investors stop diversifying. One is that an investor or mutual fund manager can obtain most of the benefits of diversification from a relatively small portfolio, because the marginal benefits of diversification become smaller as the portfolio gets more diversified. Consequently, these benefits may not cover the marginal costs of diversification, which include transactions and monitoring costs. Another reason for limiting diversification is that many investors and fund managers believe they can find undervalued assets and

thus choose not to hold those assets that they believe to be fairly or overvalued. The capital asset pricing model assumes that there are no transactions costs, all assets are traded and investments are infinitely divisible (i.e., you can buy any fraction of a unit of the asset). It also assumes that everyone has access to the same information and that investors therefore cannot find under or overvalued assets in the market place. Making these assumptions allows investors to keep diversifying without additional cost. At the limit, their portfolios will not only include every traded asset in the market but will have identical weights on risky assets.

The fact that this diversified portfolio includes all traded assets in the market is the reason it is called the market portfolio, which should not be a surprising result, given the benefits of diversification and the absence of transactions costs in the capital asset pricing model. If diversification reduces exposure to firm-specific risk and there are no costs associated with adding more assets to the portfolio, the logical limit to diversification is to hold a small proportion of every traded asset in the market. If this seems abstract, consider the market portfolio to be an extremely well diversified mutual fund that holds stocks and real assets, and treasury bills as the riskless asset. In the CAPM, all investors will hold combinations of treasury bills and the same mutual fund.

2.2.2 Arbitrage Pricing Theory

The application of Arbitrage Pricing Theory (APT) enables us to relax the restrictions associated with CAPM. Consequently, greater freedom is achieved in the development of a model that explains expected returns. In APT, the correlation between an asset and the risk factors associated with it are used to predict asset returns. This is achieved by combining exogenous macroeconomic variables in a linear manner (Elita, 2011). It is worth noting that, the returns of an asset are determined by several factors. Hence, it is upon the analyst to select the factors to focus on. According to Chen and Jin (2004), factor analysis is the widely used method for determining the main factors that influence asset returns in both international and domestic markets. The APT refutes the premise that everyone can access a portfolio that satisfies his or her investment needs and further, suggests a model that explains the drivers of returns.

The main weakness of APT is that it is characterized by knife-edge equilibrium whereby no investor can change his/ her portfolio. In particular, the model assumes that there are only a few macroeconomic variables that determine asset returns. Additionally, the effects of these factors on asset returns cannot be avoided through diversification. Consequently, investors are expected to precisely price these factors. In a nutshell, investors who purchase assets which are exposed to these risks expect to be compensated for investing in the assets by the expected returns. In this regard, a factor beta is used to measure an asset's exposure to risks.

2.2.3 Inter-Temporal Capital Asset Pricing Model

Robert Merton (1973) developed the Inter-Temporal Capital Asset Pricing Model (ICAPM) as an alternative to CAPM. According to Robert's model, the expected return is the compensation to investors for the risks they face. Such risks include systematic risks, as well as, undesirable changes in investment opportunities. The point of distinction between ICAPM and CAPM is that in the former model, hedging is undertaken against the uncertainty associated with factors which include future commodity prices, expected future asset prices, as well as, employment. This is based on the assumption that investors are able to determine these uncertainties and hedge against them. Unlike, CAPM, the ICAPM as a multi-factor model, takes into account several risk factors (Riley, 2009).

According to Eita (2011), there are different forms of ICAMP which address the weaknesses of the original CAMP. Fama and French classify the 3 factor model as an improvement of ICAMP. Additionally, the Cahart 4 factor model can also be classified in this theoretical class.

2.3 Empirical Literature Review

Abugri (2006) performed a study to determine whether selected macroeconomic indicators like exchange rates, interest rates, industrial production and money supply in four Latin American countries significantly explain market returns. His research results indicated that the global factors are consistently significant in explaining returns in all the markets. The country macroeconomic variables are found to impact the markets at varying significance and magnitudes.

Robert (2008) while conducting a study on the effect of macroeconomic variables on stock market returns for four emerging economies of Brazil, Russia, India and China affirmed that there was no significant relationship between present and past market returns with macroeconomic variables, suggesting that the markets of Brazil, Russia, India and China exhibit weak form of market efficiency. Also, no significant relationship was found between respective exchange rate and oil price on the stock market index prices of the four countries studied. Coleman and Tettey (2008) while examining the impact of macroeconomic variables on Ghana Stock Exchange using quarterly data for the period 1991 to 2005 concluded that market lending rates from deposit money banks have adverse effect on stock market performance. The study also found inflation to be negatively related to stock market performance and this effect takes time because of the presence of a lag period.

Chen and Jin (2004) conducted a multivariate analysis on twenty portfolios of the New York Stock Exchange (NYSE) using a set of economic variables. Chen and Jin (2004) applied conditional mean encompassing test for model specification with the assumption that it is robust to heteroscedasticity. The specific economic variables that were included in the model were term structure of interest rates, the change in expected inflation, contemporaneous unexpected inflation, and monthly growth rate in industrial production, lags of the above six economic variables. The dependent variable was the lag of excess rate of returns. The authors concluded that the conditional excess rates of returns are explained by lagged expected inflation, lagged unexpected premium for default, lagged unexpected change in term structure, a seasonal dummy, and lagged market returns.

The study by Chen and Jin (2004) is similar to our study to the extent that both studies attempt to establish the determinants of stock returns and that both use 20 portfolios. However, the two studies differ because the current study focuses on a developing economy and the economic variables in developing economies may affect stock returns differently. In addition, the current study uses a panel data analysis and in particular a random effect generalized least squares (GLS) while the study by Chen and Jin (2004) used a simple multivariate regression analysis.

Salaber (2007) investigated the factors that determine the returns of sin stocks in European stock market. This study was informed by the CAPM developed by Sharp (1964) and Litner (1965) and used data from 18 European countries for the period 1975-2006. The study also adopted the three factor model developed by Fama and French (1993). In this study, legal, as well as, cultural attributes such as religion were found to be the main determinants of stock market returns.

In Anatolyev (2007) ten year retrospective study on the factors that influence the returns of Russian stocks, cash-flow news was found to be the main determinant of the returns of EU bank stocks. This study covered the period between 1954 and 2004. Morgan Stanley Capital International Inc. index was used as the dependent variable. The independent variables included MSCI index, oil price, T-bill (3-month US Treasury bill), Mibor (1 month Moscow interbank offer rate), gold, money, and JP Morgan Emerging Market Bond Index Plus for Russia. According to this study, the relationship between factors and returns was highly unstable and the instability was not confined to financial crises alone. While the computed statistics showed a random trend, the explain-ability of stock return has sharply increased. In addition, while the effect of the domestic factors seems to diminish, internal factors have played an increasing role in explaining stock returns. For instance, while the effect of oil prices and foreign exchange rates had diminished, the influence of US stock prices and international and domestic interest rates had increased. Furthermore, monetary aggregates such as gold reserves and credit balances seemed to have no effect at all.

Castren, FitzPatrick and Sydow (2005) investigated the drivers of EU bank stock returns by using the dynamic dividend discount model to yield bank level evidence. The model incorporated financial accounting data to estimate bank stock returns. The banks that were selected for this study are listed EU banks that showed a consistent time series of annual data from 1991 to 2004 for all variables that were used in the estimation. The data set consisted of accounting and market information for a pooled time series of 53 EU banks. The accounting data such as return on equity, book value of equity, book debt variables, as well as the equity price series and the earnings per share series were included. The data was converted into log form. Therefore, the variables considered

were log excess stock returns, log excess return on equity (RoE), log leverage and log book-to-market ratio.

The dynamic discount model used by Castren, FitzPatrick and Sydow (2005) allowed them to decompose unexpected stock returns into two components namely; expected return component and cash flow component. The two return components were later defined as cash flow news and expected return news. To empirically assess the relative importance of expected return and cash flow news as drivers of bank stock returns, the authors utilized a “panel” Vector Auto Regression (VAR) framework. The variance decomposition resulting from the VAR model revealed that the cash flow news component was the main driving force of EU banks stock returns. Indeed, the coefficient of the bank-specific cash flow news component was more than ten times larger than the coefficient of the expected return news component.

Using Istanbul Stock Exchange data, Celiker (2004) conducted a cross sectional study on factors that influence returns of Turkish stock market. This study used data for the period 1993 to 2003. The independent variables included firm-specific features which included market beta, leverage earnings yield among others, with the stock returns being the dependent variable. Both univariate and multivariate linear time-series models were used in the analysis. The results revealed that higher mean returns existed for smaller firms which were characterized by high book-to-market value of equity ratio, as well as, higher leverage. Similarly, firms which had negative earnings yield, higher sales-to-price ratio as well as lower past earnings exhibited comparatively higher average returns.

Chau (2012) carried out a study on the macroeconomic determinants of United States of America Gold Industry Stock returns over the period 1996 to 2011. His study focused on the correlation between gold stock returns and macroeconomic variables which include market returns, gold price, exchange rate, as well as, the interest rate. Following Faff and Chan (1998), Chau (2004) incorporated gold price, interest rate and exchange rate in his model; with the market factor setting the base for a multi-beta CAPM. Real monthly GDP and change in unemployment rate were used as proxies for business cycle. The results indicated that market return and gold price return were the main determinants of gold stock returns. Additionally, change in unemployment rate had a greater explanatory

power than GDP growth. However, interest rate had no significant influence on the returns of gold stock returns.

Using quarterly data for the period 1998q1 to 2009q4, Eita (2011) investigated the factors that determine stock market prices in Namibia. The results indicated that the main determinants of stock prices were economic activity, exchange rate, inflation, interest rate, money supply. A positive relationship was found between stock market prices, money supply, and economic activity. An increase in inflation led to a decrease in stock market prices. Similarly, a rise in interest rates led to a decline in stock prices.

Bai and Green (2008) used data from 13 emerging stock markets (ESM's) for the period 1984 to 2004 to investigate the determinants of cross sectional stock returns variations in emerging markets. The random effects regression was used in the analysis. According to the results, the exchange rate changes had a negative relationship with country effects. An increase in exchange rate changes by 1 unit led to a decline in stock returns by 52.8%. Inflation had a positive association with country effects with a 1 unit in inflation leading to a 1.8% rise in stock returns. A 1 unit increase in activities of financial intermediary led to 0.6% decrease in stock returns. The activity of the stock market appeared to be positively related to stock returns and a one-unit increase in it led to 2.2% increase in stock returns.

Koubi (2008) studied the determinants of financial development and stock returns using a sample of 49 countries for the period 1980 to 1999. The study found that both high transactions (TRANS) and legal uncertainty (LEGAL) have a negative effect on stock market stability. The effect of transaction costs (TRANS) was economically more significant (about twice the size of the effect of the latter). Finally, while exchange rate and general economic volatility also destabilized stock returns, capital controls and the degree of openness had little influence.

Using large sample evidence, Artmann, Fitner and Kempf (2010) studied the determinants of stock market returns in the German market. The sample considered in the study consisted of 955 German stocks for the period 1963 to 2006. The study adopted the Fama and French 3 factor model, the Alternative 3 factor model and the Cahart four factor models. The results obtained using Fama and French 3 factor model

revealed a significant positive relation between average returns and book-to-market equity, earnings-to-price, and momentum.

Siddiqui (2010) modeled uncertainties and investments as determinants of stock returns in Pakistan insurance firms. This study was based on unbalanced panel data for the period 1996 to 2008, obtained from a sample of 13 insurance firms listed at the Karachi Stock Exchange. The methodology used in the analysis included Engle-Granger causality tests and panel data fixed and random effects regression. Panel data results indicated that there exists a statistically significant positive effect of uncertainty on returns both in the short and the long runs.

Wang, Meric, Liu, and Meric (2010) investigated the factors that determined stock returns in the 1987 and 2008 US stock market meltdowns using multivariate regression analysis. The study focused on the contribution of technical insolvency risk and the bankruptcy risk to stock returns. The results indicated that stocks with higher betas, larger market capitalization, and greater return volatility lost more value in both meltdowns. They also found that the market-to-book ratio was a significant determinant of stock returns in the 2008 meltdown but not in the 1987 meltdown. Additionally, stock illiquidity was found to be a significant determinant of stock returns in the 1987 meltdown but not in the 2008 meltdown.

Jiranyakul (2009) did a study on the relationship between macro-economic variables and the Thai stock market Index. The study used quarterly data covering the period 1993 q1 and 2007q4. The study adopted Multivariate Time series regression analysis using unit roots tests; co-integration test using a two-step Engle and Granger (EG) co-integration test; and the Johansen Co-integration test. Additionally, a vector error correction method was used to determine the relationship between the long run and short run relationships between macro variables and stock returns. The results revealed that the variables are co-integrated, and this implied that there exists a long-run relationship between the stock market index and a set of four macroeconomic variables. Additionally, real GDP, money supply, and nominal effective exchange rate had a significant positive impact on the stock market index. The price level had an insignificantly negative impact. The 1997 financial crisis had no influence on stock prices. The causality test results from showed a

bidirectional causal relation between stock market return and the growth rate in the long run and the short run.

Anatolyev (2007) studied the determinants of Russian stock returns and concluded that, while the effect of the domestic factors seems to diminish, internal factors had played an increasing role in explaining stock returns. For instance, while the effect of oil prices and foreign exchange rates had diminished, the influence of stock prices and interest rates had increased both at the domestic and international markets. However, monetary policy shows that aggregates such as gold reserves and credit balances seemed to have no effect at all.

Artmann, Fitner and Kempf (2010) investigated the determinants of stock market returns from the German market and concluded that market factor, the book-to-market equity and the earnings-to-price factor clearly outperformed the Fama and French 3 factor model. By adding the momentum factor explanatory power was further increased. Artmann, Fitner and Kempf (2010) further found that a 4-factor model fits best in Germany. Furthermore it performed fairly well and was only inferior to an alternative 4-factor model containing the earnings-to-price factor as opposed to size factor. Chen and Jin (2004) conducted a study on twenty portfolios of the New York Stock Exchange (NYSE) and concluded that the conditional excess rates of returns are explained by lagged expected inflation, lagged unexpected premium for default, lagged unexpected change in term structure, a seasonal dummy, and lagged market returns.

Empirical studies on the determinants of stock markets in emerging economies have indicated that there exists a host of factors that influence stock returns. The host of factors have been classified into country effect and industry effects factors (Bai and Green (2008); Bai, Green and Ledger (2006); Koubi (2008)). Specifically, Koubi (2008) isolated country effects into Transaction costs (TRANS), legal environment (LEGAL), capital controls (CC), volatility of the exchange rate (FXV), Output volatility (SDGDP), trade openness (OP). On the other hand, Bai and Green (2008) isolated country effect factors into economic variables (openness, exchange rate changes, inflation rate, and domestic risk free rates), Institutional Variables size (liabilities), absolute size, relative size, activities of financial intermediaries, size of stock market, the activity of the stock market, the efficiency of the stock market, civil liberties and political rights), general

law indicators (efficiency of judicial system and corruption) and financial law indicators (creditors' rights, shareholders rights).

An empirical study conducted by Eita (2011) isolated several macroeconomic variables which influence stock returns. The study concluded that the prices of the stock market in Namibia are determined by their macroeconomic variables inflation, interest rate, money supply and exchange rate. Specifically, the investigation revealed a positive relationship between stock market prices on one hand, and money supply, economic activity on the other hand. In addition, decreases in stock market prices increases inflation. An increase in interest rates causes stock prices to be reduced; hence, higher interest rates would make discounted cash flows less worthy. The effect will be a decrease in investment, and reduced stock market returns (Eita, 2011).

Olweny and Kimani (2011) conducted a study on the causal relationship between stock market performance and economic growth in Kenya for the period 2001-2010, using quarterly secondary data. The authors concluded that variables were found to be cointegrated with at least one co-integrating vector. The findings imply that the causality between economic growth and stock market runs unilaterally or entirely in one direction from the NSE 20-share index to the GDP. From the results, it was inferred that the movement of stock prices in the Nairobi stock exchange reflect the macroeconomic condition of the country and can therefore be used to predict the future path of economic growth.

Ochieng and Oriwo (2012) conducted a study on the relationship between macroeconomic variables on NSE All share index (NASI) and goes further to determine whether changes in macroeconomic variables can be used to predict the future NASI and the three key macroeconomic variables are examined and they include lending interest rate, inflation rate and 91-day Treasury bill (T-bill) rate. The study concluded that 91-day T-bill rate has a negative relationship with the NASI while inflation has a weak positive relationship with the NASI.

2.4 Chapter Summary

The determinants or factors that influence equity returns have been a source of much contention since the introduction of the CAPM by Sharpe (1964). This has led to the

evolution of other models that claim a higher explanatory power than the CAPM. Such models include the Inter Temporal Capital Asset Pricing Model which seems to improve the efficiency of CAPM. The Arbitrage Pricing Theorem (APT) was the most dynamic model of all since it removed all the restrictions of the CAPM.

Artmann, Fitner and Kempf (2010) investigated the determinants of stock market returns from the German market and concluded that market factor, the book-to-market equity and the earnings-to-price factor clearly outperformed the Fama and French 3 factor model. The study failed to investigate the relationship between the macroeconomic factors and stock returns. Wang, Meric, Liu, and Meric (2010) investigated the factors that determined stock returns in the 1987 and 2008 US stock market meltdowns using multivariate regression analysis. The study focused on the contribution of technical insolvency risk and the bankruptcy risk to stock returns. Siddiqui (2010) modeled uncertainties and investments as determinants of stock returns in Pakistan insurance firms. This study was based on unbalanced panel data for the period 1996 to 2008, obtained from a sample of 13 insurance firms listed at the Karachi Stock Exchange. Koubi(2008) studied the determinants of financial development and stock returns using a sample of 49 countries for the period 1980 to 1999. The study found that both high transactions (TRANS) and legal uncertainty (LEGAL) have a negative effect on stock market stability. All these studies investigated on the determinant factors of stock market but failed to address the relationship between the factors and stock market returns and especially foreign exchange and disaggregation of inflation between overall and underlying inflation which is the key uniqueness of this study.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter highlights the methods and procedures used in carrying out the study. It includes the research design, population, the sampling frame and technique used, data collection methods (instruments and procedures), data analysis and presentation methods.

3.2 Research Design

In this project, explanatory research design was used. Studies that establish causal relationships between variables may be termed as explanatory studies. The emphasis here is on studying a situation or a problem in order to explain the relationship between variables (Saunders, Lewis and Thornhill, 2003). Explanatory studies are designed to test whether one event causes another (Hair, Babin, Money and Samouel, 2003). In general, an explanatory design is appropriate because the study intends to establish if there is a causal relationship between macroeconomic performance indicators and stock returns at the Nairobi Securities Exchange.

3.3 Population

Mugenda and Mugenda (2003) refer to population as the ‘universe’. Borg and Gall (1999) define population as all the members of a real hypothetical set of people, event or object to which a research wishes to generalize the results of the study. The population of this research consists of all the listed companies in the Nairobi Securities Exchange. There are 62 listed companies (NSE, 2013). A census methodology will be employed since all the listed firms will be studied for a period of five years (2008 to 2012).

3.4 Data Collection

The research was based on the secondary information collected from the Nairobi Securities Exchange and data available in the library of the Nairobi Securities Exchange. Secondary data was therefore collected in this study. The main source of data was the NSE manuals, annual reports and accounts documents published by companies covering the aforementioned period.

3.5 Data Analysis

Burns and Grove (2003) define data analysis as a mechanism for reducing and organizing data to produce findings that require interpretation by the researcher. The researcher used frequencies, averages and percentages in this study. The researcher used Statistical Package for Social Sciences (SPSS) to generate the descriptive statistics and also to generate inferential results. Regression analysis used to demonstrate the relationship between the macroeconomic factors and stock returns in the NSE. According to Mugenda and Mugenda (2003), the regression technique is used to analyze the degree of relationship between two variables.

The multiple linear regression model adopted for the study is as follows:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \epsilon$$

Where: Y = Stock Returns in Kenya Shillings, X_1 = Underlying Inflation in percentage, X_2 = Overall Inflation in percentage, X_3 = Exchange Rates in Kenya Shillings to the US Dollar, X_4 = Economic growth in percentage and X_5 = Interest Rates in percentage. In the model α is the constant term while the coefficients β_1 to β_5 are used to measure the sensitivity of the dependent variable (Y) to a unit change in the explanatory variables (X_1 , X_2 , X_3 , X_4 and X_5) and finally ϵ is the error term which captures the unexplained variations in the model.

Table 3.1: Definition of Variables

Variable	Definition	Measure
Y	Stock Returns	KShs value of annual dividend paid and capital gain per share
X ₁	Underlying Inflation	Annual average percentage underlying inflation
X ₂	Overall Inflation	Annual average percentage overall inflation
X ₃	Exchange Rate	Annual average exchange rate of KShs value to US dollar
X ₄	Economic Growth	Annual average percentage GDP growth
X ₅	Interest Rate	Annual average percentage bank lending interest rate

CHAPTER 4

DATA ANALYSIS AND PRESENTATION OF FINDINGS

4.1 Introduction

This chapter presents the results of the study. In regards to this case study descriptive statistics were used to present the results followed by tables. The interpretation and discussion of the data analysis is in the form of frequencies and descriptive statistics. The data is analyzed and presented based on the objectives of the study.

4.2 Data Presentation

This section presents the trend of economic indicators over six years (2007-2012) followed by the descriptive results where the study will review whether overall inflation, underlying inflation, economic growth, foreign exchange rate, and interest rate have any effect on stock returns.

4.2.1 Underlying Inflation

The results in Figure 4.1 show the Underlying Inflation in Kenya for the period 2007-2012. Results indicate that underlying inflation for the year 2007 was 5.18%. The underlying inflation rose to 7.63% in year 2008 but dropped to 6.57% in year 2009. The underlying inflation fell further to 0.93% in year 2010 but sharply rose to 10.76% in year 2011 and witnessed a sharp decline to 4.81% in year 2012. Overall, the trend in underlying inflation has been inconsistent for the period under study.

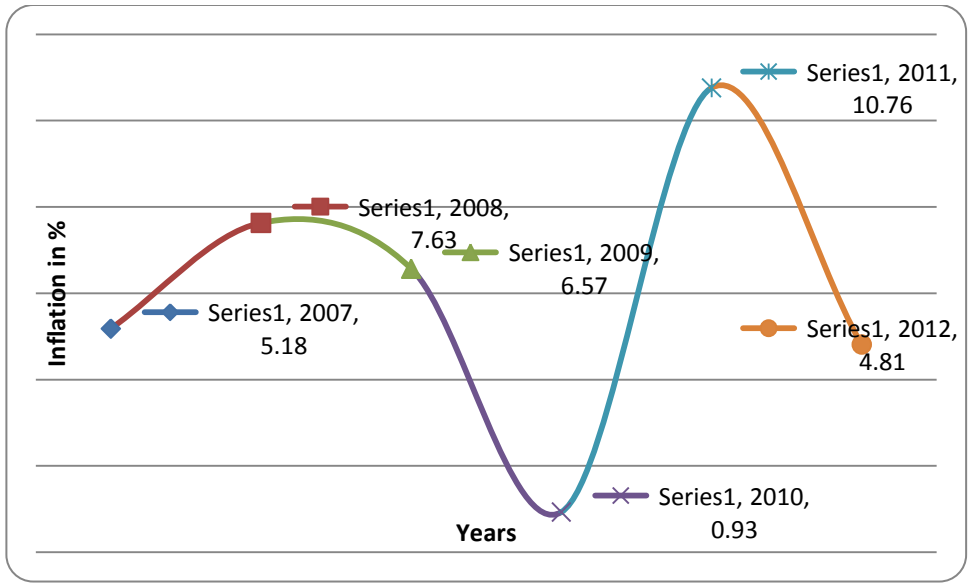


Figure 4.1: Trend Analysis of Underlying Inflation, 2007-2012

4.2.2 Overall Inflation

The results in Figure 4.2, shows the overall Inflation in Kenya for the period 2007-2012. Results show that overall inflation for the year 2007 was 9.76%. The overall inflation rose sharply to 26.24% in year 2008 but dropped to 9.24% in year 2009. The overall inflation floored further to 3.96% in year 2010 but sharply rose to 14.02% in year 2011 and witnessed a steady decline to 9.38% in year 2012. Overall, the trend in overall inflation has been inconsistent for the period under study.

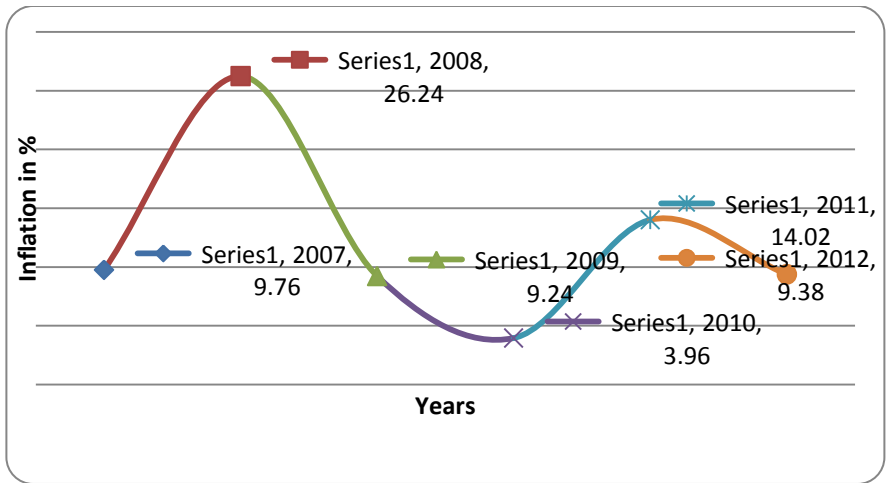


Figure 4.2: Trend Analysis of Overall Inflation, 2007-2012

4.2.3 Exchange Rate

The exchange rate of the dollar to the shilling for the period 2007-2012 is shown in Figure 4.3. The outcome shows that the exchange rate was at KShs. 67.32 in 2007 witnessing a slight increase in 2008 of KShs. 69.18. There was a considerable increase to KShs. 77.35 in 2009 and a moderate rise in 2010 of KShs. 79.23. A rise was observed of KShs. 88.81 in 2011 followed by a slight decline to KShs. 84.53 in 2012. The trend in the exchange rate of the dollar exchange to the shilling was consistently increasing throughout the period of study.

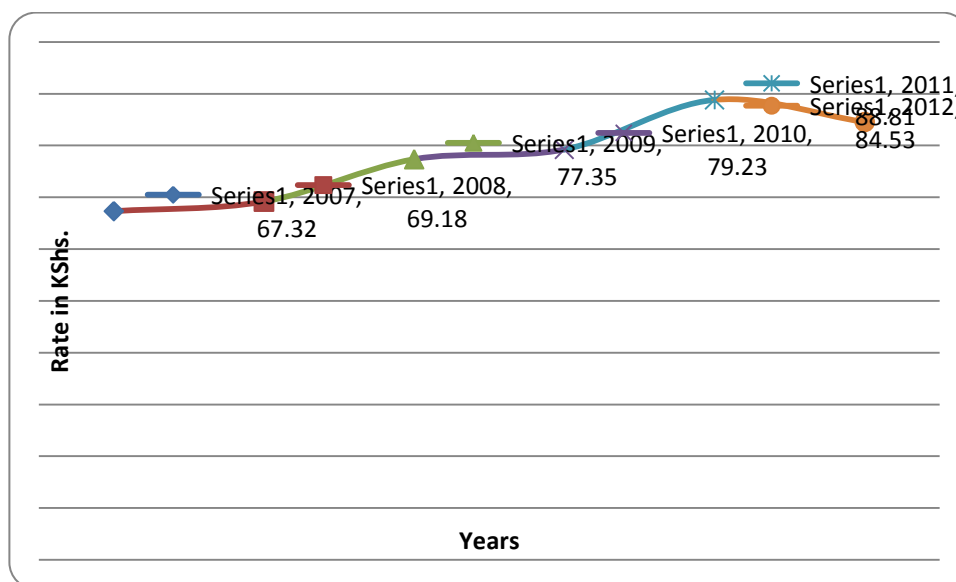


Figure 4.3: Trend Analysis of Exchange Rate, 2007-2012

4.2.4 Economic Growth

Results displayed on Figure 4.4, illustrate the economic growth of Kenya for the period covering 2007-2012. Outcome displays that economic growth was at 6.99% in 2007 followed by a sharp decline to 1.53% in 2008. There was a slight increase in economic growth to 2.74% in 2009. In 2010 there was a sharp increase to 5.76% but there was a minor decline to 4.38% in 2011 and a further decline to 4.30% in 2012. The overall trend of the economic growth has been inconsistent for the period under study.

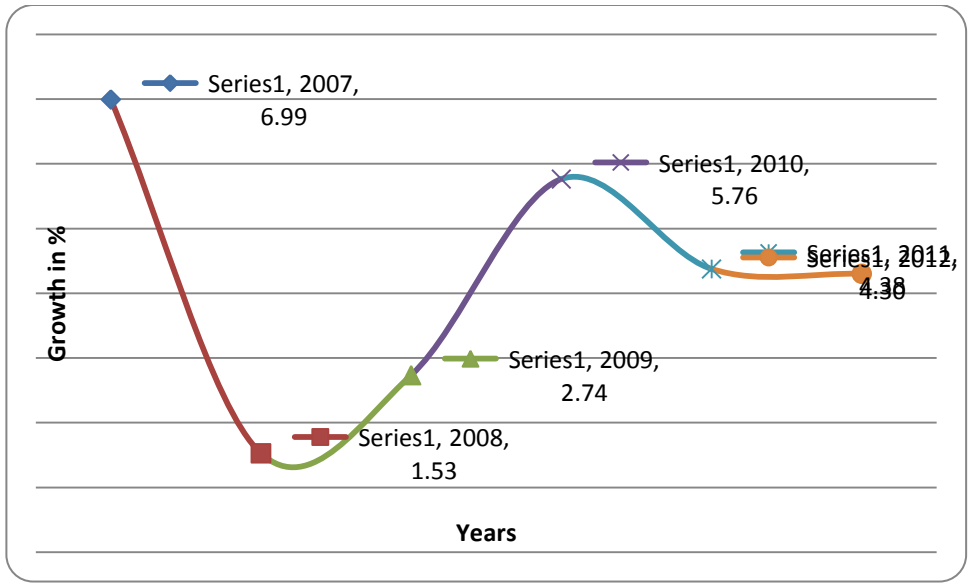


Figure 4.4: Trend Analysis of Economic Growth, 2007-2012

4.2.5 Lending Interest Rate

The lending interest rate as shown Figure 4.5, cover a period spanning from 2007-2012. The lending interest rate was 13.34% in 2007, followed by a small rise to 14.02% in 2008. There was a minor rise to 14.80% in 2009 followed by a decline to 14.37% in 2010. The year 2011 had a slight increase to 15.05% and a sharp increase to 19.72% in 2012. Generally the trend in lending rates was at a constant increase for the period under study.

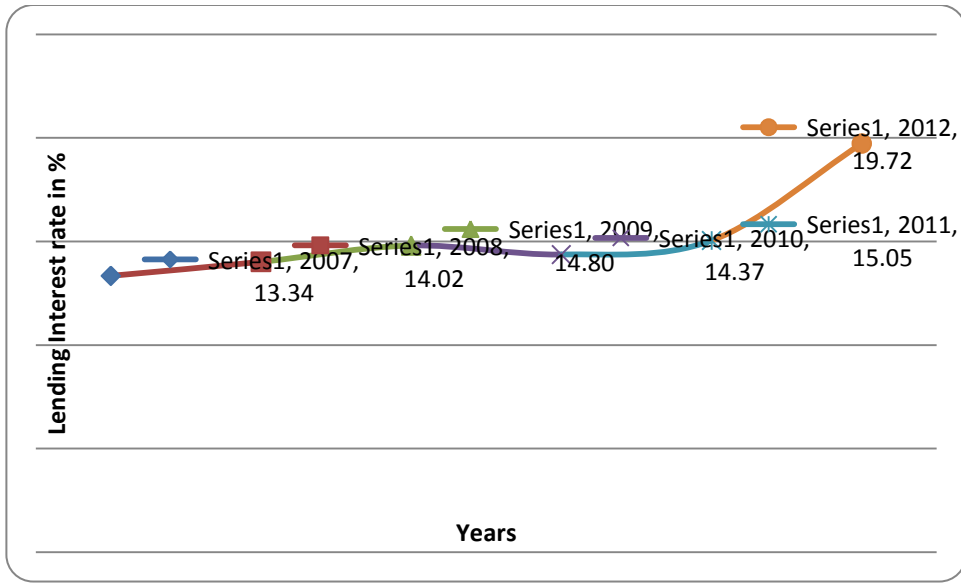


Figure 4.5: Trend Analysis Lending Interest Rate, 2007-2012

4.2.6 Average NSE 20 Share Index

Results in Figure 4.6 show the trend of the Average NSE 20 Share Index for the years covering 2007-2012. The average index for 2007 was 3736.00 followed by a slight increase to 3751.00 in 2008. The year 2009 saw a steady rise to 4257.00 and was followed a slight drop in 2010 to 3247.00. There was a minor increase to 3521.00 in 2011 followed by a sharp rise to 5445.00 in 2012. Generally, the trend for the Average NSE 20 Share Index was inconsistent during the years under study.

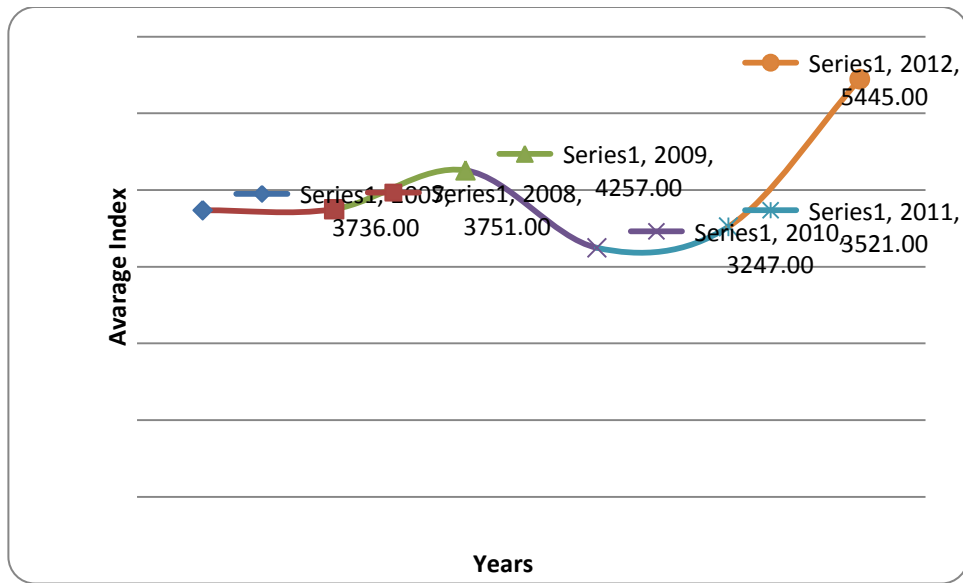


Figure 4.6: Trend Analysis in Average NSE 20 Share Index, 2007-2012

4.2.7 Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Stock Return	269	(0.97)	2.55	(0.11)	0.52
Underlying Inflation	306	0.93	10.76	5.98	2.99
Overall Inflation	306	3.96	26.24	12.10	6.97
Exchange Rate	306	67.32	88.81	77.74	7.68
Economic Growth	306	1.53	6.99	4.28	1.81
Interest Rate	306	13.34	19.72	15.22	2.09

4.2.8 Inferential Statistical Analysis

Inferential analysis conducted generated correlation results, model of fitness, and analysis of the variance and regression coefficients.

4.2.9 Bivariate Pearson's Correlation

Table 4.1 presents Pearson's Bivariate Correlation which shows that underlying inflation had a strong negative correlation of (-0.171) and a probability value of (0.005). This shows that underlying inflation was statistically significant in explaining stock returns. Overall inflation had a weak negative correlation of (-0.111) and a probability value of (0.069) hence was statistically insignificant an indication that overall inflation does not determine stock return of the companies in the NSE. Exchange rate had a negative but strong correlation of (-0.329) and a probability value of (0.00). This indicates that the exchange rate was statistically significant in explaining stock returns. Economic growth had a positive and strong correlation of (0.397) and a significant probability value (p-value) of (0.00) which shows that economic growth explains stock returns. Interest rate has a weak and negative correlation of (-0.238) and a significant probability value of (0.00) which shows that interest rate explains the stock returns. In general, it can be concluded that the variables of the study had moderate to strong correlations to stock returns.

Table 4.1: Bivariate Pearson's Correlation

		Stock return	Underlying Inflation	Overall Inflation	Exchang e Rate	Economic Growth	Interes t Rate
Stock return	Pearson Correlation Sig. (2- tailed)	1					
Underlying Inflation	Pearson Correlation Sig. (2- tailed)	-0.171 0.005	1				
Overall Inflation	Pearson Correlation Sig. (2- tailed)	-0.111 0.069	0.617 0.00	1			
Exchange Rate	Pearson Correlation Sig. (2- tailed)	-0.329 0.00	0.229 0.00	-0.328 0.00	1		
Economic Growth	Pearson Correlation Sig. (2- tailed)	0.397 0.00	-0.455 0.00	-0.7 0.00	-0.008 0.886	1	
	N	269	306	306	306	306	
Interest Rate	Pearson Correlation Sig. (2- tailed)	-0.238 0.00	-0.068 0.237	-0.196 0.001	0.598 0.00	-0.103 0.072	1

4.2.10 Regression Analysis

Table 4.2 below shows the fitness of the regression model in explaining the variables under study. The results indicate that the variables; underlying inflation, overall inflation, interest lending rate, economic growth, dollar exchange rate of the firms were satisfactory in explaining the stock returns. This conclusion is supported by the R square of 0.27. This further means that the independent variables can 27.1% explain the independent variable (stock returns).

Table 4.2: Model Fitness

Indicator	Coefficient
R	.521
R Square	0.271
Std. Error of the Estimate	0.444517

ANOVA statistics presented on Table 4.3 indicate that the overall model was statistically significant. This was supported by a probability (p) value of 0.00. The reported p value was less than the conventional probability of 0.05 significance levels thus its significance in the study. These results indicate that the independent variables are good predictors of stock returns.

Table 4.3: Analysis of Variance (ANOVA)

	Sum of Squares	df	Mean Square	F	Sig.
Regression	19.362	5	3.872	19.597	.000
Residual	51.968	263	0.198		
Total	71.329	268			

Regression of coefficients results in Table 4.10 shows that there is a positive relationship between stock returns and underlying inflation, overall inflation, economic growth, interest lending rate whose beta coefficients are 0.014, 0.005, 0.137 and 0.009 respectively. There is a negative relationship between stock returns and the exchange rate of -0.023. Statistically significant variables in the study were exchange rate and economic growth as they had a probability value of 0.00, 0.00 which is lower than the conventional probability of 0.05. These results indicate that the level of stock returns is determined by exchange rate and economic growth. Whereas the other variables are not significant to influencing stock returns. This implies that an increase in unit change of exchange rate and economic growth, of the firms results to a unit change in stock returns of the firms.

4.2.11 Regression of Coefficients

Table 4.4 displays the regression coefficients of the independent variables. The results reveal that exchange rate and economic growth are statistically significant in explaining stock returns of listed firms. However underlying inflation, overall inflation and interest rate were not statistically significant in explaining stock returns but they were positively related with stock returns apart of listed firms.

Table 4.4: Regression Coefficients

	B	Std. Error	Beta	t	Sig.
(Constant)	0.777	0.474		1.641	0.102
Underlying Inflation	0.014	0.016	0.081	0.905	0.366
Overall Inflation	0.005	0.009	0.071	0.609	0.543
Exchange Rate	-0.023	0.006	-0.338	-3.587	0.00
Economic Growth	0.137	0.023	0.482	5.917	0.00
Interest Rate	0.009	0.018	0.038	0.525	0.6

The regression equation was as follows;

$$\text{Stock Returns} = 0.777 + 0.014 \text{ Underlying Inflation} + 0.005 \text{ Overall Inflation} + 0.023 \text{ Exchange Rate} + 0.137 \text{ Economic Growth} + 0.009 \text{ Interest Rate}$$

4.2.12 Sectoral Analysis

A sector by sector analysis is presented in table 4.5. The model fitness for the agriculture sector (1) was 0.43 which implied that 43% of the variances in stock returns for the agricultural sector were explained by the independent variables (underlying inflation, overall inflation, exchange rate, economic growth, interest rate). The overall model was significant as indicated by an F statistics of 5.32 and a p-value of 0.01. Agricultural sector analysis results indicate that economic growth has a positive and significant relationship with agricultural stock returns (b=0.23). This implies that an increase in economic growth by 1 unit leads to an increase in agricultural sector stock returns by 0.23 units.

The model fitness for the commercial and services sector (2) was 0.29 which implied that 29% of the variances in stock returns for the commercial and services were explained by the independent variables (underlying inflation, overall inflation, exchange rate, economic growth, interest rate). The overall model was insignificant as indicated by an F statistics of 2.281 and a p-value of 0.075. Commercial sector analysis results indicate that economic growth has a positive and significant relationship with commercial stock returns ($b=0.17$). This implies that an increase in economic growth by 1 unit leads to an increase in commercial and services sector stock returns by 0.17 units.

The model fitness for the telecommunications and technology sector (3) was 1.00 which implied that 1% of the variances in stock returns for telecommunications and technology sector were explained by the independent variables (underlying inflation, overall inflation, exchange rate, economic growth, interest rate). The overall model was insignificant as indicated by an F statistics of 1.00 and a p-value of 0.

Results of the model fitness for the automobiles & accessories sector (4) was 0.575 which implied that 57% of the variances in stock returns for the automobiles & accessories were explained by the independent variables (underlying inflation, overall inflation, exchange rate, economic growth, interest rate). The overall model was insignificant as indicated by an F statistics of 4.32 and a p-value of 0.11. Automobiles & accessories sector analysis results indicate that exchange rate has a negative and significant relationship with stock returns ($b=-0.041$). This implies that an increase in exchange rate by 1 unit leads to a decrease in automobiles & accessories sector stock returns by 0.041 units.

Model fitness results for the banking sector (5) was 0.505 which implied that more than 50% of the variances in stock returns for the banking sector were explained by the independent variables (underlying inflation, overall inflation, exchange rate, economic growth, interest rate). The overall model was significant as indicated by an F-Statistics of 9.79 and a p-value of 0.00. Banking sector analysis results indicate that exchange rate has a negative and significant relationship with stock returns ($b=-0.036$ and economic growth has a positive and significant relationship ($b=0.143$). This implies that an increase in economic growth by 1 unit leads to an increase in banking sectors stock returns by 0.143.

Outcome of the model fitness for the insurance sector (6) was 0.84 which implied that 84% of the variances in stock returns for the insurance sector were explained by the independent variables (underlying inflation, overall inflation, exchange rate, economic growth, interest rate). The overall model was significant as indicated by an F statistic of 13.31 and a p-value of 0.00. The insurance sector analysis results indicate that exchange rate has a negative and significant relationship with insurance stock returns ($b=-0.036$). Economic growth also has a positive and significant relationship with insurance stock returns ($b=0.15$). This implies that an increase in economic growth by 1 unit leads to an increase in the insurance sector stock returns by 0.15 units and a decrease in exchange rate by 1 unit leads to a decrease of 0.036 units in the insurance sector stock returns.

The model fitness for the investment sector (7) was 1 which implied that 1% of the variances in stock returns for the investment sector were explained by the independent variables (underlying inflation, overall inflation, exchange rate, economic growth, interest rate). The overall model was insignificant as indicated by an F statistic of 1 and a probability value of 0. Investment sector analysis results indicate that there is no significant relationship between the analyzed economic indicators and stock returns.

Outcome of the model fitness for the Manufacturing and Allied sector (8) was 0.12 which implied that 12% of the variances in manufactured and allied for the investment sector were explained by the independent variables (underlying inflation, overall inflation, exchange rate, economic growth, interest rate). The overall model was insignificant as indicated by an F statistic of 0.78 and a probability value of 0.571. Manufacturing and Allied sector analysis results indicate that there is no significant relationship between the analyzed economic indicators and stock returns.

Results of the model fitness for the Construction and Allied sector (9) was 0.383 which implied that 38% of the variances in stock returns for the construction and allied were explained by the independent variables (underlying inflation, overall inflation, exchange rate, economic growth, interest rate). The overall model was insignificant as indicated by an F statistics of 2.97 and a p-value of 0.31. Construction and Allied sector analysis results indicate that overall inflation has a negative and significant relationship with stock returns ($b=-0.003$). This implies that an increase in overall inflation by 1 unit leads to a decrease in construction and allied sector stock returns by 0.003 units.

Results of the model fitness for the Energy and Petroleum sector (10) was 0.72 which implied that 72% of the variances in stock returns for the construction and allied were explained by the independent variables (underlying inflation, overall inflation, exchange rate, economic growth, interest rate). The overall model was significant as indicated by an F statistics of 9.047 and a p-value of 0.00. Energy and petroleum sector analysis results indicate that exchange rate has a negative and significant relationship with stock returns (b=-0.03). This implies that an increase in exchange rate by 1 unit leads to an increase in Energy and Petroleum sector stock returns by 0.03units.

Table 4.5: Sectoral Analysis

Sectoral	1	2	3	4	5	6	7	8	9	10
(Constant)	-1.79	.254	4.49 7	2.451	1.516	1.827	1.03 5	-.323	1.285	2.615
Underlying Inflation	-0.01	-.005	.035	.021	.018	.042	.009	.013	.012	.013
Overall Inflation	0.02	.015	- .031	-.010	.003	-.006	.042	.009	-.003*	-.002
Exchange Rate	0.01	-.013	- .049	-.041*	-.036*	-.045*	.	-.023	-.017	-.030*
Economic Growth	0.23*	.173*	- .058	.064	.143*	.153*	.153	.134	.118	.026
Interest Rate	0.01	-.014	- .039	.014	.021	.039	-. .030	.089	-.040	-.049
R Squared	0.43	0.29	1	0.575	0.505	0.84	1.00	0.115	0.383	0.716
F Statistic	5.32(p =0.01)	2.281(p=0.07 5)	.	4.32(p= 0.11)	9.79(p= 0.00) _	13.311(p =0.00)	.	0.781(p= 0.571)	2.97(p= 0.31)	9.074(p =0.00)

*implies that the p-value is less than 0.05. Therefore, the variable is significant.

Table 4.6: Sector Key

Sector Key:

Code	Sector Name
1	Agriculture
2	Commercial and Services
3	Telecommunications & Technology
4	Automobiles & Accessories
5	Banking
6	Insurance
7	Investment
8	Manufacturing and allied
9	Construction & Allied
10	Energy & Petroleum

4.3 Summary and Interpretation of Findings

Regression of coefficients results in Table 4.10 shows that there is a positive relationship between stock returns and underlying inflation, overlying inflation, economic growth, interest lending rate whose beta coefficients are 0.014, 0.005, 0.137 and 0.009 respectively. There is however a negative relationship between stocks returns and exchange rate of -0.023. Statistically significant variables in the study were Exchange rate and economic growth as they had probability values of 0.00, 0.00 which is lower than the conventional probability of 0.05. These results indicate that the level of stock returns is determined more by exchange rate and economic growth, whereas the other variables are not significant to influencing stock returns. This implies that an increase in unit change of exchange rate and economic growth, of the firms results to a unit change in stock returns of the firms.

Agricultural sector analysis results indicate that economic growth has a positive and significant relationship with agricultural stock returns ($b=0.23$). This implies that an increase in economic growth by 1 unit leads to an increase in agricultural sector stock returns by 0.23 units.

Commercial sector analysis results indicate that economic growth has a positive and significant relationship with commercial stock returns ($b=0.17$). This implies that an

increase in economic growth by 1 unit leads to an increase in commercial and services sector stock returns by 0.17 units.

Automobiles & Accessories sector analysis results indicate that exchange rate has a negative and significant relationship with stock returns ($b=-0.41$). This implies that decrease in exchange rate by 1 unit leads to a decrease in the Automobiles and Accessories sector stock returns by 0.041 units.

Banking sector analysis results indicate that exchange rate has a negative and significant relationship with stock returns ($b=-0.036$) and economic growth has a positive and significant relationship ($b=0.143$). This implies that a decrease in economic growth by 1 unit leads to a decrease in the banking sector stock returns by 0.036 units for exchange rate and 0.14 for economic growth.

The Insurance sector analysis results indicate that exchange rate has a negative and significant relationship with insurance stock returns ($b=-0.36$). Economic growth also has a positive and significant relationship with insurance stock returns ($b=0.15$). This implies that an increase in exchange rate by 1 unit leads to an increase in the Insurance sector stock returns by 0.15 units and a decrease in exchange by 1 unit leads a decrease by 0.15 units in the Insurance sector stock returns.

Outcome of the model fitness for the Manufacturing and Allied sector was 0.12 which implies that 12% of the variances in manufacturing and allied for the investment sector were explained by the independent variables (underlying inflation, overall inflation, exchange rate, economic growth, interest rate). The overall model was insignificant as indicated by an F statistic of 0.78 and a p-value of 0.571. Manufactured and allied sector analysis results indicate that there is no significant relationship between the study variable and stock returns.

Construction and Allied sector analysis results indicate that overall inflation has a negative and significant relationship with stock returns ($b=-0.003$). This implies that an increase in overall inflation by 1 unit leads to a decrease in construction and allied sector stock returns by 0.003 units.

Energy and Petroleum sector analysis results indicate that exchange rate has a negative and significant relationship with stock returns ($b=-0.03$). This implies that an increase in

exchange rate by 1 unit leads to an increase in the Energy and Petroleum sector stock returns by 0.03units.

These results further agree with those of Adjasi and Biekpe (2006) who studied the effect of stock market development on economic growth in 14 countries in a dynamic panel data modeling setting. The results indicate a positive relationship between stock market development and economic growth. Further investigations, based on the level of economic development and stock market capitalization reveal that the positive influence of stock market development on economic growth is significant for countries classified as upper middle income economies. The general trend in results shows that low income African countries and less developed stock markets need to grow more and develop their markets to achieve economic gains from stock markets. According to Nzue (2006), the relationship between the development of the Ivorian stock market and the country's economic performance is positive.

Bai and Green (2008) used data from 13 emerging stock markets (ESM's) for the period 1984 to 2004 to investigate the determinants of cross sectional stock returns variations in emerging markets. The random effects regression was used in the analysis. According to the results, the exchange rate changes had a negative relationship with country effects. An increase in exchange rate changes by 1 unit led to a decline in stock returns by 52.8%. Inflation had a positive association with country effects with a 1 unit change in inflation leading to a 1.8% rise in stock returns. A unit increase in activities of financial intermediary led to 0.6% decrease in stock returns. The activity of the stock market appeared to be positively related to stock returns.

In support of the results, Jiranyakul (2009) did a study on the relationship between macro-economic variables and the Thai stock market Index. The study used quarterly data covering the period 1993 q1 and 2007q4. The study adopted Multivariate Time series regression analysis using unit roots tests; co-integration test using a two-step Engle and Granger (EG) co-integration test; and the Johansen Co-integration test. Additionally, a vector error correction method was used to determine the relationship between the long run and short run relationships between macro variables and stock returns. The results revealed that the variables are co integrated, and this implied that there exists a long-run relationship between the stock market index and a set of four

macroeconomic variables. Additionally, real GDP, money supply, and nominal effective exchange rate had a significant positive impact on the stock market index.

Sectoral analysis results show majority companies (Listed NSE) stock returns are greatly influenced by economic growth and exchange rate. This is an indicator that investors should invest when the economic growth is high and when the exchange rate is favourable so as to maximize on their stock returns.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

Chapter one discussed the problem statement and the objectives of the study. This main objective of the study was to establish the relationship between macroeconomic performance indicators and stock returns at the Nairobi Securities Exchange.

Chapter two discussed the literature review, that is, the theories backing stock returns. The empirical evidence of the study was also given.

Chapter three presented the research methodology. The chapter discussed the type of research design, population, and target population, sample, instruments to be used and data analysis.

Chapter four presented the findings. The results generated through data analysis indicate that the variables; underlying inflation, overall inflation, interest lending rate, economic growth and the US dollar exchange rate were satisfactory in explaining the stock returns. This conclusion is supported by the R square of zero point two seven. This further means that twenty seven point one percent of independent variables can explain the dependent variable (stock returns).

Findings reveal that the overall model was statistically significant. This was supported by a probability value of zero. The reported probability value was less than the conventional probability of point zero five thus it is significant in the study. These results indicate that the independent variables are good predictors of stock returns.

Further results show that there is a positive relationship between stock returns and underlying inflation, overall inflation, economic growth, interest lending rate whose beta coefficients are zero point zero one four, zero point zero one five, zero point zero one three seven and zero point double zero nine respectively. There is a negative relationship between stock returns and exchange rate of negative zero point zero two three. Statistically significant variables in the study were the exchange rate and economic growth as they had probability values of zero, which are lower than the conventional probability of point zero five. These results indicate that the level of stock returns is

determined by exchange rate and economic growth, which implies that a unit change in the exchange rate and economic growth results to a unit change in stock returns of the firms.

Sectoral analysis results further indicate that different sectors stock returns are mainly influenced by the economic indicators (economic growth and exchange rates). From the sectoral results tabulated economic growth and exchange rates a can best be used to explain the stock returns across the various firms.

5.2 Conclusions

Based on the objectives, findings from the descriptive and inferential results the following conclusions can be made. Regression led to the conclusion that there is a positive relationship between stock returns and underlying inflation, overlying inflation, economic growth, interest lending rate. There is however a negative relationship between stocks returns and exchange rate. It was concluded that statistically significant variables in the study were exchange rate and economic growth. These results indicate that the level of stock returns is determined more by exchange rate and economic growth, whereas the other variables are not significant to influencing stock returns. This implies that an increase in unit change of exchange rate and economic growth results to a unit change in stock returns of the firms.

Agricultural sector analysis results led to the conclusion that economic growth has a positive and significant relationship with agricultural stock returns. Commercial sector analysis results led to the conclusion that economic growth has a positive and significant relationship with commercial stock returns. Results from Automobiles & Accessories sector analysis led to conclusion that exchange rate has a negative and significant relationship with stock returns. Banking sector analysis results indicate that exchange rate has a negative and significant relationship with stock returns and economic growth has a positive and significant relationship.

The Insurance sector analysis results led to conclusion that exchange rate has a negative and significant relationship with insurance stock returns. Economic growth also has a

positive and significant relationship with insurance stock returns. It was concluded that Manufacturing and allied sector returns were not influenced by the macroeconomic indicators. This was revealed by the lack of significance between the economic indicators and stock returns.

Construction and Allied sector analysis results led to the conclusion that that overall inflation has a negative and significant relationship with stock returns. Finally, the Energy and Petroleum sector analysis results led to conclusion that exchange rate has a negative and significant relationship with stock returns. Sectoral results analysis led to conclusion that that the relationship between Technology and communications sector and economic indicators is insignificant. Further findings from sectoral analysis indicate that there is no significant relationship between economic indicators and investment sector returns.

5.3 Recommendations to Policy and Practice

It is recommended that investors who have a fully diversified portfolio which cuts across all the sectors need to factor in underlying inflation, overall inflation, economic growth, interest lending rate. Specifically, investors of a diversified portfolio should note that underlying inflation, overall inflation, economic growth and interest rate has a positive effect on the stock returns. Therefore, they should take a buying position whenever the underlying inflation, overall inflation, economic growth and lending interest rate are expected to go up. They should sell their portfolios during periods of expected low inflation, low overall inflation, low economic growth and low lending interests rates.

It is recommended that investors who have a fully diversified portfolio which cuts across all the sectors need to factor in the movement of US dollar exchange rate in the country. They should take a buying position when the exchange rate is unfavourable and a selling position whenever favourable.

From sectoral analysis, we can recommend that investors in the Agricultural, Commercial and Services, Banking sectors should put the economic growth rate into special consideration when making their investments at the Nairobi Securities Exchange. They should invest when the expected economic growth rate is high and exit when the

economic growth rate is expected to decline. Investors in the Automobile, Banking, Insurance, Energy and Petroleum sectors should put the US dollar exchange rate into particular consideration when making their investments. The investors of such portfolios should construct portfolios based on investing when the expected exchange is bound to decline and exit when the expected exchange rate increases. Finally, investors in the Construction and Allied sector should specially consider overall inflation whenever making their investment decisions. They should therefore sell when inflation goes up but invest when the inflation goes down.

The findings and conclusions of this study can add value to various stakeholders. The economic indicators that have proven to be of no significance to stock returns should be analyzed further since they are indicators and this could increase the yield on stock returns.

5.4 Limitations of the Study

The study did not consider the effects of political crisis especially the year 2007/2008 post-election violence which affected the returns of most companies especially where population was forced to move out of areas deemed to be insecure as a result of the post-election violence. The declining incomes during this period may have affected the returns of securities

The study did not analyze internal and external factors that affect economic performance indicators and stock returns at the Nairobi Securities Exchange like competition, performance of the company, operating efficiency which could have influenced the stock returns of the companies.

The study did not exhaust clearly whether there is a long-run bi-directional causality between financial development and stock returns. This would have required factoring in financial innovation and the money supply indicators and how they affect stock returns.

The study did not consider the long run relationship between stock returns and macroeconomic indicators. For instance, the study did not conduct a co-integration analysis to see whether the trend of stock returns and the trend of macroeconomic

indicators converge in the long run. These results may provide a better basis for hedging and portfolio construction.

5.5 Suggestions for Further Research

Suggested further areas of study should be on how the financial sector can influence the economic indicators that have no great significant to stock returns. For instance, it may be important to see how financial innovation together with money supply affects stock returns.

Future studies should consider the effects of political crises especially the year 2007/2008 post-election violence which affected the returns of most companies especially where population was forced to move out of areas deemed to be insecure as a result of the post-election violence.

Future studies should analyze internal and external factors that affect economic performance indicators and stock returns at the Nairobi Securities Exchange like competition, performance of the company, operating efficiency which could have influenced the stock returns of the companies.

Future studies should consider the long run relationship between stock returns and macroeconomic indicators. For instance, the future studies should conduct a co-integration analysis to see whether the trend of stock returns and the trend of macroeconomic indicators converge in the long run. These results may provide a better basis for hedging and portfolio construction.

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APPENDICES

Appendix I: NSE Listed Companies

1	Eaagads Ltd	32	The Co-operative Bank of Kenya Ltd
2	Kapchorua Tea Co Ltd	33	I&M Holdings
3	Kakuzi	34	Jubilee Holdings Ltd
4	Limuru Tea Co Ltd	35	Pan Africa Insurance Holdings Ltd rd
5	Rea Vipingo Plantations Ltd	36	Kenya Re-Insurance Corporation Ltd
6	Sasini Ltd	37	CFC Insurance Holdings
7	Williamson Tea Kenya Ltd	38	British-American Investments Company (Kenya) Ltd
8	Express Ltd	39	CIC Insurance Group Ltd
9	Kenya Airways Ltd	40	City Trust Ltd
10	Nation Media Group	41	Olympia Capital Holdings ltd
11	Standard Group Ltd	42	Centum Investment Co Ltd
12	TPS Eastern Africa (Serena) Ltd	43	Trans-Century Ltd
13	Scangroup Ltd	44	BOC Kenya Ltd
14	Uchumi Supermarket Ltd	45	British American Tobacco Kenya Ltd
15	Hutchings Biemer Ltd	46	Carbacid Investments Ltd
16	Longhorn Kenya Ltd	47	East African Breweries Ltd
17	Access Kenya Group Ltd	48	Mumias Sugar Co Ltd
18	Safaricom Ltd	49	Unga Group Ltd
19	Car and General (K) Ltd	50	Eveready East Africa Ltd
20	CMC Holdings Ltd	51	Kenya Orchards Ltd
21	Sameer Africa Ltd	52	ABaumann Co Ltd
22	Marshalls (EA) Ltd	53	Athi River Mining
23	Barclays Bank Ltd	54	Bamburi Cement Ltd
24	CFC Stanbic Holdings Ltd	55	Crown Berger Ltd rd
25	Diamond Trust Bank Kenya Ltd	56	EACables Ltd
26	Housing Finance Co Ltd	57	EAPortland Cement Ltd
27	Kenya Commercial Bank Ltd	58	KenolKobil Ltd
28	National Bank of Kenya Ltd	59	Total Kenya Ltd
29	NIC Bank Ltd	60	KenGen Ltd
30	Standard Chartered Bank Ltd	61	Kenya Power & Lighting Co Ltd
31	Equity Bank Ltd	62	Home Africa Limited

Appendix II: Raw Data Collected

Sector Name	Company	Year	share_price	capital gain	dividend	dividend yield	Stock return	underlying_inflation	Overall Inflation	Exchange Rate	Economic Growth	Interest Rate	Av NSE 20 Share Index
Agriculture	Eaagads Ltd	2012	25.00	-0.44	1.12	0.04	-0.40	4.81	9.38	84.53	4.30	19.72	5445.00
Agriculture	Kapchorua Tea Co. Ltd	2012	118.00	0.05		0.00	0.05	4.81	9.38	84.53	4.30	19.72	5445.00
Agriculture	Kakuzi	2012	72.00	0.99		0.00	0.99	4.81	9.38	84.53	4.30	19.72	5445.00
Agriculture	Limuru Tea Co. Ltd	2012	430.00	0.15	7.50	0.02	0.16	4.81	9.38	84.53	4.30	19.72	5445.00
Agriculture	Rea Vipingo Plantations Ltd	2012	19.00	-0.03		0.00	-0.03	4.81	9.38	84.53	4.30	19.72	5445.00
Agriculture	Sasini Ltd	2012	11.70	-0.33	0.25	0.02	-0.31	4.81	9.38	84.53	4.30	19.72	5445.00
Agriculture	Williamson Tea Kenya Ltd	2012	200.00	0.56		0.00	0.56	4.81	9.38	84.53	4.30	19.72	5445.00
Commercial Services and	Express Ltd	2012	3.50	-0.97		0.00	-0.97	4.81	9.38	84.53	4.30	19.72	5445.00
Commercial Services and	Kenya Airways Ltd	2012	11.40	-0.88		0.00	-0.88	4.81	9.38	84.53	4.30	19.72	5445.00
Commercial Services and	Nation Media Group	2012	222.00	-0.32	11.00	0.05	-0.27	4.81	9.38	84.53	4.30	19.72	5445.00
Commercial Services and	Standard Group Ltd	2012	21.75	-0.62	1.10	0.05	-0.57	4.81	9.38	84.53	4.30	19.72	5445.00
Commercial Services and	TPS Eastern Africa (Serena) Ltd	2012	40.00	-0.30	1.10	0.03	-0.27	4.81	9.38	84.53	4.30	19.72	5445.00
Commercial Services and	Scangroup Ltd	2012	68.50	1.30	0.70	0.01	1.31	4.81	9.38	84.53	4.30	19.72	5445.00
Commercial Services and	Uchumi Supermarket Ltd	2012	19.10		0.30	0.02		4.81	9.38	84.53	4.30	19.72	5445.00
Telecommunications & Technology	AccessKenya Group Ltd	2012	4.40	-0.81		0.00	-0.81	4.81	9.38	84.53	4.30	19.72	5445.00
Telecommunications & Technology	Safaricom Ltd	2012	5.05		0.22	0.04		4.81	9.38	84.53	4.30	19.72	5445.00
Automobiles & Accessories	Car and General (K) Ltd	2012	24.00	-0.58	0.55	0.02	-0.56	4.81	9.38	84.53	4.30	19.72	5445.00