THE RELATIONSHIP BETWEEN THE GDP AND SHARE PRICE MOVEMENT AT THE NAIROBI STOCKS EXCHANGE

By

CRISPIN OCHIENG OGUTU

A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE DEGREE OF MASTER OF BUSINESS ADMINISTRATION OF THE UNIVERSITY OF NAIROBI

SEPTEMBER 2011

DECLARATION

This research is my original work and has not been presented to any college or university for the award of a diploma or a degree.

Signed: é é é é é é é é é é é é é é é . Date: é é é é é é é é é é é

CRISPIN OCHIENG OGUTU

D61/75327/2009

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

Signed: é é é é é é é é é é é é é é Date: é é é é é é é é é é é .

MR. JOSEPH L. BARASA

Lecturer, Department of Finance & Accounting

School of Business

University of Nairobi

ACKNOWLEDGEMENT

I wish to acknowledge my sincere appreciation to the following people without whom this research work would not have been successful. It may not be possible to mention all by name but the following were singled out for their exceptional contributions.

My profound gratitude goes to my supervisor Mr. Joseph Barasa, and Mr. Mwachiti Mohamed Ngome for their commitment and personal interest in the progress of this study. Their wise counsels, encouragement, patience, constructive and innumerable suggestions made this work come to completion. They were true captains of this ship.

Thanks to MBA colleagues for their various input and support during the course, with whom we shared experiences and knowledge and, even made the MBA fun even when the going seemed tough.

My heartfelt appreciation and indebtedness also goes to my family members and friends, especially John Matheri Kiragu, for making my dream come true by offering me moral support during my postgraduate studies.

I acknowledge my deceased parents for their belief in the power of education. Their inspiration made me study hard right when I was young thus sowing the seed of academic excellence at my early age, whose fruits I now enjoy and share with the other members of the entire family.

Finally and most importantly, I wish to thank my God and the Lord of the Universe for bringing me this far. I pride in His name because He means well for me all the times. God is good all the times and all the times God is good.

DEDICATION

This thesis is dedicated to the following: First, to my late parents Joseph Ogutu and Angeline Ogutu. Second, to my late brother Mark, and sisters Margaret, Bentah & Syprose. Last but not least, to my whole family. Their love, support, patience, encouragement and understanding gave me the will and determination to complete my postgraduate studies.

ABSTRACT

Over the past two decades, capital markets in developing countries have experienced a rapid evolution. The share market is continuously moving and changing and it is affected not only by the success of the listed companies, but also by the dynamic business environment. Share prices are very volatile and keep on changing because of several reasons, both predictable and unpredictable. The knowledge of how public financial information causes stock prices to change is therefore of vital importance for the stock exchange market players bearing in mind that current future investors usually value the share price of a company. The uncertainty surrounding the share price movements forms the basis of the proposed study which sought to establish the relationship between the GDP and share price movement at the Nairobi stocks exchange.

The study used descriptive design in describing the relationship between share price movement and GDP. The population constituted 56 companies listed in the NSE as at December 31, 2010. These companies were under; Agriculture, Commercial and Services, Finance and Investments, Industrial and Allied and Alternative Markets Investment segment. The study used secondary data which was collected from the Nairobi Stock Exchange (NSE) databases on the NSE Index and Annual real Gross Domestic Product (GDP) data collected from Central Bank of Kenya (CBK) for the period between the first quarter of 2000 and the fourth quarter of 2010. The empirical analysis was employed was used to analyze the data through the help of Statistical Package for Social Sciences (SPSS). A multiple regression model was also employed to examine the relationship between Gross Domestic Product (GDP) and Stock price movement.

The study found out that during the period 2000-2010, while GDP has been on gradual increase, stock market performance has been erratic with a non unidirectional increase; hence

stock market performance had a high variation than Real GDP. The highest performance of the GDP was in 2010, while on the other hand, findings show stock market performed better in 2006. The researcher concludes that GDP would lead to increase in stock market performance. He recommends that any investor who wants to invest by buying or selling shares in the stock market; he should closely monitor the GDP performance to determine whether itôs viable to invest then. Investors should buy shares when GDP is performing poorly and sell when the GDP performs well for them to have valuable investments.

TABLE OF CONTENT

LIST OF TABLES

LIST OF FIGURES

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

The Stock Market is one of the most closely observed economic phenomenon in the world. Market indicators meet the demand for measures of stock market performance. Over the past two decades, capital markets in developing countries have experienced a rapid evolution. The aggregate market capitalization of countries classified by the IFC as emerging markets rose from $488 billion in 1988 to $2,225 billion in 1996. Trading on these stock markets rose in similar magnitude, growing from $411 billion to $1,586 billion in that period (Enrico & Pieter, 1999).

Financial markets typically comprise of several institutions including banks, insurance companies, mutual funds, mortgage firms, finance companies and stock markets (Edward, 2004). In developing countries, particularly in Sub-Saharan Africa, financial markets are dominated by commercial banks, which have not been reliable sources of long-term financing. The non-bank sources of medium and long-term financing are generally, underdeveloped, World Bank, (2004). The short-term nature of commercial banksô assets and liabilities as well as regulatory reserve requirements in many countries renders them (banks) incapable of supplying long-term capital. The high yielding short-term government treasury bills have, therefore, resulted in ñcrowding outò of the private sector as commercial banks hold large portions of their asset portfolios in the government bills (Edward, 2004).

Stock returns reflect new market-level and firm-level information. As Roll (1988) makes clear, the extent to which stocks move together depends on the relative amounts of firm-level and market-level information capitalized into stock prices. We find that stock prices in

economies with high per capita gross domestic product (GDP) move in a relatively unsynchronized manner. In contrast, stock prices in low per capita GDP economies tend to move up or down together. A time series of stock price synchronicity for the U.S. market also shows that the degree of co-movement in U.S. stock prices has declined, more or less steadily, during the 20th century. These findings are not due to differences in market size or economy size. First, firms in low-income countries might have more correlated fundamentals, and this correlation might make their stock prices move more synchronously. For example, if low-income economies tend to be undiversified, firm-level earnings may be highly correlated because industry events are essentially market-wide events (Roll, 1992).

Second, low-income economies often provide poor and uncertain protection of private property rights. Political events and rumors in such countries could, by themselves, cause market-wide stock price swings. Moreover, inadequate protection for property rights could make informed risk arbitrage in their stock markets unattractive. According to De Long et al. (1989, 1990), a reduction in informed trading can increase market-wide noise trader risk, which we would observe as increased market-wide stock price variation unrelated to fundamentals. Third, in countries that provide poorer protection for public investors from corporate insiders, problems such as inter-corporate income shifting could make firm-specific information less useful to risk arbitrageurs, and therefore impede the capitalization of firm-specific information into stock prices. In this study therefore, the researcher expects the study to establish the relationship between GDP and share price movement in the Nairobi Stock Exchange (NSE).

1.1.1 Nairobi Stock Exchange

The Nairobi Stock Exchange (NSE) was constituted in 1954 as a voluntary association of stockbrokers under the Securities Act (NSE Fact Book, 2003). On attainment of independence in 1963, stock market activity slumped due to uncertainty about the future of independent Kenya. In the first three years of independence confidence in the market was rekindled and the exchange handled a number of highly oversubscribed public issues. Its growth was however halted when the oil crisis in the early 1970s introduced inflationary pressures in the economy, which depressed share prices further. A 35% Capital Gains tax (suspended since 1985) was introduced in 1975 inflicting losses to the exchange which at the same time lost its regional character following nationalizations, exchange controls and other inter-territorial restrictions which were introduced in neighbouring Tanzania and Uganda (NSE Fact Book, 2003). The Kenyan government realized the need to design and implement policy reforms to foster sustainable economic development with an efficient and stable financial system. In particular, it set out to enhance the role of the private sector in the economy, reduce the demand of public enterprises on the exchequer and enhance capital market development (Ngugi, 2003).

In 1988 the first privatization through the NSE was the successful sale of the governmentôs 20% stake in Kenya Commercial Bank. The NSE was registered under the Companyôs Act and phased out the ñcall overò trading system in favour of the floor based open outcry system in 1991. The stocks traded in the Nairobi Stock Exchange include ordinary shares, preference shares, debentures, corporate, and government bonds. Stock indices are constructed to measure the general price movement in the listed share of the stock exchange (NSE Fact Book, 2003).

NSE is fully owned by nineteen licensed stockbrokers. The NSE is currently increasingly experiencing volatility in the share prices, as NSE 20-Share Index fell below the 3,000 psychological mark, lowering the total value of shareholdersô wealth (market capitalization) to Sh740.877 billion, from Sh1.3 trillion in June 2008. The market capitalization grew to KSh 1.3 trillion by the end of June 2008 after the listing of Safaricom shares. NSE has four core stakeholders who include; the investors, the listed companies, CDSC and the members/brokers. The most important stakeholders in any exchange are the investors. In case of Kenya, the number of investors remains very small, though in the recent years substantial number of investors has been attracted to the market. The gross number of investors in all listed companies is approximately 1.5 million based on CDS accounts that have been opened as at April, 2008. NSE has 56 listed companies on Equities board and 2 securities on preference shares board. It also has 9 listed Corporate Bonds and 65 listed Treasury bonds on the fixed income securities board (NSE Fact Book, 2003).

In the recent past NSE has undergone some major development on the trading and the settlement platform. These developments entail establishment of a modern fully automated custody and settlement services which are being provided by the Central Depository System Corporation (CDSC). CDSC became operational in 2004 after decades of manual clearing and settlement system. The shareholders of the CDSC are brokers and some financial institutions. There was a successful implementation of the automated trading system (ATS) in September 2006 on a local area network (LAN) at the trading floor. The system has facilitated efficient trading by reducing the time it takes to execute a trade. The integration of the ATS, CDS and brokersô back office systems improved service delivery to investors (Ngugi, 2003).

1.2 Problem Statement

The role of stock market as part of financial markets in economic development process is emphasized by growth theories. The interaction between stock price movements and real economic activities has been a debated issue in majority of economic studies. In this connection, two crucial questions have become the main focus of attention. First, are stock prices or share price movements influenced by economic change or are they determined on the basis of speculative bubbles? Second, to what extent does the stock market performance as a macroeconomic indicator affect the prospects for economic growth? There are a lot of studies about the connection between stock prices fluctuations and economic growth as well as other economic variables which have detected that changes in stock prices reflect real economic situation. Economic growth through the changes in levels of real economic activities affects profitability and activity of firms. As a result, with changes in profitability prospects, expected earnings and dividends of shares, stock prices fluctuate (Fama, 1990; Ferson and Harvey, 1993; Cheung and Ng, 1998; Mauro, 2003; Ritter, 2004; Liu and Sinclair, 2008; Shahbaz et al., 2008).

On the other hand, other studies have examined the impact of stock prices on macroeconomics indicators. According to the results of these investigations share prices fluctuations play a role in directing economic activities in the medium and long term. Stock prices reflect the expectation of public towards the future economic activity. In other words, the stock market is forward-looking and stock prices reflect anticipations about future economic activity. If a recession is expected, for example, then stock prices reflect this by decreasing in value whereas large increase in stock prices may reflect the expectation towards future economic growth (Jefferis and Okeahalam, 2000; Nasseh and Strauss, 2000; Mauro, 2000; Shirai, 2004; Adajaski and Biekpe, 2005; Mun et al., 2008).

In the light of the mixed empirical results in the literature, the researcher is motivated to examine the empirical support for the link between stock price movement (fluctuations) and GDP. Moreover, from the researcherôs point of observation, no study of this kind (analyzing the relationship between GDP and stock prices movement) has been conducted in the Kenyan context or rather in economies for emerging markets; First, the study can provide evidence as to whether theories relevant to role of stock market in economic growth and the findings from developed and developing countries can be applied to Kenyan economy. Second, from a policy point of view, analyzing the relationship between stock market performance and economic growth is important in designing economic development programmes. It is this gap that the researcher wants to fill by carrying out an analysis of GDP and share price movement at the Nairobi Stocks Exchange.

1.3 Research Objectives

To establish the relationship between the GDP and share price movement at the Nairobi stocks exchange.

1.4 Significance of the Study

The momentous business reality in Kenya is that in Nairobi Stock Exchange there is a number of challenges in the stock share and market price which call for high level of awareness. This study will therefore give a better understanding on share price movement at the Nairobi Stocks Exchange and hence it will be highly beneficial to the following people:

Quoted firms: This study will be beneficial to the firms listed and trading at NSE as well as firms planning to be listed at NSE. These firms will be able to know how it will affect the prices at NSE when they want to issue secondary stock through the Nairobi stock exchange.

Current and Prospective investors: The study will also benefit the current and prospective investors by having a better understanding on how GDP influences share price movement at the Nairobi Stocks Exchange thus predicting the share worth in advance.

Regulatory Bodies and Government: The government parastatals planning to privatize can also use the information to its advantage. The capital markets authority will be able to make decisions and formulation of policies for future secondary stock offerings.

Other Stakeholders: This study will be of critical importance to the management of organizations in general. Todayôs turbulent environment requires creation of a sustainable competitive advantage. The study will contribute to the body of knowledge through suggesting areas of improvement and avail useful data for all stakeholders working at NSE.

Investors: The study findings will also be of importance to the investors both institutional and individual in the country. The study will identify the pattern of institutional trading and price momentum and how they affect trading of shares at Nairobi Stock Exchange. This will aid the investors in making sound decisions.

Scholars and academic Researchers: The study information obtained will be of great benefit to future scholars in the field of price movement and GDP of a nation. The research findings will be important and will serve as a source of reference to future scholars. The finding will be beneficial to scholars as they will see that the result transpires despite growth rates of consumption, labour income, and asset holdings might have a statistically insignificant relationship with future share returns.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The chapter outlines the literature done by other authors on the Stock Exchange Market, determinants of share price movements, and investment at the Stock Exchange Market.

2.2. Theoretical Review

2.2.1 Dow Theory

According to Kolari, (2001) the Dow Theory is a theory dealing with the technical analysis of stock and is perhaps one of the first theoryôs dealing with technical analysis. It was created by Charles H. Dow in the early 1900ôs who theorized on how the stock market behaved and how the market can be used to measure the health of businesses in general. While his theory focused mainly on price, it differs a bit from mainstream technical analysis because the theory is concerned with movements of the broad markets rather than with specific securities. Charles Dow believed that all information including past, present and future is reflected in the price of stocks and indexes. The Dow Theory also suggests that the market discounts everything. As a result investors only need to focus on the stock price movements itself rather than on the reasons for the price movement. Again, this falls in line with the basic principles of stock technical analysis as opposed to fundamental analysis.

Tamtom, (2002) argues that these factors that affect pricing however include many things such as inflation, interest rates, state of the economy, politics, as well as investor sentiment and emotion. (See the psychology of investing) Many long term traders study these intrinsic factors, through fundamental analysis, while technical analysts believe that these factors are already expressed in the price movements. Basically the Dow Theory suggests that all factors

are priced into the market, those that could happen, those that have happened, and those that are expected to happen. The stock market then adjusts, along with the prices, to reflect the new information. Under the Dow Theory a major reversal from a bear to a bull market cannot be signaled unless both indexes both show it occurring. That means is one index that is in a bullish market while the other is in a bearish market there is no clear trend. If both indexes however are both in up trends or downtrends, then the trend is confirmed (Carstrom, 2002).

The Dow Theory also suggests that when stock market is doing well it is because conditions are good overall. Conversely, when the market is doing poorly, then it is due to poor business conditions. Again, as stated above, if the two market indexes are conflicting, then there is no clear trend in the general condition of businesses. There are many other theories and tools available to investors who are interested particularly in short term stock trading. Explore the basics as well as the technical indicators that signal things which are occurring in the markets (Kolari, 2001).

2.2.2 Random Walks Theory

Malkiel, a Princeton Economist, argues that price movements are largely random and investors cannot outperform the major indices. Malkiel asserts that price movements in securities are unpredictable. Because of this random walk, investors cannot consistently outperform the market as a whole. Applying fundamental analysis or technical analysis to time the market is a waste of time that will simply lead to underperformance. Investors would be better off buying and holding an index fund (Olowe, 1997).

According to Mayo (2000), Random walk theory jibes with the semi-strong efficient hypothesis in its assertion that it is impossible to outperform the market on a consistent basis. This theory argues that stock prices are efficient because they reflect all known information

(earnings, expectations, dividends). Prices quickly adjust to new information and it is virtually impossible to act on this information. Furthermore, price moves only with the advent of new information and this information is random or unpredictable.

The challenge of the theory of random walks to the proponent of fundamental analysis, however, is more involved. If the random walk theory is valid and if security exchanges are "efficient" markets, then stock prices at any point in time will represent good estimates of intrinsic or fundamental values. Thus, additional fundamental analysis is of value only when the analyst has new information which was not fully considered in forming current market prices, or has new insights concerning the effects of generally available information which are not already implicit in current prices. If the analyst has neither better insights nor new information, he may as well forget about fundamental analysis and choose securities by some random selection procedure. In essence, the challenge of the random walk theory to the proponent of fundamental analysis is to show that this more complicated procedures are actually more profitable than a simple random selection policy. As in the case of the chartist, the challenge is an empirical one. The analyst cannot merely protest that he thinks the securities he selects do better than randomly selected securities; he must demonstrate that this is in fact the case.

2.2.3 Technical/Chartist Theory

This approach is based on the view that future patterns of share prices are repetitions of the same patterns of price movement which had occurred in the past; that is, historical price patterns are repeated in the future (Akinsulire, 2006). According to Corrado et al (2002), technical analyst makes attempt to predict the direction of future stock price movement based on historical price and volume behaviour; and investment sentiment. Bodie, Kane and Marcus (1999), supported this view that it is essentially the search for recurrent and predictable

patterns in stock prices. Although technicians recognised the value of information regarding future economic prospects of the firm, they believed that such information is not necessary for a successful trading strategy.

This is because whatever the fundamental reason for a change in stock prices, if the price responds slowly enough; the analyst will be able to identify a trend that can be exploited during the adjustment period. The key to successful technical analysis is a sluggish response of stock prices to fundamental supply and demand factors. Technical analysts also called chartists study records or charts of past stock prices to find patterns to exploit to make profit using Dow Theory, which is a method of analyzing and interpreting stock market movement which dates back to the turn of the century. Share prices/values can be measured using primary, secondary and tertiary trends. Though, there is no real theoretical justification for this approach, it can at times be spectacularly successful. Studies outside Nigeria have suggested that the degree of success is greater than could be expected merely from chance (Mayo, 2000). Nevertheless, not even the most extreme chartist would claim that every major price movement can be predicted accurately and sufficiently enough to make the correct investment decision. Many critics of charting suggested that it is unscientific as to be of no practical value, because there is no theoretical justification of this theory except its pointing to empirical evidence of its correctness (Akinsulire, 2006).

2.3 Predicting Share price Returns

2.3.1 Predicting Share Price Returns with Financial Ratios

Initial evidence that fundamental data can be used to forecast share market returns is provided by Fama and French (1988). The authorsô findings are twofold. First, share prices which are normalized by dividends or earnings can be used to capture time variation in expected returns. Second, dividend yield has more explanatory power. As a result of their findings, the

authors conclude that the power of dividend yields to forecast share returns increases with the return horizon. The literature also shows that dividend-price ratios can be used to predict future returns as demonstrated by Campbell and Shiller (1989). Making use of dividend ratios, they show that the dividend-price ratio is in effect a long-term expected real return on shares, contaminated by expected changes in real dividends. The Campbell-Shiller model expresses the log dividend-price ratio as the rational expectation of the present value of future dividend growth rates and discount rates.

Subsequently, Lamont (1998) finds that the information that dividends and earnings contain is mainly about short-run variation in expected returns, while price is the only relevant variable for forecasting long-horizon returns. By suggesting that dividends contain information about future returns and that earnings contain information, Lamont makes two broad deductions: Not only do dividends contain information about future returns because they help measure the value of future dividends, but earnings also contain information, as they are positively correlated with business conditions. Making use of quarterly earnings, which had previously been regarded as containing too much noise, Lamont demonstrated that information is contained in this data which provides important information about short-term movements in expected returns.

There is evidence indicating that, during the 1990s, the ability of dividend yields to predict share returns had deteriorated considerably. During the 1990s, movements in aggregate share prices, and consequently returns, were much different from what earnings and especially dividends would seem to have implied. This is demonstrated in Campbell and Shiller (2001), who examine the use of price-earnings ratios and dividend-price ratios as forecasting variables for the share market for an extensive sample of aggregate US data between 1871

and 2000 and aggregate quarterly data for 12 countries since 1970. Further, Ang and Bekaert (2001) examine whether dividend yield, earnings yield, and the short rate can predict share returns in France, Germany, Japan, the UK, and the US. Results support the proposition that the short rate is the only robust short-run predictor of excess returns. More recently, Goyal and Welch (2003) infer that dividend ratios have no predictive power, providing evidence to support their claims from prior to the 1990s. Further support for Goyal and Welch (2003) with respect to quantifying the lack of predictive power associated with dividend ratios is provided by Manzly, Santos, and Veronesi (2004). Making use of a general equilibrium model in which both investor preferences for risk and expectations of future dividend growth are time-varying, they explain the poor predictive performance of valuation ratios throughout the 1990s. The authors find that time varying risk preferences cause the standard positive relationship between dividend yields and expected returns while, at the same time, the time-varying expected dividend growth induces a negative relationship between the two variables in equilibrium. These offsetting effects reduce the ability of the dividend yield to forecast future returns and essentially eliminate its ability to forecast dividend growth.

2.3.2. Predicting Share price Returns Using Macroeconomic Variables

Chen, et al. (1986) argues that the use of general economic state variables will influence the pricing of large share market aggregates. The authors use lagged macroeconomic variables and find that those that systematically affect share market returns include (i) the spread between long and short interest rates; (ii) expected and unexpected inflation; (iii) industrial production; and (iv) the spread between high- and low-grade bonds.

Evidence provided in the twenty-first century suggests that some macroeconomic variables contain information about futures returns over and above that of financial ratios, such as dividend yield. For example, Lettau and Ludvigson (2001) examine the role of fluctuations in

the aggregate consumption-wealth ratio for predicting share returns, where aggregate wealth is defined as the sum of human and asset wealth. With human capital being an unobservable component of aggregate wealth, the authors argue that the important predictive components of the consumption-aggregate wealth ratio may be expressed in terms of the observables consumption, asset holdings, and current labour income. Findings show that short-term deviations from the common trend in consumption, asset holdings, and labour income combine as a strong univariate predictor of both raw share returns and excess share returns. Empirical evidence is provided to show that this cay-ratio predicts US excess returns well and captures a considerably larger fraction of the variation in expected returns than the price-dividend ratio and the dividend-earnings ratio. This result transpires despite growth rates of consumption, labour income, and asset holdings having a statistically insignificant relationship with future share returns.

Developing further the work of Lettau and Ludvigson (2001) by combining the cay-ratio with future labour income growth to predict share returns, Julliard (2004) finds that fluctuations in expected future labour income are a strong predictor of both real share returns and excess returns over a Treasury bill rate. Julliard (2004) finds that around one-third of the variance of returns is predictable over a one-year horizon when expected future labour growth rates and cay are jointly used as forecasting variables. Earlier work by Cochrane (1991) relates the consumption-based asset model to a production based asset model to examine forecasts of share returns by business-cycle-related variables and the association of share returns with subsequent economic activity. Cochrane (1991) shows that an investment-capital ratio predicts US returns.

In more recent times, there have been further developments in consumption-based assets models. Lettau and Ludvigson (2005) investigate a consumption-based present value relation

that is a function of future dividend growth. Using data on aggregate consumption and measuring the dividend payments from aggregate wealth, they show that changing forecasts of dividend growth make an important contribution to fluctuations in the US share market. This contribution is significant despite the failure of the dividend-price ratio to uncover such variation. Subsequently, Santos and Veronesi (2005) extended the standard consumption-based asset pricing model. In their model, consumption is funded by labour income. The authors first show that changes in the fraction of consumption funded by labour income induce fluctuations in the expected excess return of the market portfolio and then that the ratio of labour income to consumption should forecast share returns at the aggregate level. This implication is then tested, and the results indicate that this labour income to consumption ratio is a strong predictor of US returns at long horizons.

Rangvid (2006) finds that the ratio of share prices to GDP captures a large fraction of the variation over time of future realized returns and as well as excess returns on the aggregate share market, both in-sample and out-of-sample. Rangvid (2006) uses annual data for the US over the period 1929ï 2003, as well as the international G-7 countries, and finds that the relationship between expected returns and the ratio of share prices to GDP is economically and statistically significant when measured over a long period of time. The ratio of share price to GDP is found to capture more of the variation of raw share returns than do price-earnings and price-dividend ratios and also provides additional information about excess returns.

2.4 Relationship between Inflation and Stock Price

At the process of stock valuation, it is important to consider the effects of inflation on stock prices because inflation rates vary around the world and over time. In theory, stocks should be inflation neutral, and rising inflation should have no impact on stock valuations. Fisher

(1930) noted that the nominal interest rate r can be expressed as the sum of expected real return p and expected inflation rate E (I). The model takes the form of:

$$E(R_i) = R_f + \beta_i(E(R_m) - R_f)$$

The nominal interest rate is observed in the marketplace and is usually referred as the interest rate, while the real interest rate is calculated from the observed interest rate and the forecasted inflation. It is argued that real interest rates are stable over time. Therefore, fluctuations in interest rates are caused by revision in inflationary expectations, not by movements in real interest rates. As Irving Fisher (1930) noted, nominal interest rate is decomposed into an expected real rate and an expected inflation component. Fisher argued that the expected real return is determined by real factors, and is unrelated to expected inflation. That is, real rates of return on common stocks and expected inflation rates are independent and that nominal stock returns vary in a one-to-one correspondence with expected inflation. Gultekin (1983) testing the generalized Fisher hypothesis for 26 countries for the period of 1947-1979, could not find a reliable positive relation between nominal stock returns and inflation rates.

A negative relationship between inflation and stock prices is contended in literature because an increase in the rate of inflation is accompanied by both lower expected earnings growth and higher required real returns. In the US, there is substantial empirical evidence that high inflation is associated with a high equity risk premium and declining stock prices (Hoguet, 2008). Rising inflation is apt to restrictive economic policies, which in turn increases the nominal risk-free rate and hence raises the required rate of return in valuation models. Additionally, inflation has a distorting effect on reporting earnings when historical costs are used in accounting. Reported earnings based on depreciation recorded at historical cost as an estimate of replacement costs gives an overstatement of earnings. Similarly, a first in first out

(FIFO) inventory system leads to understatement on inventory costs and an overstatement of reported earnings. So, a company operating in a high-inflation environment will be penalized if it cannot pass through inflation (Solnik and McLeavey 2009, pp. 242-244). Sharpe (1999) argued that ñA one percentage point increase in expected inflation is estimated to raise required real returns about one percentage point, which amounts to about a 20% decrease in stock prices.ò

Fama and Schwert (1977) show that the USA common stock returns are negatively correlated to the expected component of the inflation rate, and probably also to the unexpected component. Fama (1981) hypothese that the negative relations between real stock returns and inflation observed during the post-1953 period were the consequence of proxy effects. Stock returns are determined by forecasts of more relevant real variables, and negative stock return-inflation relations are induced by negative relations between inflation and real activity. Saunders and Tress (1981) indicate that Australian nominal stock returns and inflation are related in a significantly negative fashion, implying that stocks are extremely poor inflationary hedges for the investor. In addition, the study indicates a mainly unidirectional relationship between inflation and stock returns, with price level charges leading the equity index in time. Flannery and Protopapadakis (2001) indicate the CPI and the PPI are strong risk factor candidates for NYSE-AMEX-NASD. Humpe and Macmillan (2007) report that both US and Japan stock prices are negatively related to the consumer price index.

Similar to developed markets, Naka, Mukherjee and Tufte (1998) for India and Nishat and Shaheen (2004) for Pakistan indicate that inflation is the largest negative determinant of stock prices. Additionally, Nishat and Shaheen (2004) indicate inflation does Granger-causes stock price movements in Pakistan. Maghayereh (2002) and Al-Sharkas (2004) also show reliable

negative relationship between Jordanian stock prices and inflation. However, Firth (1979) for UK, Maysami et al. (2004) for Singapore, and Adam and Tweneboah (2008) for Ghana report a significant positive relationship between inflation (CPI) and stock returns. These results of provides a sharp contrast to empirical works that have found a significant negative relationship between stock returns and expected inflation.

As for Turkey case, the long-run steady state results of Muradoglu and Metin (1996) indicate that the negative relation between stock prices and inflation persists when other monetary variables are included in the model. Ozturk (2008) shows that there is no causal relationship between inflation and stock returns. Analysis of Kandir (2008) points out that inflation rate is significant for only three of the twelve portfolios, while the regression results of Tursoy et al. (2008) indicate that there is no significant pricing relationship between the stock return and inflation. Erbaykal et al. (2008) investigating the relationship under ñProxy hypothesisò developed by Fama (1981) reveal a negative long term relationship between the stock prices and inflation. The study concludes that under the light of this evidence, Proxy hypothesis developed by Fama (1981) is valid for Turkey and that the variables which are the indicators of real economic activity such as industrial production index, employment level and fixed investments are effective on stock prices through inflation. Rjoub et al. (2009) indicate the unanticipated inflation has a positive effect on the returns of the constructed portfolios. As Gultekin (1983) indicates, the relationship between stock returns and inflation is not stable over time and that there are differences among countries regardless of either developed or emerging markets.

2.5 Relationship between Money Supply and Stock Price

Monetary policy influences the general economy through a transmission mechanism. Both a restrictive and an expansionary monetary policy might have bilateral effects. In case of

expansionary monetary policy, the government creates excess liquidity by engaging in open market operation, which results in an increase in bond price and lower interest rates. The lower interest rate would lead to the lower required rate of return and thus, the higher stock price. Additionally, an increase in monetary growth indicates excess liquidity available for buying stocks, eventually resulting in higher stock prices due to an increase of demand to both common stocks and the real good markets. However, monetary growth might result in higher inflation and hence, higher nominal interest rate according to Fisher equation. The higher interest rate leads to the higher required rate of return, which will result in the lower stock price.

In case of a restrictive monetary policy, to reduce the growth rate of money supply would result in a decrease in the supply of funds for working capital and expansion for all business. Additionally, a restrictive monetary policy would raise market interest rate and hence firmôs cost of capital. Furthermore, an increase in interest rate would make it more expensive for individuals to finance mortgage payments and the purchase of other durable goods. However, a decrease in money supply might result in the lower inflation, hence the lower required rate of return via the lower nominal interest rate. Thus, this would lead to the higher stock prices. In literature, the initial studies generally imply that changes in the growth rate of the money supply could serve as a leading indicator of stock price changes, while subsequent studies questioned these findings (Reilly and Brown 2006, p. 362).

Beltratia and Morana (2006) indicate a twofold linkage between stock market (S&P 500) and macroeconomic volatility. They suggest that discrete changes in monetary policy, affecting the volatilities of interest rates and money growth, seem to be the best candidate to account for breaks in the volatility of stock returns and therefore to explain the level and discrete jumps in volatility. Furthermore, while stock market volatility also affects macroeconomic

volatility, the causality direction is strong from macroeconomic to stock market volatility. Flannery and Protopapadakis (2001) studying NYSE-AMEX-NASD point out that money supply is a strong risk factor candidate. A monetary aggregate (generally M1) affects both returns and conditional volatility. Fama (1981), Geske and Roll (1983) point out that stock returns are negatively related to money supply. Errunza and Hogan (1998) indicate money supply volatility does Granger cause return volatility for German and France but not for Italy, Netherlands, UK, Switzerland and Belgium. Humpe and Macmillan (2007) report that Japan stock prices are influenced negatively by the money supply, while there is an insignificant (although positive) relationship between US stock prices and the money supply.

The result of studies for emerging markets are contradictory. For Amman Stock Exchange, Maghayereh (2002) indicates the coefficient of money supply (M1) is negative but not statistically significant at the 10 % level, whereas Al-Sharkas (2004) shows that money supply (M2) has a positive effect on stock returns. Maysami et al. (2004) reveal the positive correlation between changes in money supply (M2) and Singapore's stock returns. Abugri (2008) reports that the responses of returns to money supply are negative and significant in Brazil and Argentina, while the responses of returns in Mexico and Chile to money supply appear to be insignificant in explaining the movement of returns. Nishat and Shaheen (2004) indicate that Karachi Stock Exchange Index and money supply (M1) are cointegrated and two long-term equilibrium relationships exist between these variables. Additionally, the results of the study indicate money supply does Granger-causes stock price movements.

In a study carried out in Turkey, the empirical results of Muradoglu and Metin (1996) indicate that money supply is positively related to stock returns in short run dynamic model. Yildirtan (2007) reveals that an increase in money multiplier positively and strongly affects ISE 100 Index. However, Karamustafa and Kucukkale (2003), Kandir (2008), and Tursoy et

al. (2008) indicate that there is no significant pricing relationship between the stock return and money supply. Additionally, the results of Muradoglu et al. (2001) display no cointegrate relationship between stock prices and any of monetary variables or groups of variables of concern for whole research period (1988-1995). Furthermore, Karamustafa and Kucukkale (2003) point out the stock price is neither the result variable nor the cause variable of money supply, while the results of Ozturk (2008) indicate that money supply does not Granger cause the stock returns but the stock returns do Granger causes Central Bank Money. As the results of studies are conflicting, the actual relationship between money supply and stock prices is an empirical question and the effect varies over countries and time.

2.6 Relationship between Exchange Rate and Stock Price

There is no theoretical consensus neither on the existence of relationship between stock prices and exchange rates nor on the direction of the relationship. However, in the literature, two approaches have been asserted to establish a relationship between exchange rate and stock prices: The goods market model2 and the portfolio balance model3.

First approach is referred to Dornbusch and Fisher (1980) focusing on the association between the current account and the exchange rate. Dornbusch and Fisher (1980) developed a model of exchange rate determination that integrates the roles of relative prices, expectations, and the assets markets, and emphasis the relationship between the behaviour of the exchange rate and the current account. Dornbusch and Fisher (1980) argue that there is an association between the current account and the behaviour of the exchange rate. It is assumed that the exchange rate is determined largely by a countryôs current account or trade balance performance. These models posit that changes in exchange rates affect international competitiveness and trade balance, thereby influencing real economic variables such as real income and output. That is, goods market model suggests that changes in exchange rates

affect the competitiveness of a firm, which in turn influence the firmôs earnings or its cost of funds and hence its stock price. On a macro level, then, the impact of exchange rate fluctuations on stock market would depend on both the degree of openness of domestic economy and the degree of the trade imbalance. Thus, goods market models represent a positive relationship between stock prices and exchanges rates with direction of causation running from exchange rates to stock prices. The conclusion of a positive relationship stems from the assumption of using direct exchange rate quotations
(Stavarek, 2004).

On the other hand, portfolio balance models put much more stress on the role of capital account transactions (Tahir and Ghani, 2004). Portfolio balance model assumes a negative relationship between stock prices and exchange rates. A rise in domestic stocks prices would attract capital flows, which increase the demand for domestic currency and cause exchange rate to appreciate. A rising stock market leads to the appreciation of domestic currency through direct and indirect channels. A rise in prices encourages investors to buy more domestic assets simultaneously selling foreign assets to obtain domestic currency indispensable for buying new domestic stocks. The described shifts in demand and supply of currencies cause domestic currency appreciation. The indirect channel grounds in the following causality chain. An increase in domestic assets prices results in growth of wealth that leads investors to increase their demand for money, which in turn raises domestic interest rates. Higher interest rates attract foreign capital and initiate an increase in foreign demand for domestic currency and its subsequent appreciation (Stavarek, 2004).

Actually, changes in exchange rate affect exporter and importer firms conversely. In case of a depreciation of the domestic currency, imported products suddenly become more expensive

in terms of the home currency. If this price increase can be passed through to customers, earnings will not suffer from the currency adjustment. But this is often not the case. First, the price increase will tend to reduce demand for these imported products. Second, locally produced goods will become more attractive than imported goods, and some substitution will take place (Solnik and McLeavey 2009, p. 244). Therefore, the shares of importer firms will decrease, whereas the shares of exporter become more valuable.

Stavarek (2004) reports that neither the intensity nor direction of causal relationship is the same in the developed economies and the new EU-member countries. Obben et al. (2006) imply that there is bidirectional causality in the foreign exchange and New Zealand stock markets both in the short run and in the long run. As to emerging markets, the results of Abugri (2008) reveal that the response of Brazilian and Mexican stock returns to an exchange rate shock are negative and significant, while neither in Argentina nor Chile stock returns respond significantly to exchange rates. Adam and Tweneboah (2008) show that there is negative relationship between Ghana stock market and exchange rate, while the results of Maysami et al. (2004) for Singapore support the hypothesis of a positive relationship between exchange rate and stock returns.

Tabak (2006) indicates that there is no long-run relationship, but there is linear Granger causality from stock prices to exchange rates, in line with the portfolio approach Brazilian stock prices to exchange rates with a negative correlation. Furthermore, the study shows evidence of nonlinear Granger causality from exchange rates to stock prices. The study of Horobet and Ilie (2007) offer contradictory results for Romania. While the application of the Engle-Granger methodology indicates no cointegration between the exchange rates and the stock prices, the use of the Johansen-Juselius procedure suggests the presence of

cointegration between the two stock market indices and the exchange rates, either nominal bilateral, nominal effective or real effective rates.

As for Turkey case, the empirical results of Muradoglu and Metin (1996) indicate stock returns are expected to increase as exchange rates increase. The findings of the Yucel and Kurt (2003) reveal that export companiesô mean exposure coefficient is higher than non-export companiesô mean exposure, indicating that exposure pattern of export and non-export companies are different. Furthermore a depreciation of domestic currency (TL) leads to an increase in the value of export firms. The results of Kasman (2003) provide evidences that a log-run stable relationship between stock indices and exchange rates ($) exists. Furthermore, the study reports inconclusive evidence where causality relationship exists for both ways between the composite index and exchange rates, financial sector index and exchange rates, and service sector index and exchange rate. Additionally, causality relationship exists from the exchange rate to the industry index in a unique direction. Karamustafa and Kucukkale (2003) point out that the relations between stock returns and exchange rate is uncertain, indicating that the ISE is neither the result variable nor the cause variable of exchange rate variable. Likewise, the findings of Ozturk (2008) point out there are no causal relationship between stock returns and exchange rate. The empirical results of Aydemir and Demirhan (2009) indicate that there is bidirectional causal relationship between exchange rate and all stock market indices. While the negative causality exists from the ISE-100, services, financials and industrials indices to exchange rate, there is a positive causal relationship from technology indices to exchange rate.

On the other hand, negative causal relationship from exchange rate to all stock market indices is showed. Yildirtan (2007) shows that there is no relation between the deviations of real exchange rate from trend, average deviation of real exchange rate variables and the ISE-100.

The real exchange rate also point out an extremely weak, negative relation. Analysis of Kandir (2008) points out that exchange rate seems to affect all of the portfolio returns, while the regression results of Tursoy et al. (2008) indicate that there is no significant pricing relation between the stock return and exchange rate. Likewise money supply and inflation, the relationship between stock returns and exchange rate is not stable over time and that there are differences among countries regardless of either developed or emerging markets.

2.7 Relationship between Real Economy and Stock Price

The industrial production index is typically used as a proxy for the level of real economic activity. It is theoretically shown that the industrial production increases during economic expansion and decreases during a recession, and thus a change in industrial production would signal a change in economy. The productive capacity of an economy indeed rises during economic growth, which in turn contributes to the ability of firms to generate cash flows. That is why the industrial production would be expected to act beneficially on expected future cash flows, hence a positive relationship between real economy and stock prices exist. Furthermore, the volatility of stock returns increases during economic contractions and decreases during recoveries. Fama (1981) indicates that the growth rate of industrial production had a strong contemporaneous relation with stock returns. Many studies show that large fractions (often more than 50%) of annual stock-return variances can be traced to forecasts of variables such as real GNP, industrial production, and investment that are important determinants of the cash flows to firms (Fama, 1990).

Foresti (2006) indicates that stock market prices can be used in order to predict growth, but the opposite is not true. Fama (1990) reports that a large fraction of the variation of stock returns (the NYSE) can be explained primarily by time-varying expected returns and

forecasts of real activity. Nardari and Scruggs (2005) report that stock market (CRSP NYSE) volatility changes over time primarily because of changes in the volatility of ñnews about future returnsò. Errunza and Hogan (1998) show that industrial growth rate volatility does Granger cause return volatility for Italy and the Netherlands but not for Germany, France, UK, Switzerland and Belgium. The findings of Flannery and Protopapadakis (2001) indicate that three real factor variables (Balance of Trade, Employment/Unemployment, and Housing Starts) are strong risk factor candidates, and these real factor candidates affect only the returnsô conditional volatility for NYSE-AMEX-NASD. Furthermore, it is reported that remarkably, two popular measures of aggregate economic activity (Real GNP and Industrial Production) do not appear as risk factors, as well as that Real GNP announcements are associated with lower rather than higher return volatility. Humpe and Macmillan (2007) indicate both US and Japan stock prices are positively related to industrial production.

As to emerging markets, Nishat and Shaheen (2004) infer that industrial production is the largest positive determinant of stock prices in Pakistan, as well as bilateral Granger cause between industrial production and stock prices. Naka, Mukherjee and Tufte (1998) indicate that industrial production is the largest positive determinant of Indian stock prices. Additionally, domestic output growth is its predominant driving force to Indian stock market performance. Maghayereh (2002) and Al-Sharkas (2004) for Jordan and Maysami et al. (2004) for Singapore indicate that industrial production is positively and significantly related to the stock returns. Abugri (2008) reports that the response of stock returns to industrial production are positive and significant in Brazil and Chile, while industrial productions do not appear to exert a significant impact on the expected stock returns in Argentina and Mexico. Adam and Tweneboah (2008) indicate the positive relationship between foreign direct investments and Ghana stock index.

For Turkey case, Karamustafa and Kucukkale (2003) show that the relation between stock returns and industrial production is positive and the relation between stock returns and trade balance is negative. Furthermore, the findings of the study indicate that the ISE is neither the result variable nor the cause variable of any macroeconomic variable. The results of Yildirtan (2007) evidence that there is a linear relation between imports, exports and the stock returns. According to the results of Ozturk (2008), the stock returns do Granger causes foreign investor transactions, current account deficit/GNP and industrial production index. Kandir (2008) and Tursoy et al. (2008) indicate that industrial production does not appear to have any significant affect on stock returns.

According to the result of Kaplan (2008), the stock prices have a positive and statistically significant long-run effect on out level implying that stock prices lead real economic activity in Turkey. Furthermore, the direction of the causality between variables is only from stock market price to real economic activity. Erbaykal et al. (2008) reveal a positive and statistically significant long term relationship between stock prices and independent variables which are industrial price index, employment level and fixed investments under ñProxy hypothesisò developed by Fama (1981). The study concludes that under the light of this evidence, Proxy hypothesis developed by Fama (1981) is valid for Turkey and that the variables which are the indicators of real economic activity such as industrial production index, employment level and fixed investments are effective on stock prices via inflation.

2.8 Summary

Macroeconomic factors are theoretically deemed as the sources of stock market volatility. Therefore, these variables are regarded as the leading indicator of stock returns. Some authors ascertain that the volatility of the return on the market portfolio is inversely related to the

ratio of expected profits to expected revenues for the economy. To other authors, high uncertainty regarding future returns is mainly associated with recessions. However, some authors also indicate stock prices as leading indicators, reporting that the turn in stock prices takes place prior to the turn in business activity. In literature, the relationship between economic variables and stock returns are well-documented, especially for developed markets. Even though significant relationships between stock prices and economic variables are commonly found out both in developed and in emerging markets, there is yet no consensus regarding neither the signs of relationship nor the direction of causality.

As shown in the literature on the subject, there is no doubt that stock prices are closely connected to real economic activity through a number of different channels. However, the literature provides conflicting results on the causal direction of the underlying relationship; i.e. empirical literature provides mixed results on the relationship between stock markets and real economic activity. Several empirical studies in the literature suggest that there is a strong relationship between stock market performance and the real economic activity. Some other studies, however, provide evidence that stock market performance is not correlated with real economic activity and arguing that price movements cannot be explained by fundamental factors implying that the link between stock prices and real economic activity has broke down.

It is from these conflicting and mixed results that prompted the researcher to conduct this study and in order to determine the macroeconomic causes of the Nairobi Stock Exchange (NSE) stock Index observed in a specific period, the relationship between stock returns and macroeconomic variables such as inflation, money supply, real economy, and exchange rate are tested in this study.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

The chapter outlines the overall methodology used in the study. This includes the research design, population of the study, sample size, sample frame, data collection methods, research procedures and data analysis and presentation.

3.2 Research Design

Research design is the plan and structure of investigation so conceived as to achieve the objectives of the study. This study was conducted through a descriptive survey method. This is because; the study involved describing the relationship between Share price movement and GDP of the country.

3.3 Population

The population comprised of 56 companies listed in the NSE as at December 31, 2010. These were classified according to five main segments as follows; Agriculture, Commercial and Services, Finance and Investments, Industrial and Allied and, Alternative Markets Investment segment.

3.4 Sample Design

The population served as the sample for this study.

3.5 Data collection

The study used secondary data from the Nairobi Stock Exchange (NSE) databases on the NSE Index. Annual real Gross Domestic Product (GDP) data was also collected from Central

Bank of Kenya (CBK). The NSE data and GDP data was for the period between the first quarter of 2000 and the fourth quarter of 2010.

3.6 Data Analysis

In this research project, the relationship between stock market performance and economic growth was tested.

In the study, the variables to be measured were Capital market variables ï Nairobi Stock Exchange Index and Economic Growth variables ï Gross Domestic Rates. Economic Growth is the independent variable and Stock Market index performance (NSE Index) is the dependent variable picked from the Nairobi Stock Exchange data.

The empirical analysis employed quarterly data for stock market indices and GDP between the first quarter of 2000 and the fourth quarter of 2010. The data was analyzed with the help of Statistical Package for Social Sciences (SPSS).

All data was taken from the Central Bank of Kenya (CBK) and Nairobi Stock Exchange (NSE) electronic data delivery systems.

To test whether the links between stock market performance and real economic activity holds in Kenya, a multiple regression model was conducted to examine the relationship between Gross Domestic Product (GDP) and Stock price movement. It was often necessary to examine the relationship between two or more financial variables.

In the empirical analysis, the following model which shows the relationship between real quarterly stock prices and real quarterly GDP was estimated.

The model specification was as follows:

$Y=ƀ0+ƀ1X1+ú$

Where:

Y = Market index, for Kenya, it is gauged by the NSE Index

ƀ0 = Y intercept

ƀ1 = a vector of coefficients on the variables in X

X = Real growth rate measured by the real GDP per capita - A set of variables for a variety of factors that may be associated with economic growth, and includes Growth rate of capital, Growth rate of labour, Trade openness growth among others.

ú = The Error term (To capture other variables)

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSIONS

4.1 Introduction

This chapter presents the analysis of data obtained on the effect of stock market performance and real GDP. Real GDP was calculated to the base year of 2001 as used by CBK reports. The two dataset were obtained from CBK monthly and annual reports (Table 4.1). This relationship was investigated for 11 year period (2000 to 2011). Linear regression analysis was used to investigate the relationship between the two variables. The regression analysis was of the form:

$$\textbf{Stock Index} = \beta_0 + \beta_1 GDP + \varepsilon$$

4.2 Descriptive Statistics

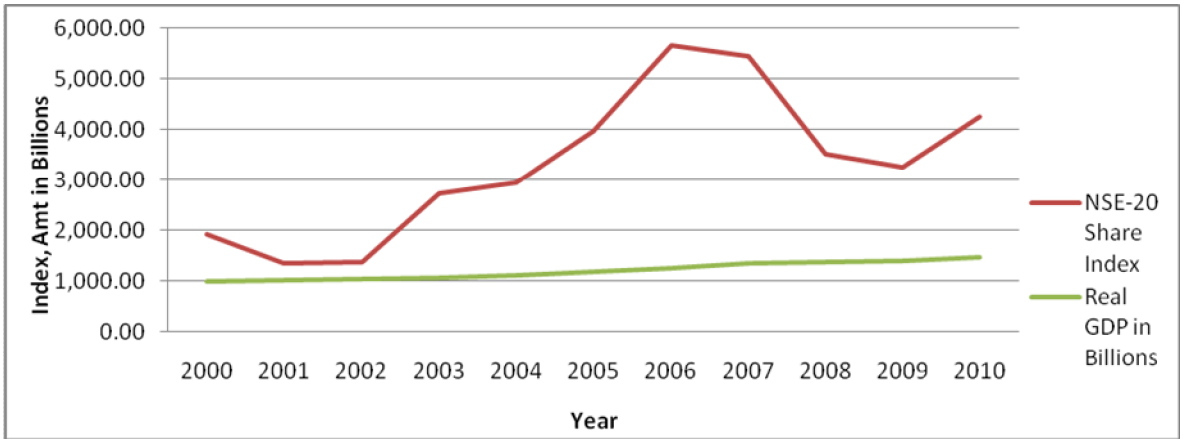
Table 4.1: NSE-20 Share Index and Real GDP Performance

Year	NSE-20 Share Index	Real GDP in Billions
2000	1,913.40	982.855
2001	1,355.10	1,020.02
2002	1,362.90	1,025.58
2003	2,737.60	1,055.66
2004	2,945.58	1,109.54
2005	3,973.04	1,175.13
2006	5,645.65	1,249.46
2007	5,444.83	1,336.87
2008	3,521.18	1,357.64
2009	3,247.44	1,392.83
2010	4,257.6917	1,470.52
Mean	**3,309.49**	**1,197.83**
STDEV	**1,463.65**	**172.03**
Maximum	**5,645.65**	**1,470.52**
Minimum	**1,355.10**	**982.86**

Table 4.1 illustrates the data on annual NSE-20 share index and real GDP. The table shows that while GDP was on constant increase over the period of time, share price movement (as

indicated by the NSE-20 share index) was quite erratic. This can also be indicated by a standard deviation value of 1,463.65 which was way above the minimum value of 1,355.10. The standard deviation value of GDP was 172.03 compared with the minimum value of 982.86 billion. The average NSE20 share index value was 3,309.49 and real GDP was 1,197.83 billion. It was also established that while the highest real GDP performance was in 2010, stock market performed well in 2006 (index = 5,645.65) when the market was bullish before ónose divingô in 2009 (3,247.44). This is illustrated by Figure 4.1 below:

Figure 4.1: NSE-20 Share Index and Real GDP Performance



4.3 Regression Analysis

Regression analysis was conducted to determine the effect of GDP on stock market performance. Regression tests were done which included modelôs goodness of fit (correlation, coefficient of determination and Durbin Watson tests) and Analysis of Variance (ANOVA).

Table 4.2: Model Goodness of Fit

R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
0.707a	0.499	0.444	1,091.76	0.858

a. Predictors: (Constant), Real GDP in Millions

b. Dependent Variable: NSE-20 Share Index

Table 4.2 presents the regression model goodness of fit statistics to determine whether stock market performance has a linear dependence on Real GDP performance. The study established a correlation value of 0.707. This depicts a very good linear dependence between the stock market performance and real GDP growth.

An R-square value of 0.499 was established in the first model and adjusted to 0.444. The coefficient of determination depicts that real GDP performance brings about 44.4% variations in stock performance while 65.6% are brought about by other variables/macroeconomic aggregates.

Durbin Watson test was conducted to determine if there was any autocorrelation within the modelôs residuals. Durbin Watson test has a critical value of 2.0 and minimum and maximum values of 0 and 4 depicting positive and negative autocorrelation respectively. Table 4.2 shows that the Durbin Watson testôs value was 0.858 in the first model. This depict that there is autocorrelation in the data, thus, a key assumption of linear regression is violated. The study thus tested autocorrelation using Partial Autocorrelation Function (PACF) of SPSS.

4.4. Test for Autocorrelation

Figure 4.2: Partial Autocorrelation Function – NSE-20 Share Performance

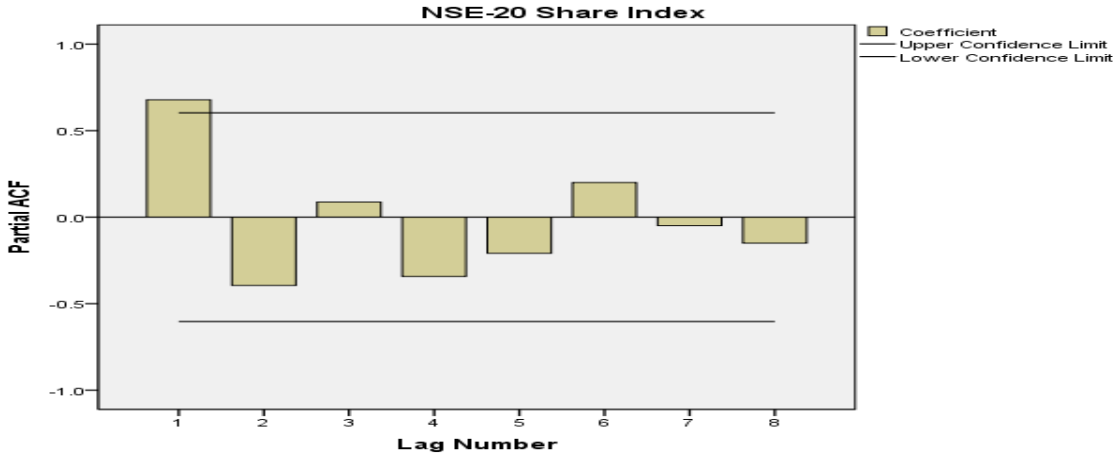
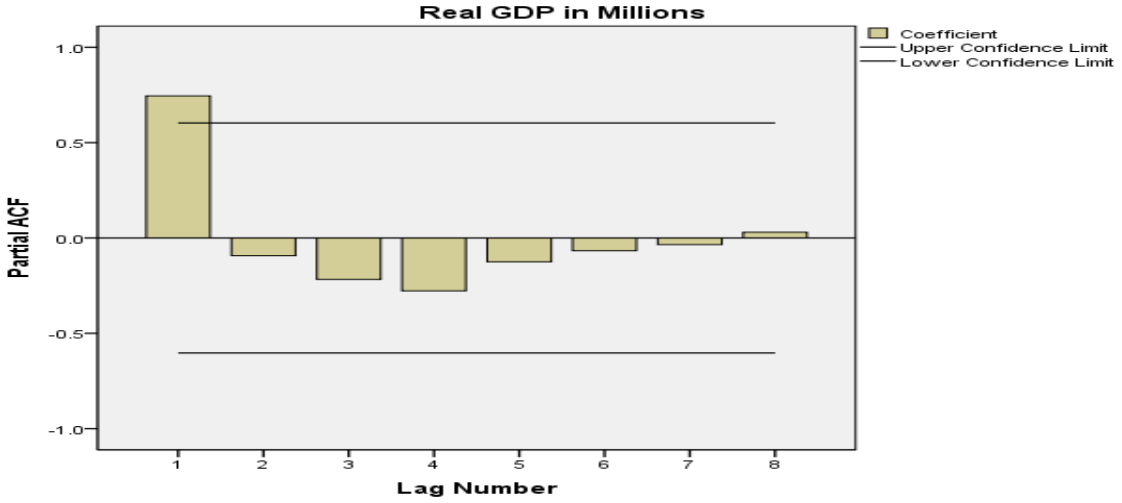


Figure 4.2 above illustrates that NSE-20 share index performance for the 11 year period is autocoreelated, that is, is non-stationary (non-random variable). This is shown by the fact that one of the vertical bars (first lag) is higher than the horizontal line(s) that indicate the cut-off points for statistical significance. This hints at a first order differencing to take care of the non-stationarity. Figure 4.3 presenting PACF of real GDP shows that, the variable is autocorrelated and first order differencing could help make it a random variable (non-autocorrelated variable).

Figure 4.3: Partial Autocorrelation Function – Real GDP



4.5 Remedy to Autocorrelation

The data was again tested for non-stationarity after first order differencing using PACF test and results presented in Figure 4.4 and 4.4.

Figure 4.4: PACF – NSE-20 Share after First-Order Differencing

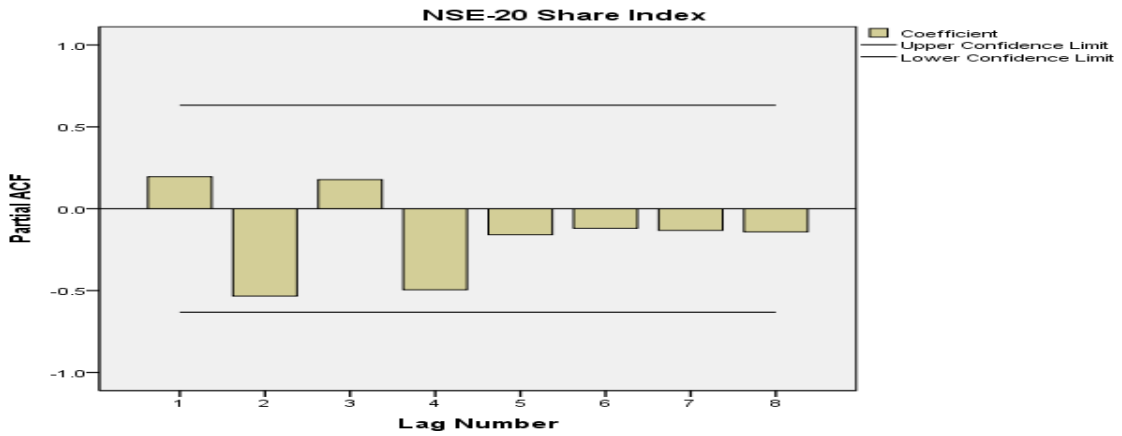
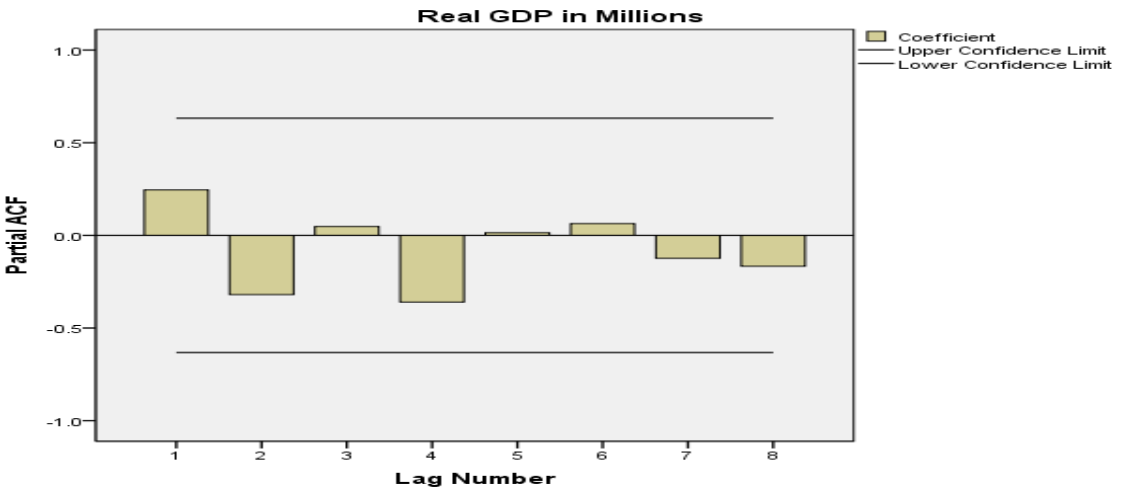


Figure 4.4 show that when an attempt to remove non-stationarity is made by using first order differencing, none of PACF coefficients is above the critical limit. This indicates the absence autocorrelation and indicates that first-order differencing can be used to remove autocorrelation. The same is true of Real GDP variable (Figure 4.5).

Figure 4.5: PACF – Real GDP after First-Order Differencing



After removal of the autocorrelation, regression was run again and model goodness of fit produced.

Table 4.3: Model Goodness of Fit – After Difference

R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
0.460[a]	0.212	0.113	1,011.543	1.493

Table 4.3 presents the regression model goodness of fit statistics to determine whether linear regression can be used determine the relationship between Real GDP and Stock Market. The study established a correlation value of 0.460 depicting a moderate linear dependence between the stock market performance and real GDP growth with determination coefficient of 0.212. This indicates that GDP performance brings about 21.2% of the changes in stock market. Table 4.2 shows that the Durbin Watson testôs value was 1.493 in the first model. This depict that there is no autocorrelation in the data. With removal of Autocorrelation ANOVA was conducted.

Table 4.4: Analysis of Variance (ANOVA)

	Sum of Squares	df	Mean Square	F	Sig.
Regression	2199093.599	1	2199093.599	2.149	.181a
Residual	8185747.250	8	1023218.406		
Total	10384840.849	9			

a. Predictors: (Constant), Real GDP in Millions

b. Dependent Variable: NSE-20 Share Index

Table 4.4 shows that the ANOVA significance was 0.181. This depicts that there is no statistical significant equality in the means of real GDP and NSE-20 share index.

Table 4.5: Regression Model Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-654.963	685.839		-.955	.368
Real GDP in Millions	.018	.012	.460	1.466	.181

From the data in the above table 4.5, the established regression equation was:

Stock Market = -654.963 + 0.018 Real GDP **p = 0.181** **(1)**

From the above regression model, when real GDP value is zero or without consideration of the GDP, stock market would be -654.963. It is also established that a unit increase in real GDP, would result in a 0.018 increase in stock market performance as measured by NSE-20 share index. This depicts that while real GDP would increase stock market performance, the relationship is insignificant.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter provides discussion on the research objective from data processed in the previous chapter. This study sought to establish the relationship between real GDP and the NSE stock performance. From the discussions, conclusions and recommendations on the subject matter are made.

5.2 Summary of the Findings

The findings indicate for the 11 year period, while GDP has been on gradual increase, stock market performance has been erratic with a non unidirectional increase. Thus, stock market performance had a high variation (1,463.65) than Real GDP (172.03 billlion). While the highest performance of the GDP was in 2010, stock market performed better in 2006. The study also shows that while stock market performs poorly during recession 2008/2009, real GDP increased within the same period though marginally.

Being macro-economic aggregates, it was established that the data of both stock market are non-random and autocorrelated. That is, for both cases, the performances are influenced by the previous yearsô performance and not instantaneous. It was established that owing to autocorrelation, GDP performance would influence 44.4% of the variations in stock market. A correlation coefficient value of 0.707 was established depicting a very good linear relationship between GDP and stock market performance. Nishat and Shaheen (2004) established that GDP performance, as influenced by industrial production, positively determine stock prices.

5.3 Conclusion

It is concluded that GDP would lead to increase in stock market performance. Thus, real GDP which is determined by nationôs output determined by prices either at constant or market prices would lead to more money which can be dispensed on stock purchases.

5.4 Recommendations

The study recommends that investors should look at the GDP performance to determine when to invest by buying or selling shares in the stock market. That is, buy shares when GDP performs poorly and sell when the GDP performs well. This would help them get value for their investments in stock market.

5.5 Limitations of the Study

There could be other variables, besides GDP that affects stock performance or that would moderate the relationship between the two. However, since these variables could not be statistically isolated, they would have affected the relationship. The study could be limited by the reliability of the data. However, since the information was obtained from the CBK and confirmed by the Kenya National Bureau of statistics, it is assumed that the data is reliable.

5.5 Area for Further Studies

The study suggests that further studies be carried out on other macro-economic aggregates like per capita GDP, national savings, export or import value, inflation e.t.c. The study can also be carried out using other models.

REFERENCES

Abugri, B. A. (2008), ñEmpirical relationship between macroeconomic volatility and stock returns: Evidence from Latin American marketsò, *International Review of Financial Analysis,* Vol.17, Issue 2, pp. 396-410.

Adajaski, C.K.D. and N.B. Biekpe, (2005) ñStock market development and economic growth: The case of selected African countriesò. Afr. Dev. Rev., 18: 144-161. http://www3.interscience.wiley.com/journal/11856\5413/abstract

Adam, A. M. and Tweneboah, G. (2008), ñMacroeconomic Factors and Stock Market Movement: Evidence from Ghanaò.

Akinsulire, O. (2006). ñFinancial Managementò, 4 th ed., Lagos, Zinol Nigeria Limited.

Al-Sharkas, A. (2004), ñThe Dynamic Relationship Between Macroeconomic Factors and the Jordanian stock marketò, *International Journal of Applied Econometrics and Quantitative Studies,* Vol.1-1, pp. 97-114

Ang, A., and Bekaert, G., (2001) Stock Return Predictability: Is it there? NBER WP W8207.

Aydemir, O. and Demirhan, E. (2009) ñThe Relationship between Stock Prices and Exchange Rates Evidence from Turkeyò. International *Research Journal of Finance and Economics,* Issue 23, pp. 207-215

Beltratia, A. and Morana, C. (2006) ñBreaks and Persistency: Macroeconomic Causes of Stock Market Volatilityò, *Journal of Econometrics,* Vol. 131, Issue 1-2, pp. 151ï 177

Bodie, Z., Kane, A. and Marcus, J. A. (1999). *Investment*, 4th ed., USA, McGraw Hill Companies Inc.

Campbell, J. Y., and Shiller, R. J., 1989. The dividend-price ratio and expectations of future dividends and discount factors. The Review of Financial Studies, 1, 195-228.

Campbell, J. Y., and Shiller, R. J., 2001. Valuation Ratios and the Long-Run Stock Market Outlook: An Update. NBER WP 8221

Carstrom, C. T. (2002). ñStock Prices and Output Growth: An Examination of the credit channel.ò Retrieved from www.moneybiz.co.za on 5/27/2008.[8]

Chen, N. F., Roll, R., and Ross, S. A., 1986. Economic Forces and the Stock Market. The Journal of Business, 59, 383-403.

Cheung, Y. and L. Ng, 1998). International evidence on the stock market and aggregate economic activity. J. Emp. Finance, 5: 281-96. *http://www.elsevier.com/wps/find/journaldescripti on. cws_home /523106/* description

Cochrane, J. H., 1991. Production-based asset pricing and the link between stock returns and economic fluctuations. Journal of Finance, 46, 207-234.

Cochrane, J. H., 1992. Explaining the variance of price-dividend ratios. The Review of Financial Studies, 5, 243-280.

Corrado, C. J. and Jordan, B. D (2002). *The Fundamentals of Investments Valuation and Management* . 2nd ed. USA, McGraw-Hill Companies Inc.

DeFusco, Richard A., Dennis W. McLeavey, Jerald E. Pinto, and David E. Runkle (2007), ñQuantitative Investment Analysisò, *John Wiley & Sons,* Inc.

De Long, J.B., Shleifer, A., Summers, L.H., Waldmann, R.J., 1989. The size and incidence of the losses from noise trading. Journal of Finance 44, 681-696.

De Long, J.B., Shleifer, A., Summers, L.H., Waldmann, R.J., 1990. Noise trader risk in financial markets. Journal of Political Economy 98, 703-738.

Dornbusch, R. And Fischer, S. (1980),òExchange Rates and the Current Accountò, *The American Economic Review*, Vol. 70, No. 5, pp. 960-971

Edward Odundo, (2004) ñOverview and Evolution of Investment Instruments In Sub-Saharan Africa With Special Reference To Kenyaò (Nairobi, Retirement Benefits Authority).

Enrico C. Perotti & Pieter van Oijen. (1999). "Privatization, Political Risk and Stock Market Development in Emerging Economies," Tinbergen Institute Discussion Papers.

Erbaykal, E., Okuyan, H. A., Kadioglu, O. Real (2008), ñMacro Economic Variables and Stock Prices: Test of Proxy Hypothesis In Turkeyò, *Yeditepe International Research Conference on Business Strategies, Istanbul, Turkey, June 13-15, 2008*

Errunza, V. and Hogan, K. (1998), ñMacroeconomic determinants of European stock market volatilityò, *European Financial Management*, Vol. 4, No. 3, pp. 361ï 377.

Fama, E. F. (1981), ñStock Returns, Real Activity, Inflation, and Moneyò, The American Economic Review, Vol. 71, No. 4, pp. 545-565 [Online] Available at: http://www.jstor.org/stable/1806180 [Accessed 28 June 2009].

Fama, E. F. and Schwert, G. W. (1977), ñAsset Returns and Inflationò, Journal of Financial Economics, Vol. 5, Issue 2, pp. 115-146 [Online] Available at: http://www.sciencedirect.com/science/article/B6VBX-45KNKK3B/2/ bfff32caf83a7913c4c9aca110a44118 [Accessed 28 June 2009].

Fama, E. F., and French, K. R. (1988), ñDividend yields and expected stock returnsò. Journal of Financial Economics, 22, 3-27.

Fama, E. (1990) ñStock returns, expected returns and real activityò. J. Finance, XLV: 1089-1108. http://www.afajof.org/journal/browse.asp

Ferson, W. and C. Harvey, 1993. ñThe risk and predictability of international equity returnsò Rev. Fin. Stud., 6: 527-66. http://econpapers.repec.org/article/ouprfinst/default 6.htm

Firth, M. (1979), ñThe Relationship Between Stock Market Returns and Rates of Inflationò, *The Journal of Finance*, Vol. 34, No. 3, pp. 743-749

Fisher, I. (1930), ñThe Theory of Interestò Available at: http://www.econlib.org/library/YPDBooks/Fisher/fshToI.html [Accessed 28 June

Flannery, M. J. and Protopapadakis, A. A. (2001), ñMacroeconomic Factors Do Influence Aggregate Stock Returnsò Available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=314261 [Accessed 12 February 2009].

Foresti, P. (2006), ñTesting for Granger causality between stock prices and economic growthò, MPRA Paper No. 2962.

Goyal, A., and Welch, I., 2003. ñPredicting the Equity Premium with Dividend Ratiosò. *Management Science*, 49, 639-654.

Geske, R. and R. Roll (1982) ñThe Fiscal and Monetary linkages between stock returns and inflationò Journal of finance, Vol. 38, No.1 pp. 1-33

Gultekin, N. (*1983*), ñ*Stock* Market *Returns* and Inflation: Evidence from Other Countriesò. Journal of Finance, 38(3): 49-65.

Hoguet, G. R. (2008), ñInflation and Stock Price, State Street Global Advisorsò http://www.ssga.com/library/esps/Inflation_and_Stock_Prices_George_Hoguet_8.28ev3CCRI1221060800.pdf [Accessed 17 July 2009].

Horobet, A and Ilie, L. (2007), ñOn The Dynamic Link Between Stock Prices And Exchange Rates: Evidence From Romaniaò.

Humpe, A. and Macmillan, P. (2007), ñCan macroeconomic variables explain long term stock market movements? A comparison of the US and Japanò, Centre for Dynamic Macroeconomic Analysis Working Paper Series, [Online] Available at: http://www.st andrews.ac.uk/economics/CDMA/papers/wp0720.pdf [Accessed 9 July 2009].

Jefferis, K. and C. Okeahalam, 2000. ñThe impact of economic fundamentals on stock markets in Southern Africaò. Dev. South. Afr., 17: 23-51. http://www.informaworld.com/smpp/title~db=all~content=g713413759

Julliard, C. (2004). ñLabor income risk and asset returnsò. Manuscript, Princeton University.

Kandir, S. Y. (2008), ñMacroeconomic Variables, Firm Characteristics and Stock Returns: Evidence from Turkeyò, *International Research Journal of Finance and Economics*, Issue 16.

Kaplan, M. (2008), ñThe Impact of Stock Market on Real Activity: Evidence Turkeyò, *Journal of Applied Sciences*, 8 (2), pp 374-378.

Karamustafa, O. and Kucukkale, Y. (2003), ñLong Run Relationships between Stock Market Returns and Macroeconomic Performance: Evidence from Turkeyò.

Kasman, S., (2003), ñThe Relationship Between Exchange Rates and Stock Prices: A Causality Analysisò, *Dokuz Eylül University Journal of Social Sciences Institute*, Vol. 5, No. 2, pp. 70-79.

Kolari, J. (2001). ñStock Prices and Inflation.ò *Journal of Financial Research*

Lamont, O., 1998. Earnings and Expected Returns. Journal of Finance, 53, 1563-1587.

Lettau, M., and Ludvigson, S., 2001. ñConsumption, aggregate wealth and expected stock returnsò. Journal of Finance, 56, 815-849.

Lettau, M., and Ludvigson, S., 2005. ñExpected returns and expected dividend growthò. Journal of Financial Economics, 76, 583-626.

Liu, X. and P. Sinclair, 2008. ñDoes the linkage between stock market performance and economic growth vary across Greater China?ò Applied Econ. Let., 15: 505-508. http://www.tandf.co.uk/journals/offer/raec-so3.asp

Maghayereh, A. (2002), ñCausal Relations among Stock Prices and Macroeconomic Variables in the Small, Open Economy of Jordanò.

Manzly, L., Santos, T., and Veronesi, P., 2004. ñUnderstanding predictabilityò. Journal of Political Economy, 112, 1-38.

Mauro, P., 2000. ñStock returns and output growth in emerging and advanced economiesò. http://www.imf.org/external/pubs/ft/wp/2000/wp00 89.pdf

Mauro, P., 2003. ñStock market returns and output growth in emerging and advanced economiesò. J. Dev. Econ., 71: 129-153. http://www.elsevier.com/wps/find/journaldescripti on. Cws _home /505546/ description #description

Mayo. H. B. (2000). *"Investment: An Introduction"*, 6th ed., USA, Harcourt Inc.

Maysami, R. C., Howe, L. C., and Hamzah, M. A. (2004), ñRelationship between Macroeconomic Variables and Stock Market Indices: Cointegration Evidence from Stock Exchange of Singaporeôs All-S Sector Indicesò, *Jurnal Pengurusan* Vol. 24, pp. 47-77.

Mun, H.W., E.C. Siong and B.S. Long, 2008. ñStock market and economic growth in Malaysiaò: Causality test. Asi. Soc. Sci., 4: 86-92. *http://www.ccsenet.org/journal/index.php/ass/article/view/1605*

Muradoglu, G. And Metin, K. (1996), ñEfficiency of the Turkish Stock Exchange with respect to monetary variables: A cointegration analysisò**,** *European Journal of Operational Research,* Vol. 90, Issue 3, pp. 566-576.

Naka, A., Mukherjee, T., and Tufte, D. (1998), ñMacroeconomic Variables and the Performance of the Indian Stock Marketò, University of New Orleans, Department of Economics and Finance, Working Papers, [Online] Available at: *http://louisdl.louislibraries.org/cgi-bin/showfile.exe?CISOROOT =/EFW & CISOPTR =14* [Accessed 4 July 2009].

Nardari F. and Scruggs, J. T. (2005), ñWhy Does Stock Market Volatility Change Over Time? A Time-Varying Variance Decomposition for Stock Returnsò, *EFA 2005 Moscow Meetings.*

Nasseh, A. and J. Strauss, 2000. ñStock prices and domestic and international macroeconomic activity: A cointegration approach. Q. Rev. Econ. Finance, 40: 229-45.

Ngugi, R. W. 2003. ñDevelopment of the Nairobi Stock Exchangeò. KIPPRA Discussion, pg 1 to 20

Nishat, M. And Shaheen, R. (2004), ñMacroeconomic Factors and Pakistani Equity Marketò, *The Pakistan Development Review*, Vol. 43, No. 4, pp. 619-637 d=01020 NSE Fact Book, 2003: pg 35

Obben, J., Pech, A., and Shakur, S. (2006), ñAnalysis of the Relationship between the Share Market Performance and Exchange Rates in New Zealand: A Cointegrating VAR Approachò, *New Zealand Economic Papers*, Vol 40, No 2, pp. 147-180

Olowe, R. A. (1997). ñ*Financial Management: Concepts, Analysis and Capital Investment",* Lagos, Briefly Jones Nigeria Limited.

Ozturk, B. (2008), ñThe Effects of Macroeconomic Factors on Istanbul Stock Exchangeò National 100 Index and its volatility (1977-2006), Thesis, Instabul Technical University (In Turkish).

Rangvid, J., 2006. ñOutput and Expected Returnsò. Journal of Financial Economics, 81(3), 595-624.

Reilly, F. K. and Brown, K. C. (2006), ñInvestment Analysis and Portfolio Managementò, Eighty Edition, Mason ï OH, Thomson South-Western.

Ritter, J., 2004. ñEconomic growth and equity returnò. http://bear.cba.ufl.edu/ritter

Rjoub, H., Türsoy, T., and Günsel, N. (2009), ñThe Effects of Macroeconomic Factors on Stock Returns: Istanbul Stock Marketò, *Studies in Economics and Finance,* Vol. 26, No 1, pp. 36-45.

Roll, R., 1992. ñIndustrial structure and the comparative behavior of international stock market indicesò. Journal of Finance 47, 3-41.

Santos, T., and Veronesi, P., 2005. ñLabor Income and Predictable Stock Returnsò. Review of Financial Studies, 19, 1-44.

Saunders, A.and Tress, R. B. (1981), ñInflation and stock market returns: some Australian evidenceò, The Economic Record, Vol. 57, Issue 156, pp. 58-66. [Online] Available

at: http://ideas.repec.org/a/bla/ecorec/v57y1981i156p58-66.html [Accessed 6 July 2009].

Shahbaz, M., N. Ahmed and L. Ali, 2008. ñStock market development and economic growthò: ARDL causality in Pakistan. Int. Res. J. Fin. Econ., 14: 182-195. http://www.eurojournals.com/irjfe%2014%20shah baz.pdf

Sharpe, S. A. (1999), ñStock Price, Expected Returns, and Inflationò, FEDS Working Paper No. 99-2 [Online] Available at: http://ssrn.com/abstract=155071 [Accessed 22 July 2009].

Shirai, S., 2004. ñTesting the three roles of equity markets in developing countriesò: the case of China. World Dev., 32: 1467-1486. http://econpapers.repec.org/article/eeewdevel/v_3a32_3ay_3a2004_3ai_3a9_3ap_3 1467- 1486.htm

Solnik, B. and McLeavey, D. (2009), ñGlobal Investmentsò, Sixth Edition, Boston, Pearson Prentice Hall.

Stavarek, Daniel (2004), ñStock Prices and Exchange Rates in the EU and the USA: Evidence of their Mutual Interactionsò, MPRA Paper No. 7297.

Tabak, B. (2006), ñ*The Dynamic Relationship Between the Stock Prices and Exchange Rates: evidence for Brazil"*, Banco Central Do Brasil, Working Paper Series *124*.

Tahir, R. and Ghani, A. A. (2004), ñ*Relationship Between Exchange Rates and Stock Prices: Empirical Evidence from Bahrain's Financial Markets"*, EcoMod2004 International Conference on Policy Modeling.

Tamtom, J. A. (2002). ñStock Prices, Inflation and Monetary Policyò, Business Economics, Retrieved from www.thenigerianstock-exchange.com on 5/27/2008

Tursoy, T., Gunsel, T., and Rjoub, H. (2008), ñMacroeconomic Factors, the APT and the Istanbul Stock Marketò, *International Research Journal of Finance and* 56 *Economics,* Issue 22.

Yildirtan, D. C. (2007), ñEffects of Macroeconomic Variables on Istanbul Stock Exchange Indexes: the case of Turkish Stock Exchange Marketò.

Yucel, T. and Kurt, G. (2003), ñForeign Exchange Rate Sensitivity and Stock Price: Estimating Economic Exposure of Turkish Companiesò.

APPENDICES

Appendix I: List of Companies at the NSE

List of Companies at the NSE

Agricultural Sector

1. Unilever Tea Kenya Ltd
2. Kakuzi
3. Rea Vipingo Plantations Ltd
4. Sasini Ltd

Commercial and Services

5. Access Kenya Group Ltd
6. Car & General (K) Ltd
7. CMC Holdings Ltd
8. Hutchings Biemer Ltd
9. Kenya Airways Ltd
10. Marshalls (E.A.) Ltd
11. Nation Media Group
12. Safaricom limited
13. Scangroup Ltd

14. Standard Group Ltd

15. TPS Eastern Africa (Serena) Ltd.

Finance and Investment

16. Barclays Bank Ltd

17. Centum Investment Company Ltd

18. CFC Stanbic Holdings Ltd

19. Diamond Trust Bank Kenya Ltd

20. Equity Bank Ltd

21. Housing Finance Co Ltd

22. Jubilee Holdings Ltd

23. Kenya Commercial Bank Ltd

24. Kenya Re-Insurance Corporation Ltd

25. National Bank of Kenya Ltd

26. NIC Bank Ltd

27. Pan Africa Insurance Holdings Ltd

28. Standard Chartered Bank Ltd

29. Co-op bank of Kenya

30. Trans- Century

Industrial and Allied

31. Athi River Mining
32. B.O.C Kenya Ltd
33. Bamburi Cement Ltd
34. British American Tobacco Kenya Ltd
35. Carbacid Investments Ltd
36. Crown Berger Ltd
37. E.A.Cables Ltd
38. E.A.Portland Cement Ltd
39. East African Breweries Ltd
40. Eveready East Africa Ltd
41. Kenol Kobil
42. Kenya Power & Lighting Ltd
43. KenGen Ltd.
44. Mumias Sugar Co. Ltd
45. Olympia Capital Holdings ltd
46. Sameer Africa Ltd

47. Total Kenya Ltd

48. Unga Group Ltd

Alternative Investment Market Segment

49. A. Baumann & Co. Ltd

50. City Trust Ltd

51. Eaagads Ltd

52. Express Ltd

53. Williamson Tea Kenya Ltd

54. Kapchorua Tea Co. Ltd

55. Kenya Orchards Ltd

56. Limuru Tea Co. Ltd