RELATIONSHIP BETWEEN NAIROBI STOCK EXCHANGE 20 SHARE INDEX AND SELECTED MACRO-ECONOMIC VARIABLES

BY

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Declaration

This research project is my own original work and has not been presented for award of a degree in any other university:

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Acknowledgement

First I wish to acknowledge the Almighty God for this breakthrough and for constantly giving me the strength and the inspiration to continue. It is hoped that this research will impart knowledge and insight into people who will get to read it in future

Secondly, I acknowledge the inspiring guidance I received from my supervisor Mr Odipo, his patience and great support in shaping this study to the last day and the University fraternity for a chance to come this far.

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Finally, I wish to thank my family, particularly Mwiti, Tony and Faith for their understanding and stepping in the gap and bearing with my very tight schedules. To you Pasqualina and Anesio, thank you for your prayers and encouragement, this accomplishment is yours too.
Dedication

I dedicate this work to Ivy & Antoinette and to you George. I am; because you all are.
ABSTRACT

This study sought to understand the relationship between performance of the Nairobi Stock Exchange (NSE) 20 share index and selected macro-economic variables that influence the state of economy of Kenya (economic growth). The study has established that performance of NSE 20 share index has significant relationship with selected macro-economic variables (Gross Domestic Product (GDP), GDP growth rates, interest rates, inflation rate, exchange rates, and domestic savings) except for foreign portfolio flows where the relationship was found to be insignificant.

The study has found evidence to support the assertion that stock markets are indeed important as predictors of the direction of the economy. It is therefore imperative that concrete measures be taken to enhance and encourage better performance of the NSE since it has been found that when the NSE is performing well, the state of the economy as represented by the selected macro-economic variables is also performing well.

Since all the dependent variables are not mutually exclusive, i.e. in one way or the other, they affect and are influenced by each other, the three Stage Least Squares Estimates (3SLS) was used to cater for the feedback effect among the variables. The results were normalized through the use of natural logarithm. The mean market capitalization ratio at 28.97% is a ration used to find out how much of GDP is represented by NSE. The study has revealed that over the period of study, NSE has been greatly undervalued.

In conclusion, the study has established significant relationships between the variables in respect of Kenya’s economic growth and the NSE 20 Share Index. An efficient and well performing
stock market is indispensable for an economy that is keen on using scarce capital resources to achieve economic growth. The results of this study can be used by policy makers to plan for future expectations of the country in the light of Kenya Vision 2030 and other development plans.
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<tbody>
<tr>
<td>BT</td>
<td>Bond Turnover</td>
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<tr>
<td>CBK</td>
<td>Central Bank of Kenya</td>
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<td>CDSC</td>
<td>Central Depository and Settlement Corporation</td>
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<td>CDS</td>
<td>Central Depository and Settlement Act</td>
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<td>CMA</td>
<td>Capital Markets Authority</td>
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<td>CPI</td>
<td>Consumer Price Index</td>
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<td>ECA</td>
<td>Economic Commission for Africa</td>
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<td>EMH</td>
<td>Efficient Market Hypothesis</td>
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<tr>
<td>ERSWEC</td>
<td>Economic Recovery Strategy for Wealth and Employment Creation</td>
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<tr>
<td>ET</td>
<td>Equity Turnover</td>
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<tr>
<td>FDI</td>
<td>Foreign Direct Investments</td>
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<td>GDP</td>
<td>Gross Domestic Product</td>
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<td>GOK</td>
<td>Government of Kenya</td>
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<td>ICF</td>
<td>Investor Compensation Fund</td>
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<td>IFC</td>
<td>International Finance Corporation</td>
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<td>IMF</td>
<td>International Monetary Fund</td>
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<td>IPO</td>
<td>Initial Public Offer</td>
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<td>KCB</td>
<td>Kenya Commercial Bank</td>
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<tr>
<td>KENGEN</td>
<td>Kenya Electricity Generating Company</td>
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<tr>
<td>KIPPRA</td>
<td>Kenya Institute for Public Policy, Research and Analysis</td>
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<tr>
<td>LSE</td>
<td>London Stock Exchange</td>
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<td>MC</td>
<td>Market Capitalization</td>
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<td>NASI</td>
<td>Nairobi All Share Index</td>
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<td>NSE</td>
<td>Nairobi Stock Exchange</td>
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<td>NSI</td>
<td>NSE 20 Share Index</td>
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<tr>
<td>SAP</td>
<td>Structural Adjustment programme</td>
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<td>S&amp;P EMP</td>
<td>Standard and Poor’s Emerging Market Fact book</td>
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<td>SBF</td>
<td>Stock Brokerage Firms</td>
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<td>UN</td>
<td>United Nations</td>
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<td>UNCTAD</td>
<td>United Nations Conference on Trade and Development</td>
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<td>UNDP</td>
<td>United Nations Development Programme</td>
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CHAPTER ONE

INTRODUCTION

1.1 Background of the study.

Stock exchange (market) is an entity that facilitates trade in stocks and other securities. Stock markets were initially meant to provide "trading facilities" for stock brokers and traders to enable them to trade stocks although modern stock exchanges also provide facilities for issue and redemption of securities as well as other financial instruments. In recent times, stock markets have become electronic networks that have advantages of speed and low cost of transactions and do not necessarily have to be a physical place. For a company to trade its stocks on a stock exchange, it must be listed in that exchange. The securities traded on a stock exchange include shares issued by listed companies, unit trusts, derivatives, pooled investment products and bonds. The stock exchange therefore is a market that deals in the exchange of stocks issued by publicly quoted companies which are listed on its board as well as government securities (http://www.nse.co.ke/newsite/inner.asp?cat=arole).

The characteristics that describe a macro-economy are usually referred to as the key macro-economic variables which are used to analyse the macro-economic environment and describe the state of the macro-economy, http://www.referenceforbusiness.com/encyclopedia/Kor-Man/Macro-economics. Macro-economic variables are associated with aggregate indicators that influence the overall
economic environment in which organizations operate and they include Gross Domestic Product (GDP) and GDP growth rates, consumer price indices and inflation, savings and investment, monetary and fiscal policies, foreign investments, international trade and international finance. Selected macro-economic variables for this study are, GDP and GDP growth rates, rate of inflation, exchange rates, interest rates, growth in domestic savings and foreign portfolio flows. Companies listed in a stock exchange operate within these macro-economic variables which affect their performance and that of the stock exchange.

In Kenya, the Nairobi Stock Exchange (NSE) is the only body that performs the functions of a stock market. Among many other objectives and roles, are promotion and enhancement of a culture of thrift, and/or saving by providing alternative avenues for investment and assists in the transfer of these savings to investment in productive enterprises and quoted stocks. Indeed, Demirguc-Kunt and Levine, (1996) point out that mobilization and allocation of resources for national development has long been the central focus of development economists. The NSE also promotes higher standards of accounting, resource management and transparency in the management of business through the agency arrangements. Without doubt, the ability to effect changes in the management of listed companies is expected to ensure that managerial resources are used efficiently (Kumar, 1984). The NSE is one of the most important avenues for both new and growing companies to raise capital at lower cost through Initial Public Offers (IPOs)
and other offers and also for government to divest from public corporations through privatization. This in turn allows greater growth and increase in the supply of assets available for long-term investment. Barnes, (2009) noted that all companies need capital and the challenge that managers face is finding innovative ways to fund their projects at lower costs. NSE is also expected to acts as the barometer of the economy of Kenya, (CBK and IFC study- “Development of Money and Capital Markets in Kenya”)

It is on the bases of the perceived benefits of the NSE to the economy of Kenya that the Government of Kenya (GOK), the Capital Markets Authority (CMA), and the Central Bank of Kenya (CBK) have over the years played a principal role in developing and strengthening the NSE to enable it take up these various roles and functions. Measures taken include enactment of legislation, rules, policies, and guidelines, adjustments in macro-economic variables such as taxation rates, interest rates, exchange rates and working towards managing inflation in the economy, setting up institutions such as Central Depository and Settlement Corporation (CDSC) and Investor Compensation Fund (ICF), etc. The government has also set out to privatize various state corporations with a view to make the NSE more liquid through provision of alternative investment opportunities and also divest from business and instead concentrate more on provision of public services (Country Fact Sheet - Privatization in Kenya - by MIGA and the Africa Region of the World Bank – August 2001 & the Parastatal Reform Programme)

An economy where the stock market is on the rise is considered to be an up and coming economy. Rising share prices, for instance, tend to be associated with increased business investment and vice versa. The stability, rise and fall of share prices at the stock
exchange is mostly dependent on the market forces of demand and supply and has a
direct impact on the market capitalization of the individual companies and the market in
general. On every trading day, the NSE uses a variety of market performance indicators
to report performance which include equity turnover or the level of liquidity, volume of
shares traded, bond turnover, NSE 20 share index and recently, the NSE all share index
(http://www.nse.co.ke/newsite). However, it is the NSE 20 share Index that measures the
overall performance of the bourse.

Besides the various functions performed by the NSE, the stock market is in the focus of
the economist and policy makers because of the perceived benefits it provides for the
economy as it is deemed to be the fulcrum for capital market activities and often, it is
cited as a barometer of business direction. An active stock market may be relied upon to
measure changes in the general economic activities using the stock market index,
Obadan, (1998). In a modern economy, economic growth hinges on an efficient stock
market sector that pools domestic savings and mobilizes private and foreign capital for
productive investments while providing investors with adequate liquidity and risk
diversification alternatives, Barnes (2009) who also added that a good and well run stock
exchange will channel the savings into areas that most require it.

This study therefore sought to understand the relationship between the NSE 20 Share
Index and economic performance indicators that relate directly to the functions and roles
of the NSE and they include the GDP and GDP growth rates, inflation rates, interest
rates, exchange rates, domestic savings and foreign capital flows.
**NSE 20 share Index:** A stock market index is a listing of selected stocks, statistically expressed to reflect the composite value of its component stocks. The NSE 20 Share Index is therefore a weighted average index that is used to measure performance at the NSE and has been in use since 1966. It measures the performance of 20 blue-chip companies with strong fundamentals and which have consistently returned positive financial results (NSE Handbook Manual 2008). Indices give investors a feel for the general direction of the particular market the index represents. Indices show trends and changes in investing patterns. Indexes provide a yardstick for comparison.

**Market Capitalization:** Market capitalisation (market cap) for the stock market measures the total value of the companies trading at the stock exchange such as NSE. It measures the market size of the stock exchange and it is equal to the total value of all listed shares multiplied by the market price. In terms of economic significance, the assumption is that market size and the ability to mobilize capital and diversify risk are positively correlated.

**GDP and GDP Growth Rates:** According to the Economic Abstract of 2002 and the New Zealand Institute of Economic Research (2006), GDP is the total market value of currently produced goods and services within the borders of a country in one year. It is a measure of a country's overall official economic output. It indicates at a glance, a country’s market size. It is often positively correlated with the standard of living.
**GDP Growth Rate** on the other hand is the speed at which the economy/market size of the country is growing. GDP growth rate is an overall phenomenon explaining the entire economy and it is used by investors to study the suitability of the economic environment in terms of market size and returns. A positive GDP growth rate indicates a growing economy and a bigger market size and may signal high investment returns and consequently attract more investments in all sectors of the economy including the capital and the stock markets.

**Domestic Savings:** Domestic savings represent the net amounts that a country sets aside after consumption to facilitate investments in fixed capital projects and other stocks. According to a UN article, “*Africa Renewal, Vol.23#2 (July 2009)*, Africans across the continent, are saving and investing more of their own money. Such improvements are especially important, as Africa’s prospects for external funding look ever more uncertain at a time of global financial turmoil. One of the strengths of Kenya’s performance has been the growth in recent years of savings groups (investment groups) popularly known as *Chamas*, and Savings and Credit Cooperatives (SACCO) which have helped many ordinary Kenyans channel their savings into productive investments. A successful case in point is Tran-century Group which started as an investment group but currently controls billions of shillings in investments.

Buying shares on the Nairobi Stock Exchange (NSE) has been a popular investment route. But the potential for using the exchange has not yet been adequately explored due to lack of information and investor education, rogue stock brokerage firms that have eroded investor confidence after they closed down with investors’ money etc.
**Foreign Capital Flows:** There are four different types of foreign capital inflows namely; cross-border bank lending, foreign direct investment (FDI), bonds flows and portfolio equity flows that may have an impact on the economic growth of a country according to Overseas Development Institute Working Paper No 304 of 2009. Bonds flow and portfolio equity flows are particularly important to the NSE performance. The larger they get the better for the country. The government of Kenya repealed the entire foreign exchange controls in 1995 to facilitate more foreign investments into the country through the stock exchange.

**Rate of Inflation:** Economic Survey of Kenya (2002) describes inflation as the sustained rise in money prices generally. The Consumer Price Index (CPI) is the main estimator of the rate of inflation. It is a macro-economic indicator for general economic and social analysis and is a tool used in wage and tax negotiation and indexation.

**Exchange Rate:** Exchange rate (also known as the foreign-exchange rate, forex rate or FX rate) specifies how much one currency is worth in terms of the other. It is the value of a foreign nation’s currency in terms of the home nation’s currency. When foreigners invest in Kenya, they bring foreign currency which is converted into the local currency using the prevailing exchange rate.

**Interest rates** on the other hand have long been recognized as important for the economy because periods of stable interest rates have generally been more favourable for both local and foreign investments. While Interest rates are supposed to moderate and cool
down inflation, they are not expected to compromise the secondary trading of government securities.

1.2 Problem Statement

In principle, the stock market is expected to have an effect on the economic well being of a country through its role of providing an avenue for mobilization and allocation of domestic savings and increasing the quantity and the quality of investment, Singh, (1997). The stock market performance is assumed to be one of the guiding factors when investors commit their savings to securities traded in a stock market. The stock market is expected to invoke economic growth by providing investors with alternative financial instruments that may better meet their risk preferences and liquidity needs, Barnes (2009).

However, the nature and economic significance of the relationship between stock market development and economic well being vary in method and results according to a country’s level of economic development and the period under consideration with a larger impact in less developed economies (Filler, Hanousek & Campos, 1999). The proponents of positive relationships between stock market development and economic growth hinged their argument on the fact that the stock market aids economic growth and development through the mobilization and allocation of savings, risk diversification, liquidity creating ability and corporate governance improvement among others, (Nyong, 1997, Adjasi and Biekpe, 2005). Similarly, Arestic et al. (2001), Chen et al (2004) and
Shahbaz et al. (2008) all indicated that stock markets play a role in economic growth. On the other hand, the proponent of the negative relationship between the stock market and economic growth argue that changes in competitive environment may contribute to a negative association between economic growth and stock market development (Azarmi, Lazar & Jeyapaul, 2005). Moreover, due to their liquidity, stock markets may hurt growth since savings rates may reduce due to externalities in capital accumulation. The reduction in savings may result from securities scams involving brokers and bankers in which considerable amount of capital are diverted from the banking sector to the stock markets by individual traders. Bencivenga and Smith (1991), Bhide (1993) and Koirara (2009) also note that stock markets can actually harm economic growth. In India, Azarmi, et al. (2005) found that during the post-liberalization period of 1991-2001, the Indian stock market had a significant negative relationship with economic growth.

Kimura and Yobesh (1999) in a study to find out why there is such low growth in NSE found that there is insignificant correlation between the growth of the economy and stock market performance. Whether the circumstances have changed or they remain is a subject of another empirical study.

In the 2002 Annual Report, the Chief Executive of CMA opined that the performance of the capital markets is directly correlated with the performance of the economy and as such closely interrelated thereby indicating that the soundness of the financial system affects the performance of the economy and vice versa. The performance of the financial
system influences economic activity which in turn has significant impact on the capital markets operations.

In spite of all these alternative studies, the relationship between the NSE performance and the state of the economy is not clearly understood. The *Kenya Vision 2030* aims to transform Kenya into a newly industrializing; “middle-income country” by the year 2030 and one of the targeted macro-economic goals is increasing the stock market capitalization from 50% to 90% of GDP. It is not known if NSE can be relied upon to facilitate realization of this target. Admittedly, many studies in respect of NSE and the economy of Kenya have not empirically brought out the relationship between NSE performance and the state of the economy. The study therefore seeks to evaluate the relationship between NSE performance and the state of the economy of Kenya.

### 1.3 Objective

The objective of the study is to establish the relationship between NSE performance and the state of the economy of Kenya with respect to selected macro-economic variables of GDP and GDP growth rates, inflation, interest rates, exchange rates, domestic savings mobilization and allocation as well as foreign portfolio flows.

### 1.4 Significance of the Study

The findings of this study will provide detailed comparative and empirical data on performance of the NSE alongside the various economic measurements parameters as
well as provide important analysis and explanations on whether stock market performance should be considered as one of the leading indicator of the state of the economy of Kenya. This will assist to enhance planning especially in the light of Kenya Vision 2030.

The study should inform the relevant sectors of the economy on whether it is importance to allocate time and effort in making NSE an efficient market for allocation of scarce capital resources.

It will enhance the understanding of the various stake holders as each endeavor to play their various roles in growing Kenya’s capital markets.

The study will add to the existing body of knowledge on the subject matter.
CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter will review the previous theoretical and empirical literature on the role of stock market performance as barometers of the state of the economy; highlight the linkage between the various variables that affect the performance of the stock markets and consequently, the state of the economy. It will also look into related studies on NSE and other emerging markets including the history of NSE.

2.2 Theoretical and Analytical Issues

2.2.1 The Neo-Classical Theory of Capital Flows

This theory explains capital flow with differentiated rate of return leading to capital arbitrage where capital seeks the highest returns. Cockcroft and Riddell (1991) argue that future capital flows depend on a package of direct incentives which influence return, security of investments, tax regimes and policies, investment guidelines and overall macroeconomic policies including those relating to foreign exchange. The theory emphasizes that addressing the problem of legal infrastructure, labour, legislation, taxation policy; price controls and exchange rate levels will improve investment climate and the performance as envisaged.
2.2.2 The Theory of Capital Structure

The basic theorem under Modigliani & Miller, (1958), forms the basis for modern thinking on capital structure which states that in the absence of taxes, bankruptcy costs, and asymmetric information, and in an efficient market, the value of a firm is unaffected by how that firm is financed. It does not matter if the firm's capital is raised by issuing stock or selling debt. It does not matter what the firm's dividend policy is. Therefore, the Modigliani-Miller theorem is also often called the capital structure irrelevance principle. However, capital structure decisions are influenced by many factors including taxes and costs related to debt capital. A firm cannot be fully financed with debt because at some point, bankruptcy costs set in and threaten the very existence of the firm. Companies requiring huge capital outlay which they may not get from financial institutions approach the stock market for long term debt capital which is less costly through floatation of corporate bonds. They can also raise cheap finances through IPOs, Rights Issue, and Bonus Issue etc.

2.2.3 Efficient Market Hypothesis (EMH)

Besides their role in supplying capital, stock markets play an important informational role. Efficient and well-functioning stock markets may also reduce the costs of information as they collect, generate and disseminate firm specific information that efficient stock prices reveal and make it available to creditors and investors who in turn use it to make better investment decisions thus leading to allocative efficiency. This may only happen if prices of securities incorporate all available information - the Efficient Market Hypothesis (EMH), Fama, (1970). Improvement in flow of information about
firms will allow well-functioning stock markets to contribute to corporate control and thus lead to greater managerial competency.

2.2.4 Portfolio Theory

Portfolio theory takes into account the element of uncertainty that is missing in other theories, Fama, (1970). Investors are postulated to consider not only returns but also the risks associated with selecting the portfolio to invest in. This theory is based on the fact that fluctuations in rates of capital returns are not perfectly correlated. Diversification of portfolios is a risk reduction strategy through which investors acquire a variety of stocks thereby enhancing their levels of liquidity.

2.2.5 The Dow Theory

The Dow Theory pre-supposes that the market moves in persistent "Bull" and "Bear" cycles. The theory was derived from 255 Wall Street Journal editorials written by Charles H. Dow (1851–1902), journalist, founder and first editor of the Wall Street Journal and co-founder of Dow Jones and Company. While Dow himself never used the term "Dow Theory," nor presented it as a trading system, William Peter Hamilton presented the theory after Dow’s death in his 1922 book ‘The Stock Market Barometer’. The theory agrees with one of the premises of the ECMH that the stock market discounts all news allowing stock prices to quickly incorporate new information as it becomes available. Once news is released, stock prices will change to reflect this new information and the cycles of performance continue creating discernible trends within the stock market.
2.2.6 Behavioral Theory

A field known as "behavioral finance" has evolved that attempts to better understand and explain how emotions and cognitive errors influence investors and the decision-making process. It is the last group of theories which explains stock market performance through behavioral reasons such as irrational behavior and biases of investors whether corporate or individuals. The empirical and theoretical literature on this subject is still limited and undeveloped but it is assumed that some investors in the stock market exhibit sentiments such as herding instincts, emotional and social influences as well as conservatism behavior which sway their actions and guide their decisions. When this happens, stock market performance is affected by non fundamental issues and may not conform to empirically supported investment behavior. Some Professors recognized as experts in this field include Daniel Kahneman (Princeton), Meir Statman (Santa Clara).

2.3 History of NSE and Stock Market Development in Kenya

The history of NSE will greatly inform the literature review of this study because it captures most of the developments that have made the NSE what it is today.

The NSE is Africa's fourth largest stock exchange in terms of trading volumes, and fifth in terms of market capitalization as a percentage of GDP (CMA Bulletin, 2009). Other notable African stock exchanges include South Africa, Nigeria, Morocco and Egypt. NSE works in cooperation with Uganda Securities Exchange and Dar-es-Salaam Stock Exchange and recently, the Rwanda Stock Exchange. By December 2009, the 56 listed
companies had a total market capitalization of approximately Kshs 831 billion, (NSE Bulletin, 2009). Bonds and commercial papers are other securities listed at NSE.

Dealing in shares and stocks in Kenya is an evolutionary process that started in the 1920s when Kenya was still a British colony. After recognition as an overseas stock exchange by London Stock Exchange (LSE) in 1954, NSE has evolved over the years to play an important role in the economy of Kenya before and after independence, (NSE handbook). By 1966, the NSE had begun measuring daily trading activity by computing the NSE Index -a weighted average of price changes in selected stocks. 1966 was used as the base year and set at 100 points.

The major stakeholders in the history of NSE are GOK, CBK, CMA and NSE itself who, either singly or in collaboration, have over the years come up with several measures aimed at enhancing development of the bourse and these include legislation at various stages of the bourse’s life aimed at strengthening and improving its performance. For instance, the repeal of the entire Exchange Control Act in 1995 as well as changes with regard to the restrictions on foreign ownership of local companies and introduction of a favourable tax regime on withholding tax on dividend income (NSE Handbook) was meant to encourage foreign portfolio investments and more local participation in the NSE. The enactment of both the CMA Act, 1989 and the Central Depository System (CDS) Act, 2002, and the gazettement of various policies and guidelines have been very instrumental in enhancing performance of the exchange.

GOK Policy reforms allowed for a study dubbed “Development of Money and Capital Markets in Kenya” conducted through the CBK in conjunction with the International
Finance Corporation (IFC) in 1984, which study became a blue print for structural reforms in Kenya’s financial markets and led to the establishment of the CMA in 1989 - a regulatory body to assist in creation of an environment conducive to growth and development of the country's capital markets and consequently, economic growth.

Institutional changes to the NSE included registration of the bourse under the Companies Act in 1991 after which it embarked on an extensive modernization exercise, including a move to more spacious premises at the Nation Centre in July 1994 with a modern Information Centre. Work flows were computerized and with increasing trading volumes, Electronic Trading System was introduced in 2006. A Wide Area Network platform implemented in 2007 enables trading to be conducted from the brokers' offices.

To improve corporate governance and broaden the ownership structure of NSE, plans are at an advanced stage to demutualize the exchange to expand its ownership and eventually allow it to list in its own board alongside other listed companies. (NSE website: - www.nse.co.ke)

The NSE is poised to play an increasingly important role in the Kenyan economy, especially in the privatization of state-owned enterprises. Under the Economic Recovery Strategy for Wealth and Employment Creation (ERSWEC) 2003-2007, the Government implemented a number of key privatization transactions through the NSE. Kenya’s new development blueprint -Kenya Vision 2030 aims to transform Kenya into a newly industrializing, “middle-income country” by the year 2030 and targets macro-economic goals such as raising the savings rates from 17% to 30% of GDP and increasing the stock
market capitalization from 50% to 90% of GDP (Ministry of State for Planning National Development and Vision 2030). This is also hoped to improve performance of the NSE.

2.4 Empirical Studies

2.4.1 The debate on stock market as engines of growth - Overview of stock markets in emerging economies like Kenya.

The term "emerging market" implies a stock market that is in transition, increasing in size, activity, or level of sophistication {International Finance Corporation Annuals (IFC) 1992-1999; Standard & Poor's Emerging Market Fact Book (S&P EMFB), 1998-2000}. A stock market is classified as emerging if it is located in a low or middle-income economy, as defined by the World Bank, and its "investable" i.e. market capitalization is low relative to its most recent Gross National Product per capita (S&P EMF 2000). The first test of a market's "investability" is determining whether the market is open to foreign institutions as stock market development and performance is determined by the extent to which foreigners can buy and sell shares on local exchanges and repatriate capital, capital gains, and dividend income without undue constraint, (S&P EMFB, 2000).

Over the past few decades, the world stock markets have surged, and emerging markets (Kenya included) accounted for a large amount of this boom. A key indicator of stock market development, the capitalization ratio (market capitalization as a proportion of GDP) rose at an unprecedented rate in leading developing economies during the 1980s and the 1990s, Yartey (2008).
In recent times, there has been a heightened interest in understanding the role of stock market in economic growth and economist and policy makers have put the stock market into focus because of the perceived benefits it provides for the economy as it is deemed to be the fulcrum for capital market activities and often, it is cited as a barometer of business direction, (Levine & Zervos, 1996; Demirgüç-Kunt & Levine, 1996; Obadan, 1998). An active stock market may be relied upon to measure changes in the general economic activities using the stock market index (Obadan, 1998).

New theoretical research works show that stock market development might boost economic growth and empirical evidence tends to provide some support to this assertion. Levine and Zervos (1998), for instance, find that stock market development plays an important role in predicting future economic growth. Demirgüç-Kunt and Levine (1996) opined that there was a boom in developed and emerging markets and substantial part of that growth could be attributed to the fact that investing firms were enjoying lower cost of equity with efficiently functioning stock market.

The nature and economic significance of the relationship between stock market development and economic well being vary according to a country’s level of economic development with a larger impact in less developed economies (Filler, Hanousek & Campos, 1999). The proponents of positive relationships between stock market development and economic growth hinged their argument on the fact that the stock market aids economic growth and development through the mobilization and allocation
of savings, risk diversification, liquidity creating ability and corporate governance improvement among others, Nyong (1997).

The creation of an economy in which limited liability companies could easily be formed and their shares freely sold and transferred between investors, dates back to the industrial revolution in Great Britain where businesses needed to operate on a much large scale than hitherto to take advantage of the new opportunities for automation and economies of scale. For the first time, companies with limited liability and transferable shares enabled entrepreneurs to raise funds on the scale they needed and from people who were not involved in the running of the businesses, Barnes and Firman, (2002). All this was facilitated through the LSE. Bencivenga, Smith and Starr (1996), asserted that without liquid capital market, there would be no industrial revolution because savers would be less willing to invest in large, long-term projects that characterized the early phase of industrial revolution. They used the liquidity argument to argue that the level of economic activities is affected by the stock market’s liquidity creating ability because profitable investment requires long-term capital commitment; but often, investors are not willing or are reluctant to trade their savings for a long gestation period thus making stock markets very relevant due to their liquidity creating role.

Closely related to liquidity is the function of risk diversification. Stock markets can affect economic growth when they are internationally or regionally integrated or when they avail different stocks and bonds where investors can put their savings. This enables greater economic risk sharing. Because high return projects also tend to be comparatively
risky, stock markets that facilitate risk diversification encourages a shift to higher-return projects, Obstfeld, (1994). The resultant effect is a boost in the economy leading to growth through the shifting of society’s savings to higher-return investments.

The stock market is viewed as a complex institution imbued with inherent mechanism through which long-term funds of the major sectors of the economy comprising households, firms, and government are mobilized, harnessed and made available to various sectors of the economy (Nyong, 1997). The development of the capital market, and apparently the stock market, provides opportunities for greater funds mobilization, improved efficiency in resource allocation and provision of relevant information for appraisal (Inanga and Emenuga, 1997).

Laporta et al (1997) find that countries with lower quality of legal rules and law enforcement have smaller and narrower capital markets and that the listed firms on their stock markets are characterized by more concentrated ownership. Demirguc-Kunt and Maksimovic (1996) show that firms in countries with high ratings for the effectiveness of their legal systems are able to grow faster by relying more on external finance thereby enhancing the growth in stock market capitalization.

The SAP promoted by the World Bank and the IMF and embarked upon by the developing countries, emphasized that self-sustained growth process requires substantial investible resources, which are readily available at the stock market, Soyode (1990). In Kenya, Kibuthu, (2005) opined that the process of structural adjustment and privatization
due to fiscal deficit and government divestiture programs resulted in the entry of restructured firms in the stock market indicating that in the 1990s, the NSE was driven to historic levels of activity when the Kenya Airways and Kenya Commercial Bank were listed in the NSE. In the new Millennium, activity levels increased with the divestiture of government shareholding through rights issues in Mumias Sugar Company and the Kenya Commercial Bank. All these activities were aimed at increasing liquidity in the market as well as raise funds for government projects.

Kimura and Yobesh (1999) in a study meant to find out why there is such low growth in NSE found that there is insignificant correlation between the growth of the economy and stock market performance.

2.5 Role of Information in Stock Market Performance

Accelerated economic growth may also result from ability to acquire information about firms. Rewards often come to an investor whose trading at the stock exchange is guided by available information as it enhances effective monitoring of firms for performance. A share price should reflect all known information and represents the collective beliefs of all investors about the future prospects of the business (Barnes 2009).

Information that is likely to affect a company’s value and therefore its share price include significant changes in - prices of inputs, fiscal and monetary policies, political stability, major acquisitions, disposals, mergers, takeovers and bankruptcies etc. Market
performance is affected whenever any or all of this kind information filters into the market.

2.6 Conclusions

From the literature review, it is apparent that stock markets in emerging markets play some very important basic roles in the economies of their countries because the determination of the overall growth of an economy depends on how efficiently the stock market performs its savings mobilization and allocative functions in respect of capital, Alile, (1996). Through the stock market, new and growing companies can raise capital at lower cost and government can divest from public corporations through privatization.

Once the investments are in the stock market, the need to safeguard them becomes very critical to the performance of the exchange. The threat of takeover made possible through the agency arrangement makes management of listed companies more responsive while the ability to effect changes in management is expected to ensure that managerial resources are used efficiently for economic growth, Kumar, (1984). Optimal performance of listed companies may therefore enhance performance of the bourse and may be a good pointer to the general direction of the economy.

In their secondary market role, stock markets provide investors with efficient mechanisms to liquidate their investments in securities whenever they wish. Stock markets hedge against inflationary effects on income thereby checking against flight of capital which takes place due to local inflation and currency depreciation.
CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlines the methodological techniques that were used in the study. The sections describes the research design, the study population, data collection, data analysis and finally a review of the model building approach using regression analysis.

3.2 Research Design

This is a quantitative research utilizing secondary data collected through desk research. It is descriptive in nature and sought to establish any causal relationships between the independent variables of stock markets performance as barometer of the economy and the dependent variable with respect to economic variables describing the state of the economy. This design establishes the associations or the outcome variable in a population.

3.3 Population

This is a census study whose population comprises of time series annualized data in respect of NSE performance and macro-economic variables for 20 years from 1990 to 2009. This population was thought to be representative because a lot of developments and policy guidelines affecting NSE performance took place during this period. The period also covers the most current performance period at the NSE. The 20 year period
provided adequate time necessary to perform a trend analysis of the performance of NSE as well as establish if there exist any relationships between the variables.

### 3.4 Data Collection.

Collection of data for this study is from secondary sources through desk research on NSE overall market performance through observation of the NSE 20 Share Index – NSI. All the data in respect of NSE performance between January 1\textsuperscript{st} 1990 and 31\textsuperscript{st} December 2009 was collected from the NSE database as it contains the most comprehensive and reliable information about the NSE. The study used average annual performance measurement indicators for the NSE. In addition, data on economic performance in respect of GDP and GDP growth rates, inflation rates, interest rates, exchange rates, domestic savings and foreign capital flows was collected from the CBK’s various publications, economic surveys and statistical abstracts of the state, annual reports and quarterly bulletins of CMA. The information was useful for comparisons, identification of cycles and trends within the period.

### 3.5 Data Analysis

Data analysis began upon data inspection, coding and entry into the computer. It was then analyzed to assist in answering the research question.

#### 3.5.1 Data Analysis Techniques

The data collected was analyzed using both descriptive and inferential statistics using Statistical Package for the Social Scientists (SPSS) and MS EXCEL.
<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Independent Variable</th>
<th>Dependent Variable</th>
<th>Statistical Tool</th>
</tr>
</thead>
<tbody>
<tr>
<td>i) There is no significant relationship between NSE performance and GDP</td>
<td>NSI</td>
<td>GDP growth rate</td>
<td>• Descriptive statistics: Frequencies/ Percentages, mean, standard deviation</td>
</tr>
<tr>
<td>and GDP growth rates in Kenya</td>
<td></td>
<td></td>
<td>• Ratio analysis</td>
</tr>
<tr>
<td>NSE performance has no relation with trends in rates of inflation</td>
<td>NSI</td>
<td>Inflation</td>
<td>• Time plots</td>
</tr>
<tr>
<td>There is no significant relationship between NSI and the interest rates</td>
<td>NSI</td>
<td></td>
<td>• Multiple linear regression</td>
</tr>
<tr>
<td>in Kenya</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NSI cannot adequately explain the trends in exchange rates in Kenya</td>
<td>NSI</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ii) NSE performance cannot adequately explain the trends in level of</td>
<td>NSI</td>
<td>Domestic savings</td>
<td>• Descriptive statistics: Frequencies/ Percentages, mean, standard deviation</td>
</tr>
<tr>
<td>domestic savings in Kenyan economy</td>
<td></td>
<td></td>
<td>• Ratio analysis</td>
</tr>
<tr>
<td>iii) NSE performance cannot significantly explain the direction foreign</td>
<td>NSI</td>
<td>Private and foreign</td>
<td>• Time plots</td>
</tr>
<tr>
<td>capital flows in Kenya.</td>
<td></td>
<td>capital flows</td>
<td>• Multiple linear regression</td>
</tr>
</tbody>
</table>
Descriptive statistics in the form of time plots, frequencies/percentages, mean, standard deviation and ratios analysis was be used to present the result. Because the study was aimed at quantifying the relationship between the dependent and independent variables, effect statistics was used. Multiple linear regression technique was employed to give the magnitude and direction of the relationship between the two variables within the specified period of 20 years.

3.5.2 Model Specification

Due to the fact that NSE performance is described by a number of variables, multiple linear regression is considered the best technique in determining the most important variables that describe NSE performance. The model will reveal the existing relationships between macro-economic predictors and the NSE performance.

The economic performance can be specified as;

$$\Gamma_j = \beta_0 + \beta_i NSEPV_i + \epsilon$$

Where:

$\Gamma_j$ represents the different economic performance indicator variables “$j$”, which includes GDP and GDP growth rate, domestic savings and foreign capital flows

$NSEPV$ represents the NSE performance variables influencing each of the economic performance indicators “$j$”; these include NSE 20 Share Index and Market Capitalization.

$\beta_0$ and $\beta_i$ are unknown coefficients for the independent variables and

$\epsilon$ is the stochastic disturbance (error) term.
Following this approach, if we let “X” represent a vector of NSE performance variable predicting economic performance indicator “j”, then the basic form of the multiple regression model function with “Y” as the predictor variable can be expressed as:

\[ Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_k X_k + \epsilon \]

Where;

For the \( i^{th} \) observation, \( Y = Y_i \) and \( X_1, X_2, \ldots, X_k \) are set values \( X_{i1}, X_{i2}, \ldots, X_{ik} \)

The \( \epsilon \) is the error components that represent the deviations of the response from the true relation. They are unobservable random variables accounting for the effects of other factors on the response.

The regression coefficient \( \hat{\beta}_0, \hat{\beta}_1 \) and \( \hat{\beta}_2 \ldots \hat{\beta}_k \) that together locate the regression function are unknown but given the data, they can be estimated using the principle of least squares.

From the predictor variables identified in the preceding sections, the probability that the NSE performance will predict the economic performance indicator variable “j” GDP and GDP growth rate (\( GDP \ GR \)), rate of inflation (ROI), interest rates (IR), exchange rates (ER), domestic saving (DS) and foreign capital flows (FCF); is predicted as;

\[ GDP = f (NSI) \]
\[ ROI = f (NSI) \]
\[ ITR = f (NSI) \]
\[ EXR = f (NSI) \]
\[ DS = f (NSI) \]
\[ FCF = f (NSI) \]
\[ GDP = f (MC) \]

Where:

\textit{GDP, ROI, ITR, EXR, DS and FCF} are as described above and 
\textit{NSI} represents the NSE 20 Share Index while MC represents Market Capitalization.
CHAPTER FOUR
DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This chapter sought to address the objectives of the study. It describes how the data obtained was used in the analysis to specifically isolate any relationships between NSE 20 Share Index, Market Capitalization and some selected macro-economic variables.

In the first part of the analysis, the study starts with calculations to establish the average/mean figures for all the variables over the period of study and how they compare with figures in the last year of study. It will also deal with establishing the relationships and addressing the objective of the study through the use of the model already specified in 3.5.1 and 3.5.2 in chapter 3 above.

The final part of the chapter deals with summaries, conclusions and recommendations arising out of the study.

4.2 Descriptive Analysis

Data description for macro-economic variables and NSE performance variables is presented in Table 2 where results show that on average, the mean NSE 20 Share Index for the 20 year period was 2866 points with a high of 5656 points. The statistics also show for most of the period under study, NSE 20 performance was within 1370.09 points standard deviation from mean performance and therefore the highest attained NSE index is within two standard deviations of the mean index. This shows a wide disparity in
performance of NSE with very sharp lows and sharp highs. For most of the macro-economic variables, the highest attained results were within two standard deviations from the mean except for exchange rates. This is an indication of very high variability in performance.

Table 2: Data description; Macro-Economic & NSE Performance variables (1990-2009)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSE 20 Share Index</td>
<td>915</td>
<td>5656</td>
<td>2865.95</td>
<td>1370.099</td>
</tr>
<tr>
<td>Market Capitalization</td>
<td>10.90</td>
<td>851.00</td>
<td>279.08</td>
<td>300.967</td>
</tr>
<tr>
<td>Gross Domestic Product</td>
<td>199</td>
<td>2274</td>
<td>963.00</td>
<td>627.329</td>
</tr>
<tr>
<td>Gross Domestic Product Growth Rate</td>
<td>-0.30</td>
<td>7.00</td>
<td>2.91</td>
<td>2.113</td>
</tr>
<tr>
<td>Domestic Savings</td>
<td>5.90</td>
<td>18.30</td>
<td>12.75</td>
<td>3.244</td>
</tr>
<tr>
<td>Foreign Portfolio Flows</td>
<td>-0.160</td>
<td>1.580</td>
<td>0.18</td>
<td>0.379</td>
</tr>
<tr>
<td>Rate of Inflation</td>
<td>1.60</td>
<td>46.00</td>
<td>14.41</td>
<td>11.178</td>
</tr>
<tr>
<td>Exchange rate</td>
<td>24.10</td>
<td>81.00</td>
<td>60.68</td>
<td>18.181</td>
</tr>
<tr>
<td>Interest rate</td>
<td>1</td>
<td>28</td>
<td>14.18</td>
<td>7.367</td>
</tr>
</tbody>
</table>

Source: Survey results, 2010

The GDP grew at a mean rate of 2.9 over the same period with a high of 7% and a low of -0.3%. Average inflation during the period was a two digit figure because for most of the time it was above 10%. While interest rates remained above 10% for first half of the period under study, it went down significantly during the year 2003 to 2009 but still had a mean of above 10%. Average gross savings were Ksh 12.7 billion which is approximately one percent of average GDP; far below the desired 15% and 30% by 2030 (Kenya Vision 2030).

Market Capitalization Ratio: This is a ratio used to determine whether a market is undervalued or overvalued. The ratio is the percentage of GDP that represents the stock
market and may have some predictive value in signaling peaks in the market. This ratio is calculated as shown here below:

\[
\text{Market Capitalization to GDP} = \frac{\text{Stock Market Capitalization}}{\text{Market GDP}} \times 100
\]

The mean market capitalization ratio for the period of study was:

\[
\frac{279}{963} \times 100 = 28.97\%
\]

Compared to the ratio at the end of the period of study (2009) at 36.6%, there is some 8% improvement.

Conventionally, a ratio below 50% is deemed to mean that the market is undervalued. In recent years however, determining what percentage level is accurate in showing undervaluation and overvaluation has been hotly debated. The Kenya vision 2030 hopes to increase market capitalization ratio to 90% of GDP by the year 2030 because it is greatly undervalued at the moment.

### 4.3 Empirical Results

#### 4.3.1 Relationship between economic parameters & NSE 20 Share Index

The results of the regression model are reported in Table 3 and Table 4. Since all the dependent variables are not mutually exclusive, i.e. in one way or the other they affect and are influenced by each other, the Three Stage Least Squares Estimates was used (3SLS) to cater for the feedback effect among the variables. The results were normalized through the use of natural logarithm. The results support all the hypotheses of this study significantly at 1 per cent level of significance. The Chi² statistics for gross domestic
product, gross domestic product growth rate and exchange rate against the NSE 20 share index indicate that the models fits the data significantly at 1% level. Similarly, the Chi\(^2\) statistics for interest rate and domestic savings indicate that the models fit data significantly at 5% and 10% significant level respectively.

**Table 3: Summary Characteristics of the variables**

<table>
<thead>
<tr>
<th>Equation</th>
<th>Observations</th>
<th>RMSE</th>
<th>&quot;R-sq&quot;</th>
<th>chi2</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross domestic product=f(NSI)</td>
<td>525.401</td>
<td>0.262</td>
<td>16.49</td>
<td>0.0000</td>
<td></td>
</tr>
<tr>
<td>Gross domestic product growth rate=f(NSI)</td>
<td>1.525</td>
<td>0.452</td>
<td>15.78</td>
<td>0.0001</td>
<td></td>
</tr>
<tr>
<td>Domestic savings=f(NSI)</td>
<td>2.958</td>
<td>0.125</td>
<td>2.89</td>
<td>0.0889</td>
<td></td>
</tr>
<tr>
<td>Foreign portfolio flows=f(NSI)</td>
<td>0.368</td>
<td>0.006</td>
<td>0.26</td>
<td>0.6099</td>
<td></td>
</tr>
<tr>
<td>Rate of inflation=f(NSI)</td>
<td>10.939</td>
<td>-0.008</td>
<td>0.14</td>
<td>0.7121</td>
<td></td>
</tr>
<tr>
<td>Exchange rate=f(NSI)</td>
<td>17.083</td>
<td>0.071</td>
<td>15.30</td>
<td>0.0001</td>
<td></td>
</tr>
<tr>
<td>Interest rate=f(NSI)</td>
<td>6.696</td>
<td>0.144</td>
<td>5.63</td>
<td>0.0177</td>
<td></td>
</tr>
<tr>
<td>Gross domestic product =f(MC)</td>
<td>249.215</td>
<td>0.834</td>
<td>296.32</td>
<td>0.0000</td>
<td></td>
</tr>
</tbody>
</table>

**Source:** *Survey Results 2010*

The regression estimation of the macro-economic variables equations have varying R\(^2\). R\(^2\) is a statistical measure that represents the percentage of a variable’s movements that can be explained by movements in a benchmark index. The Gross domestic product, Gross domestic product growth rate and exchange rate have R\(^2\) of 0.262, 0.452 and 0.071 respectively at 1% significance level (P<0.01). Interest rate and domestic savings have R\(^2\) of 0.144 and 0.125 at 5% and 10% significant level respectively. Market capitalization appears to significantly explain GDP with a R\(^2\) value of 0.834 and therefore the beta coefficient cannot be ignore.
Table 4: Relationship between Economic Parameters and NSE 20 share Index

| Variables                     | Coefficient | Std. Err. | z    | P>|z| |
|-------------------------------|-------------|-----------|------|-----|
| Gross Domestic Product        |             |           |      |     |
| NSE 20 share Index            | 0.2852***   | 0.0702185 | 4.06 | 0.000 |
| Constant                      | 145.7209    | 232.6131  | 0.63 | 0.531 |
| Gross Domestic Product Growth Rate |     |           |      |     |
| NSE 20 share Index            | 0.0010***   | 0.0002509 | 3.97 | 0.000 |
| Constant                      | 0.0538      | 0.7957224 | 0.07 | 0.946 |
| Domestic Product              |             |           |      |     |
| NSE 20 share Index            | 0.0006*     | 0.0003391 | 1.70 | 0.089 |
| Constant                      | 11.0922***  | 1.171706  | 9.47 | 0.000 |
| Foreign Portfolio Flows       |             |           |      |     |
| NSE 20 share Index            | -0.0003     | 0.0000609 | -0.51| 0.610 |
| Constant                      | 0.2738      | 0.1929696 | 1.42 | 0.156 |
| Rate of Inflation             |             |           |      |     |
| NSE 20 share Index            | -0.0006     | 0.0016163 | -0.37| 0.712 |
| Constant                      | 16.1147***  | 5.233492  | 3.08 | 0.002 |
| Exchange Rate                 |             |           |      |     |
| NSE 20 share Index            | 0.0062***   | 0.0015812 | 3.91 | 0.000 |
| Constant                      | 42.9534***  | 5.894089  | 7.29 | 0.000 |
| Interest Rate                 |             |           |      |     |
| NSE 20 share Index            | -0.0025**   | 0.0010378 | -2.37| 0.018 |
| Constant                      | 21.3062***  | 3.328161  | 6.40 | 0.000 |
| Gross Domestic Product        |             |           |      |     |
| Market Capitalization         | 1.7912***   | 0.1040552 | 17.21| 0.000 |
| Constant                      | 463.11***   | 62.37869  | 7.42 | 0.000 |

Note: *** , ** , * Significance at 1% , 5% , and 10% respectively

Source: Survey Results 2010
The results presented in Table 4 indicate that there is a positive and significant (P<0.01) effect between Gross Domestic Product and GDP growth rates and the NSE 20 Share index. When GDP and GDP growth rates increase by one (1%) percent, the NSE 20 Share Index is likely to increase by 0.2852 and 0.0010 percent respectively. This is probably because the GDP and GDP growth rates are overall phenomenon used to measure the state of the economy and the stock index, being a leading indicator of economic growth or state of the economy feeds GDP and GDP growth rates. The stock index is perceived to increase or decline way before the GDP and GDP growth rates and other indicators of economic growth show any changes.

When the economy is growing, it is assumed that more savings are mobilized to productive investments through the stock markets and investors are getting a better return on their investments. These results are consistent with Levine & Zervos, (1996); Demirguc-Kunt & Levine, (1996); Obadan, (1998) who found that economist and policy makers have put the stock market into focus because of the perceived benefits it provides for the economy as it is deemed to be the fulcrum for capital market activities and often, it is cited as a barometer of business direction. This has provided heightened interest in understanding the role of stock markets in economic growth. Obadan, (1998) argued that an active stock market may be relied upon to measure changes in the general economic activities using the stock market index.

Looking at Figure 1 and 2, movement in NSE 20 Share Index is very noticeable, rising sharply from a low of 915 in 1990 to peak at 4556 in 1994; it went on a steady decline to plateau at 1355 in 2001 before it started going up again to climax at 5656 in 2006. During
the same period, GDP exhibited a steady but slow increase from Kshs 199 billions in 1990 to 2274 billions in 2009. The mean rate of growth was 2.9% as per table 2 above.

Figure 1: NSE 20 Share Index and Gross Domestic Product

![NSE 20 Share Index and Gross Domestic Product](image)

Figure 2: NSE 20 Share Index and Gross Domestic Product Growth Rate

![NSE 20 Share Index and Gross Domestic Product Growth Rate](image)
The pattern of growth in GDP is very noticeable and well established. At one point 2000, the rate of growth was negative showing that the economy had actually declined during that period. Figure 2 show that The NSE 20 Share index can adequately predict the direction of the economy. The observation is consistent with Alile, (1996) who found that capital resources are channeled by the mechanism of the forces of demand and supply to those firms with relatively high and increasing productivity thus enhancing economic expansion and growth as economies develop, more funds are needed to meet the rapid expansion necessary to sustain the growth. The stock market serves as a veritable tool in the mobilization and allocation of savings among competing uses which are critical to the growth and efficiency of the economy, Alile, (1984). Levine and Zervos (1998), also found that that stock market performance plays an important role in predicting future economic growth.

Available literature indicates that during the period 1990- 2002 (generally referred to as the reform period) the market witnessed various changes at both policy and institutional level. The market also faced various challenges, with deteriorating government-donor relationship and declining economic growth. Institutional reforms involved a deliberate effort to encourage investors to view the NSE as an investment frontier. Policy reforms involved fundamental changes in the capital market, which reorganized the market into four segments to cater for different categories of firms with the aim of encouraging more firms to list. However, entry barriers continued to crowd these initiatives and NSE performance as observed from figure 1 sea sawed significantly.
The CMA act was enacted in 1989; and the NSE was registered as a public company in 1991 and the government announced its intention to divest its interest in state corporations in 1991 with the aim that the privatization process would enhance the role of the private sector while restructuring government portfolio towards greater efficiency and productivity. All these structural and institutional changes combined with renewed optimism after cooling down of political temperatures occasioned by repealing of Section 2(A) of the constitution and a general election in 1992 propelled the NSE to great performance up to 1994. Absolute GDP was growing and so was the GDP Growth Rate but inflation and interest rates were still high and the Kenya shilling was depreciating further and all these may have led many to want to hedge their savings through the NSE.

The Government privatization of Kenya Airways (KQ) in May 1996 did not spur a general rise in NSE 20 Share Index and the Market Capitalization because prices of KQ shares started on a downward spiral immediately thereby eroding the confidence that was building up in the stock market. The situation got worse between 1999 and 2002 when NSE 20 Share Index registered its lowest point at 1355 and GDP growth rate was in the negative following heightened political temperatures and uncertainty occasioned by the ensuing transition of political leadership coupled with poor infrastructure, inadequate power supply, telecommunication services, depressed investments, declined level of tourism, depressed manufacturing production, rising costs of inputs and poor world commodity prices in addition to continued high level of interest rates, Economic Survey, (1999 and 2003).
After a smooth political transition, things started showing up for the Kenyan economy with the entire range of economic indicators under this study showing very positive relationships. The NSE 20 Share Index peaked at an all time high of 5656 in 2006 and so did the GDP growth rate at 7% in 2007 and market capitalization at Kshs 851 billions. Interest rates and inflation rates were all very conducive to investments until the political violence of 2007/2008 and the global economic meltdown dealt a devastating blow to all these achievements. During the time when the NSE 20 Share Index was rising, market capitalization was also on a steady increase as several state corporations were privatized, existing listed companies issued bonuses and rights issues and private companies such as Scangroup and Eveready were listed for the first time in the NSE.

**Figure 3: Gross Domestic Product and Market Capitalization**

GDP in relation to Market capitalization, the effect is very positive and significant at less than one percent, implying that for every 1% increase in market capitalization, GDP increases by a significant 1.7912. This would be explained by the fact that GDP is an
overall phenomenon that explains the state of the economy and market capitalization feeds into the GDP thereby helping to grow it.

According to figure 3, the GDP can be explained by Market Capitalization (MC) as they seem to move in the same direction indicating that the market capitalization can significantly predict the GDP. It is noted that the MC starts direction of movement before the GDP reacts later along the way. We can therefore use the stock market returns as leading indicators of the state of the economy to predict the direction of the economy.

The results in Table 4 above further indicate that the NSE 20 Share Index has a positive and significant (P<0.1) effect on domestic savings. This implies that when the NSE 20 Share Index increases by one percent, domestic savings are likely to increase by 0.0006 percent. This kind of relationship can be explained from the fact that one of the major roles of the stock market is savings mobilization and utilization and it is likely that part of domestic savings are directed to investments in the capital markets.

This finding in both Table 2 and Figure 4 below are consistent with the argument by Singh, (1997) that stock market is expected to have an effect on the economic growth of a country through its role of providing an avenue for utilization of domestic savings and increasing the quantity and the quality of investment. The stock market is expected to encourage savings by providing individuals with alternative financial instruments that may better meet their risk preferences and liquidity needs thereby occasioning better savings mobilization which may in turn increase the savings rate in an economy, Levine.
and Zervos, (1998). Domestic savings are however too low in absolute figures and when NSE attained its highest level in 2006, domestic savings to GDP were less than 1%.

**Figure 4: NSE 20 Share Index and Domestic Savings**

Table 4 results further indicate that NSE 20 share index and foreign portfolio flows reflect a negative and insignificant (P>0.1) effect at greater than ten percent. This scenario can be explained by the fact that over the last five years, percentages of foreign investor shareholding of listed companies has been on a steady decline, Economic survey, (2010). Effectively, the net foreign flows have tended to be negative implying that in absolute terms, more foreign investment are getting liquidated than are being acquired as investors lost confidence in the market due to frequent bickering including improprieties by stock brokerage firms and market abuse through insider trading as for instance Uchumi Supermarket case, CMA Annual Report, (1998).
It is also popularly believed that since portfolio investment is more mobile than direct investment, increased portfolio investment could destabilize an economy and its financial markets, Edwards, (1998). As far as NSE is concerned, there have been numerous concerted efforts to increase foreign ownership of listed companies. These efforts involved tax concessions on the type of business, dividend income, the extent of ownership etc. It is observed that these efforts have not born fruits and there is need to rethink and renew the efforts while striving to address the aspects of the economy or the market that drives them away.

Few studies examine the growth effect of portfolio equity flows. In their study, Bekeart and Harvey (1998; 2000) find that portfolio equity inflows increase economic growth in 14 out of 19 lower-income countries under study. Durham (2004) suggests that portfolio equity flows promote economic growth in countries with relatively large equity markets and limited corruption but Carkovic and Levine (2002), instead, find that portfolio inflows have no impact on economic growth and so does José and Massa, (2009). The
question is whether foreign portfolio equity flows in Kenya have an impact on economic status of the country and if they affect performance of the NSE as foreigner investors are noted to troop out of the stock market to take advantage of cyclical bull markets, only to troop back to buy at cheaper rates during bear markets.

In the last few decades, foreign investors have emerged as major participants in emerging stock markets and although this study found insignificant relationship between NSE 20 share index and portfolio flows, Errunza, (1982) argued that the long term impact of foreign capital inflows on the development of the stock market is broader than the benefits from initial flows and increased investor participation. Foreign investment is associated with institutional and regulatory reform, adequate disclosure and listing requirements and fair trading practices and the larger they get the better for the country. NSE should therefore enjoy some benefit in the long term from the reforms already taking place.

The index has been noted to have a negative and insignificant (P>0.1) effect on rate of inflation (Table 4) because as the inflation increases by one percent, the index declines by 0.0006. The findings are consistent with results of studies by Fama and Schwert (1977), Chen, Roll and Ross (1986), Nelson (1976) and Jaffe and Mandelker (1976) who pointed to a negative relation between inflation and stock indices. While the stock market is known to provide a hedge against inflation as investors turn to stock markets during periods of inflationary pressure, some inflation is said to be positive but beyond certain points, they become a disincentive to invests because under inflationary conditions,
analysts do not think strong job creation and economic growth are sustainable, and the stock market falls.

**Figure 6: NSE 20 Share Index and rate of Inflation**

The mean inflation in Kenya is at two digit level (table 2) and may be a disincentive to invests. It may be necessary to carry out a study to understand how investors’ behaviour changes during periods of high inflation and how they hedge against inflationary pressures.

It is noted from Figure 6 above that inflation is subjected to more dramatic falls unlike the NSE 20 Share Index which has been steadier whether declining or increasing. This can be attributed to the spontaneity of inflation as it is fueled by monetary policies as well as rumours and panicky consumer behavior. Whenever the government initiates mechanisms to address inflation mostly through monetary and fiscal policies, the rate goes down with the same spontaneity as when it was going up. The pattern of inflation in Kenya can also be explained by changes in weather patterns because the observed high
peaks in figure 6 above also corresponds to prolonged periods of draught when food prices go up significantly and during periods of high fuel prices, Economic Survey, (1995; 2008)

The NSE 20 share index is very positively and significantly related with exchange rate at 1% (P<0.01). For every one percent increase in exchange rate, NSE index is likely to increase by 0.0062 percent. This positive relationship is supported by Mukherjee and Naka (1995) who found that stock market returns will be positively correlated to changes in the exchange rates and can be explained by the level of foreign investments which have been noted to be increasing at the NSE due to a sustained effort by stake holders to attract foreign investors (NSE Hand Book); Economic Survey, (2010). They also found that the impact of exchange rate changes on the economy will depend to a large extent on the level of international trade and the trade balance. Hence the impact will be determined by the relative dominance of import and export sectors of the economy.

Figure 7: NSE 20 Share Index and Exchange Rate
Initially, after the Bretton Woods system of fixed exchange rates broke down in 1972, exchange rates were determined mainly by trade issues in the balance of payments system. Later bond investors became the dominant force as countries and corporates traded in bonds originating from other countries and corporations other than their own. In recent years however, equity investors have had the greatest influence as economies have been liberalized and it is easier to own equity portfolios in different countries either as individuals or institutions. This understanding may adequately explain the strong relationship at 1% significant between NSE 20 Share Index and exchange rate (Figure 7). It is observed that the exchange rate enjoyed a steady increase unlike the NSE 20 Share Index that had sharp ups and downs.

The results in table 4 above also show NSE 20 share index reflecting a negative but significant (P<0.05) effect on Interest rates. The implication is that when the interest rate increases by one percent (1%), the NSE 20 Share Index is likely to reduce by 0.0025%. This is can be explained by the fact that investors rush to buy money market instruments (treasury bills) when interest rates are high because they give them better short-term returns than the stock market instruments.

Looking at Figure 8 below, it is noted that interest rates move in the same direction as the NSE 20 Share Index though the interest rate movement is more pronounced. This indicates that there exists a relationship between the two. Notice is also made of the time lag before both behave in a similar manner. For instance, while NSE picked in 1994 and 2006/2007, interest rates peaked in 1997/1999 and 2008.
Generally, stock markets are known to be susceptible to high interest rates because they determine how lucrative other available investments opportunities (Treasury Bills) may be and naturally, investors will select an investment with return high enough to compensate for the lost opportunity of earning interest from the guaranteed cash deposit or fixed deposit, offered by banks, and for taking on additional risk. The choice of where to invest is determined by returns and perspectives of investors, whether short term or long term. In periods of economic downturn or recession, investors would rather have their money in cash for some interest than in stock market which can crash.

Interest rates affect prospects for individual companies listed in an exchange and therefore affect the bottom line as well as the performance of the entire stock market. Thus, the importance of interest rates cannot be overlooked. At other times, the government uses macroeconomic policies such as fiscal and monetary policies to control interest rates if they are hurting the economy.
CHAPTER 5
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter deals with the summaries of the findings of the study and the observed overall relationships arising out of the study. It also highlights the conclusions of the study and eventually widens up with recommendations and suggestions for further studies.

5.2 Summary Analysis

Figure 9: NSE 20 Share Index versus all the Macro-economic variables.

As observed from figure 9 above, there exist strong relationships between NSE 20 Share Index, market capitalization and the selected macro-economic indicators involving GDP, GDP Growth Rates, Domestic Savings, Exchange Rate, and Interest Rates while the
relationship with Foreign Portfolio Flows and Rate of Inflation is found to be insignificant. Figure 9 has captured the graphical representations for all the variables observed together and it is noted that all of them exhibit similar trends except that when they are related to the stock index, some show negative relationships.

In principle, the stock market should do well under conditions of strong economic growth and low inflation, moderate interest rates, huge savings and foreign flows and a manageable exchange rate. Under inflationary conditions, analysts do not think strong job creation and economic growth are sustainable.

5.3 Conclusions

This paper examined the relationship between macro-economic variables and the NSE Stock Index and market capitalization using the three Stage Least Squares Estimates (3SLS) to cater for the feedback effect among the variables. That the stock market index can be used to predict the direction of economic growth is not in doubt because the stock market serves as an important mechanism for effective and efficient mobilization and allocation of savings, a crucial function for an economy desirous of growth.

This study attempted to understand relationships of stock market performance and selected macro-economic variables in Kenya between the period of 1990 and 2009. By use of stock market index and market capitalization, the relationship between stock market performance and economic growth was found to be positive. This suggests that for any significant growth to be achieved, policy focus should be directed on measures to promote growth and development of the stock market.
The Kenyan stock market has a bright prospect given the recent policy direction especially the abrogation of most laws that hitherto hamper its effective and efficient functioning. Also, the internationalization, the improvement in the infrastructural facilities in the market in line with what obtains in developed market and also the present democratic dispensation will all work individually and jointly to ginger the prospects of the stock market and eventually those of the entire country.

The results of the study are however contrary to assertions by Kimura & Yobesh, (1999) who in a study meant to find out why there is such low growth in NSE found that there is insignificant correlation between the growth of the economy and stock market performance. It now mean that circumstance have changed since 1999.

5.4 Recommendations

5.4.1 Policy and Institutional Recommendations

The NSE 20 Share Index can be used as a barometer of the state of the economy and therefore more insightful mechanisms and plans should be found to make it more efficient. It is imperative to note that the institutional and policy reforms of the 1990s and early 2000s have not achieved much of the objectives they were meant to address and therefore there is need to address the challenges that made it difficult for better achievements. The conclusions of the study are that the Nairobi stock market formed significant relationships with all the selected macroeconomic variables except the foreign portfolio follows and rate of inflation. Policy makers should formulate plans that ensure
that NSE performance is maximized because economic performance is also likely to be at its peak when NSE index is at its peak.

The conclusions drawn from the study will be beneficial to planners in two ways: (1) whether there exist opportunities for improvement from the inefficiencies of stock market mechanisms to aid NSE in efficiently and effectively playing its role as a significant predictor of the state of the economy. (2) Understanding why foreign portfolio flows and rate of inflation had insignificant effect yet government has done a lot to especially encourage foreign participation in the market. Further studies are necessary to understand how investors in Kenya hedge against high inflation since they do not seem to favour investing in the NSE.

Policy-makers need to be careful too when trying to influence the economy through changes in macro-economic variables such as interest rates, exchange rate, inflation rates, foreign portfolio flows, domestic savings and GDP and GDP growth rates, and while aiming to correct macro-economic ills such as inflation or unemployment, as they may inadvertently depress the stock market, and curtail capital formation which itself would lead to further slowdown of the economy due to the simultaneity effect on the index.

5.4.2 Recommendations for Further Studies

Three points that may provide grounds for further research are worth noting. First, extending the conclusions of this study to other sectors and to other markets is a matter of empirical study and one which is worth pursuing. For instance does the construction index have a relationship with the selected macro-economic variables? At the same time,
the relationship between macro-economic variables and stock markets, though widely documented, is not universally shown or accepted. Indeed, Filler, Hanousek & Campos (1999) asserted that the nature and economic significance of the relationship between stock market development and economic well being vary in method and results according to a country’s level of economic development and the period under consideration with a larger impact in less developed economies. Is this the case in Kenya?

Secondly, this study has provided long run relationships between the NSE performance variables and macroeconomic variables and does not by itself prove similar relations exit in the short run. The study was a preliminary investigation without much literature precedent, and concentrated on examining only the long-term equilibrium relationship among the macroeconomic variables and NSE performance. Secondly, there is need to understand why foreign portfolio flows had insignificant effect yet government has done a lot to encourage foreign participation in the market.

Finally, Stock market performance is influenced by both global and local economic conditions as well as weather and political influences. The terrorist attack in Nairobi in 1998, the post election violence, a general election etc affect the performance of the stock market and the economy at large and are worth some empirical study. Therefore, it may be useful for future studies to include other variables that might affect NSE performance.

5.5 Limitations of the study.
Limitations of the study include limited literature and empirical support on the subject under study. The annualized data may not have presented adequate observations for purposes of identifying meaningful lag lengths.

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