

**THE EFFECT OF FISCAL POLICY ON THE PERFORMANCE  
OF THE NAIROBI SECURITIES EXCHANGE**

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## DECLARATION

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

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This research project has been submitted for examination with my approval as a university supervisor.

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## ABBREVIATIONS

ADF	-	Augmented Dickey Fuller
AIMS	-	Alternative Investment Market Segment
CBK	-	Central Bank of Kenya
CPI	-	Consumer Price Index
CUSUM	-	Cumulative Sum Chart
EMH	-	Efficient Market Hypothesis
FDI	-	Foreign Direct Investment
FIMS	-	Fixed Income Market Segment
GDP	-	Gross Domestic Product
KNBS	-	Kenya National Bureau of Statistics
KRA	-	Kenya Revenue Authority
LIC	-	Low Income Countries
MIMS	-	Main Investment Market Segment
MPC	-	Marginal Propensity to Consume
NASI	-	Nairobi All Share Index
NSE	-	Nairobi Securities Exchange
OECD	-	Organization for Economic Co-operation and Development
VIF	-	Variance Inflation Factors

## **ABSTRACT**

The aim of this descriptive and correlational study was to determine the relationship between fiscal policy and performance of the Nairobi Securities Exchange. The performance measure of the Nairobi Securities Exchange used was the NSE 20-Share Index which was regressed against the fiscal policy instruments including government revenue, government expenditure and government debt expressed as percentage of the GDP. The period of the study was ten years from January 2004 to December 2013. The study employed monthly secondary data which was obtained from the CBK, Kenya National Bureau of Statistics and NSE. Data were analyzed using the Ordinary Least Square method which assumes linearity between the dependent variable and the independent variables and the analysis technique was multiple regression aided by research software 'eviews' version 7. The study found out that performance of the stock market is influenced by the Government's fiscal policies. Government expenditure and revenue had positive effect on stock market performance as both are indicative of the economic performance and the former reflect micro and macroeconomic consideration and direction of the Government. Government debt had low positive effect on stock market performance with a negative cumulative effect as its long-term use poses risk of inflation owing to interest rates on debt. These findings confirm the researcher's priori expectation that government fiscal policy actions significantly affect stock performance. The rest of the paper is organized as follows: chapter one covers introduction by addressing issues related to background of the study, statement of the problem, study objective and the significance of the study; chapter two focuses on literature review; chapter three is about the research methodology; chapter four covers data analysis, results and discussion; and lastly chapter five addresses summary, conclusion and recommendations.

# **CHAPTER ONE**

## **INTRODUCTION**

### **1.1 Background of the Study**

One of the factors that helps determine the country's economic direction is fiscal policy. The government uses fiscal policy to influence the economy by adjusting revenue and spending levels (Afonso and Sousa, 2011). Fiscal policy is based on the theories of British economist John Maynard Keynes, which state that increasing or decreasing revenue (taxes) and expenditures (spending) levels influences inflation, employment and the flow of money through the economic system. Fiscal policy is often used in combination with monetary policy, which is set to influence the direction of the economy and meet economic goals (Steven, 2003).

The two main tools of fiscal policy are taxes and spending. Taxes influence the economy by determining how much money the government has to spend in certain areas and how much money individuals have to spend. For example, if the government is trying to spur spending among consumers, it can decrease taxes. A cut in taxes provides families with extra money, which the government hopes they will turn around and spend on other goods and services, thus spurring the economy as a whole (Heyne et al, 2002).

Spending is used as a tool for fiscal policy to drive government money to certain sectors that need an economic boost. Whoever receives those dollars will have extra

money to spend – and, as with taxes, the government hopes that money will be spent on other goods and services. The key is finding the right balance and making sure the economy doesn't lean too far either way. There are two main types of fiscal policy: expansionary and contractionary; Expansionary fiscal policy, designed to stimulate the economy, is most often used during a recession, times of high unemployment or other low periods of the business cycle. It entails the government spending more money, lowering taxes, or both. The goal is to put more money in the hands of consumers so they spend more and stimulate the economy (Steven, 2003). Contractionary fiscal policy is used to slow down economic growth, such as when inflation is growing too rapidly. The opposite of expansionary fiscal policy, contractionary fiscal policy raises taxes and cuts spending.

### **1.1.1 Fiscal Policy**

Fiscal policy involves the use of government spending, taxation and borrowing to affect the level and growth of aggregate demand, output and jobs. Fiscal policy is also used to change the pattern of spending on goods and services. It is also a means by which a redistribution of income & wealth can be achieved. It is an instrument of intervention to correct for free-market failures (Heyne et al, 2002).

Traditionally fiscal policy has been seen as an instrument of demand management. This means that changes in government spending, direct and indirect taxation and the budget balance can be used “counter-cyclically” to help smooth out some of the

volatility of national output particularly when the economy has experienced an external shock and is in a recession (Steven, 2003).

The Keynesian school argues that fiscal policy can have powerful effects on demand, output and employment when the economy is operating below full capacity national output, and where there is a need to provide a demand-stimulus. Monetarist economists believe that government spending and tax changes only have a temporary effect on aggregate demand, output and jobs and that the tools of monetary policy are a more effective instrument in controlling inflation and maintaining macroeconomic stability (Steven, 2003).

The government uses fiscal policy to promote economic growth, low unemployment and to stabilize the economy. During period of low economic growth, the government tends to cut taxes and may increase spending in an attempt to spark growth. During periods of high economic growth, the government may increase taxes and cut spending to ensure that the economy doesn't grow too quickly which can result in undesirable effects like high inflation. The main instruments of fiscal policy are discussed in the subsequent paragraphs.

Taxation is one of the two primary instruments of fiscal policy. When the government increases or decreases taxes, it increases or decreases the amount of money consumers have to spend which can have a significant impact on the direction of the overall economy. A decrease in taxation tends to put more money into the hands of consumers, which can lead to increased spending. Increased spending tends to lead to

higher revenues for businesses, which can allow them to expand and hire more workers. Cutting taxes is a common fiscal policy measure to encourage economic growth (Heyne et al, 2002).

Government spending is the other main instrument of fiscal policy. The expenditures of the government can promote economic activity and create jobs. For example, if the government funds a project to build a high-speed train across the country, the funds that go into the project could go toward hiring workers which could reduce unemployment and inject money into the economy. Higher levels of government spending tend to promote employment and economic growth (Larch and Nogueira, 2009)

Reducing taxes and increasing spending can both promote economic growth, but if the government spends more than it takes in through taxes it is operating on a deficit, meaning it is losing money over time. Operating on a deficit causes the government to accumulate debt (Heyne et al, 2002).

### **1.1.2 Performance of Securities Exchange**

Godspeed (2008) defines stock market as the institutional framework through which public companies issue new share capital in the primary market and the ownership of the shares changes hands in the secondary market. Mishkin (2007) defines a stock as a security that is claimed on the earnings and assets of corporations. Stocks are sold in a formal market called the stock exchange. Economic agents buy shares because they value the dividends that their investments will pay in future. Equity stock not only

pays a dividend but also capital gains if the owner transfers ownership in the secondary market.

Common stock markets in the world include S and P 500 in the United States, the FTSE 100 in the United Kingdom, the Nikkei Stock Average in Japan, the Hang Seng in Hong Kong, DAX in Germany, CAC 40 in France, Bovespa in Brazil to mention a few while NSE is the Kenya's stock market. Filis (2010) opined that stock market is the best indicator to forecast future economic activities and describe the actual causal effect between future economic growth and stock prices.

The existence of the stock market enables individual investors to transfer the control of their savings to the market place with confidence. Individual investors exchange their savings for shares of companies that are listed on the stock exchange. The share gives the individuals the right to vote and appoint directors of the company who have the responsibility of steering the performance of the company. If the company is doing well the shareholders are entitled to a return on their investment in form of a dividend on each share held. Management has to perform adequately and satisfactorily or they will have to be replaced by competent managers. Shareholders therefore keep a firm grip on management so that they at least try to guarantee a return on their investment (Pilbeam, 1998).

Stock markets promote higher standards of accounting, resource management and transparency in the management of business. This is because financial markets encourage the separation of owners of capital, on the one hand, from managers of

capital, on the other. The stock exchange also improves the access to finance of different types of users by providing the flexibility for customization. Lastly the stock exchange provides investors with an efficient mechanism to liquidate their investments in securities. The very fact that investors are certain of the possibility of selling out what they hold, as and when they want, is a major incentive for investment as it guarantees mobility of capital in the purchase of assets (www.nse.co.ke).

### **1.1.3 Relationship Between Fiscal Policy and Stock Market**

#### **Performance**

Some observers view the stock market as an independent source of macroeconomic volatility to which policymakers may wish to respond (Bernanke and Kuttner, 2005). Fiscal measures enacted by various agencies of national governments influence the aggregate economies of those countries. The resulting economic conditions influence all industries and companies in an economy positively or negatively which in turn affect the performance of stock markets (Fama, 1970).

Even though a significant number of past studies have concentrated their attention on the relationship between monetary policy and stock market performance (Fama and French, 1988), only few investigate the effects of fiscal policy on stock markets (Darrat, 1994; Afonso and Sousa, 2011).

Fiscal policy used in a Keynesian manner can support aggregate demand, boosting the economy and potentially driving stock prices higher. In contrast, classical economic theory focuses on the crowding out effects of fiscal policy in the market for loanable



funds and of the productive sectors of the economy. Hence, fiscal policy could potentially drive stock prices lower through the crowding out of private sector activity. Furthermore, from a Ricardian perspective (Barro, 1974; Barro, 1979) fiscal policy is impotent and as such will have no effect on stock markets.

Theoretically, fiscal policy actions (changes in expenditures or taxes resulting in budget deficits or surpluses) play a significant role in the determination of asset prices. For example, increases in taxes, with government spending unchanged, would lower (expected) asset returns (or prices) as they discourage investors from (further) investing in the stock market (Afonso and Sousa, 2011).

Increases in government borrowing raise the (short-term) interest rate which, in turn, lower the discounted cash flow value from an asset (like a share) and thus signals a reduction in stock market activity (aside from other adverse effects in the general economy) (Barro, 1974,1979).

The priori expectation of this study is that fiscal policy affects the performance of the stock market as a critical component of the economy. Moreover, the researcher expects that various monetary policy instruments stated in the model as independent variables will be correlated to the NSE 20-share index differently either positively or negatively.

## **1.14 Fiscal Policy in Kenya and the Nairobi Securities Exchange**

Fiscal Policy is the use of government revenue collection (taxation) and expenditure to influence the economy. The government of Kenya uses fiscal policy to influence the level of aggregate demand in the economy, in an effort to achieve economic objectives of price stability, full employment and economic growth. Keynesian economic suggests that increasing government spending and decreasing tax rates are the best ways to stimulate aggregate demand, and decreasing spending and increasing taxes after the economic boom begins (Kariuki, 2003).

Kenya's strong economic performance between 2002 and 2007 has been partly attributed to macroeconomic stability and strong fiscal consolidation. After two decades of sluggish performance, economic growth resumed in 2002 and steadily increased from 0.5 percent to 7 percent in 2007. During this period, the government retired debt and started creating fiscal space to fund essential infrastructure. The ratio of debt to Gross Domestic Product (GDP) declined from 60 percent in 2000 to 40 percent in 2008. Fiscal space was achieved through a strong revenue effort and stringent fiscal management (Kirira, 2009).

The rationale for allocating the budget for development purposes is to upgrade rural basic infrastructure, urban transport, low income household and other social services. These expenditure purposes have a significant role in sustaining growth momentum and positive economic transformation (GOK, 2011). Kenya has been experiencing fiscal deficit over the years.

The Nairobi Securities Exchange (NSE) is the only stock exchange market in Kenya and is located in Nairobi city. It was formed in 1954 as a voluntary organization of stock brokers and is now one of the most active capital markets in Africa. As a capital market institution, the Stock Exchange plays an important role in the process of economic development. It helps mobilize domestic savings thereby bringing about the reallocation of financial resources from dormant to active agents. Long-term investments are made liquid, as the transfer of securities between shareholders is facilitated. The Exchange has also enabled companies to engage local participation in their equity, thereby giving Kenyans a chance to own shares ([www.nse.co.ke](http://www.nse.co.ke)).

Trading at the NSE is automated through the ATS. The products traded are shares and bonds, with over 50 different types of shares and over 60 bonds. Bonds are in two groups namely treasury bonds issued by the government and corporate bonds issued by companies. On the other hand, shares are grouped into four sectors including agriculture; commercial and services; finance and investment; and industrial and allied sectors ([www.nse.co.ke](http://www.nse.co.ke)).

Nairobi Stock Exchange (NSE) is categorized into three market segments; Main Investment Market Segment (MIMS); Alternative Investment Market Segment (AIMS); and Fixed Income Market Segment (FIMS). The MIMS is the main quotation market ([www.nse.co.ke](http://www.nse.co.ke)).

The NSE 20-Share Index has been in use since 1964 and measures the performance of 20 blue-chip companies with strong fundamentals and which have consistently

returned positive financial results. The NSE 20 Share Index (^N20I) is a price weight index. The members are selected based on a weighted market performance for a 12 month period as follows: Market Capitalization 40%, Shares Traded 30%, Number of deals 20%, and Turnover 10%. Index is updated end of day only. Included in the Index are Mumias Sugar, Express Kenya, Rea Vipingo, Sasini Tea, CMC Holdings, Kenya Airways, Safaricom, Nation Media Group, Barclays Bank Kenya, Equity Bank, Kenya Commercial Bank, Standard Chartered Bank, Bamburi Cement, British American Tobacco, Kengen, Centum Investment Company, East African Breweries, EA Cables, Kenya Power & Lighting Company Ltd. and Athi River Mining. This index primarily focuses on price changes amongst these 20 companies ([www.mystocks.co.ke](http://www.mystocks.co.ke)).

The NSE 20-Share Index is the long-standing benchmark index used for equities traded on the NSE and represents the geometric mean of share prices of the NSE's 20 top stocks. It has recently been joined by the more broad-based NSE All Share Index (NASI), aimed at capturing the market capitalization of all the NSE's listed equities traded in a day. The NSE 20 lost more than one-third of its value in 2008 as the investors began fleeing stocks after brokerage collapses and the global credit crisis ([www.nse.co.ke](http://www.nse.co.ke)). Other measures of stock performance used at the NSE include market capitalization and equity turnover.

Several studies carried out on the stock market performance in Kenya have used the NSE 20-share index as a measure of the NSE performance. Some of these studies

include (Nyamute, 1998; Mutoko, 2006; and Siele, 2009). The current study will use the NSE-20 share index as a measure of the stock market performance as well.

## **1.2 Research Problem**

Fiscal policy used in a Keynesian manner can support aggregate demand, boosting the economy and potentially driving stock prices higher. In contrast, classical economic theory focuses on the crowding out effects of fiscal policy in the market for loanable funds and of the productive sectors of the economy. Hence, fiscal policy could potentially drive stock prices lower through the crowding out of private sector activity. Furthermore, from a Ricardian perspective (Barro, 1974, 1979) fiscal policy is impotent and as such will have no effect on stock markets. Fiscal policy actions (changes in expenditures or taxes resulting in budget deficits or surpluses) play a significant role in the determination of asset prices. For example, increases in taxes, with government spending unchanged, would lower (expected) asset returns (or prices) as they discourage investors from (further) investing in the stock market (Afonso and Sousa, 2011).

Globally, various researchers have examined fiscal policy in quite a number of perspectives, for instance, Hondroyiannis and Papapetrou (2001) examined macroeconomic influences on the stock market for Greece. They found that stock prices do not lead changes in real economic activity but that the macroeconomic activity and foreign stock market changes only partially explained Greek stock price movements. Fuente (1997) examined the impact of public expenditures and taxation on economic growth of 21 OECD countries from 1965 to 1995. The results of the

study could not provide evidence in support of fiscal policy led growth. Specifically, public expenditures tend to crowd out private investment leading to reduction in disposable income and incentive to save. Devarajan et al (1996) and Afonso and Furceri (2010) found that government investment has sizable negative and statistically significant effect on growth.

Locally, Nkukuu (2011) examined the impact of government budget balance on the stock market return and found a weak negative relationship. Bhujbal (2012) on the other hand examined the relationship between local government expenditure and inter-governmental fiscal transfer and found that the local government expenditure is positive and significantly influence the inter-government fiscal transfer. Njenga (2012) looked at the relationship between fiscal Policy and Public Investment in Kenya and noted that a positive change in Government Capital Expenditure would lead to an increase in public investments. The study concluded that low-income countries such as Kenya fiscal policies may not be harmful for either long- or short-term growth.

To the best of the researcher's knowledge, there are no studies related to the performance of Nairobi Securities Exchange and fiscal policy variables. This strengthens the importance of the current study and the value it adds to the existing literature. Therefore, this paper aims to examine the relationship between fiscal policy and performance of the stock market for the ten year period between 2004 and 2013.

### **1.3 Research Objective**

The study sought to establish the effect of fiscal policy on the performance of the Nairobi Securities Exchange.

### **1.4 Value of the Study**

This study will benefit researchers and academicians in finding more evidence on the determinants of the performance of the Nairobi Securities Exchange. Scholars and academicians will find this study a useful guide for the same as it will recommend on areas for further research. The current study will also further help investors to proactively strategize their investment decisions.

The findings of this study would help the policy makers or regulatory bodies understand the behaviour of the stock market and benefit the information toward achieving fiscal goals. It will enable them understand the growing need to formulate fiscal policies that will be responsive to changes in NSE 20-share index, since the stock market is a veritable source of long-term capital. The effectiveness of fiscal policy should therefore be anchored on the potency of its instruments on stock market performance.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter presents the literature review on the subject under study as presented by various researchers and scholars. The review has drawn materials from several sources that are closely related to the theme and objective of the study. The chapter contains three areas as follows: first, theoretical review; second, empirical studies; and third, conclusions from literature review.

#### **2.2 Theoretical Review**

The basis of the study rests on the following theories:

##### **2.2.1 Efficient Markets Hypothesis**

Efficient market hypothesis (EMH) postulates that any new information is quickly and efficiently incorporated into asset prices at any point in time, so that old information cannot be used to foretell future price movements. Fama (1965b) first defined the term "efficient market" as one in which security prices fully reflects all available information. The market is efficient if the reaction of market prices to new information should be instantaneous and unbiased.

Three versions of EMH have been advanced. The weak form EMH stipulates that current asset prices already reflect past price and volume information. The



information contained in the past sequence of prices of a security is fully reflected in the current market price of that security. It is named weak form because the security prices are the most publicly and easily accessible pieces of information. It implies that no one should be able to outperform the market using the available information" Fama (1965a; 1965b)

The semi strong form EMH states that all publicly available information is similarly already incorporated into asset prices. In other words, all publicly available information is fully reflected in a security's current market price. The public information stated not only past prices but also data reported in a company's financial statements, company's announcement, economic factors and others. It also implies that no one should be able to outperform the market using any information that is public knowledge Fama (1965a).

The strong form EMH stipulates that private information or insider information too, is quickly incorporated by market prices and therefore cannot be used to reap abnormal trading profits. Thus, all information, whether public or private, is fully reflected in a security's current market price. That means even the company's management considered as insiders are not able to make gains from inside information they hold. They are not able to take the advantages to profit from information such as 'take over decisions' which has been made ten minutes ago. The rationale behind this is that the market anticipates, in an unbiased manner, future development and therefore information has been incorporated and evaluated into market price in a much more objective and informative way than insiders, French and Roll (1986).

Therefore if all fiscal actions of government are publicly known it implies that no one should be able to outperform the market using something that "everybody else knows". Similarly, it means that all this information will be incorporated in the securities prices. Hence when government reduce taxes in an expansionary fiscal policy, activity at NSE is expected to increase hence higher security prices and vice versa.

### **2.2.2 Keynes' Theory of Consumption**

The Keynesian Theory of consumption is that current real disposable income is the most important determinant of consumption in the short run. Real Income is money income adjusted for inflation. It is a measure of the quantity of goods and services that consumers have bought with their income (or budget) (Keynes, 1936). For example, a 10% rise in money income may be matched by a 10% rise in inflation. This means that real income (the quantity or volume of goods and services that can be bought) has remained constant.

The standard Keynesian consumption function is as follows:

$$C = a + c Y_d \text{ where,}$$

C= Consumer expenditure

a = autonomous consumption. This is the level of consumption that would take place even if income was zero. If an individual's income fell to zero some of his existing

spending could be sustained by using savings. This is known as dis-saving (Keynes, 1936).

$c$  = marginal propensity to consume (mpc). This is the change in consumption divided by the change in income. Simply, it is the percentage of each additional pound earned that will be spent.

There is a positive relationship between disposable income ( $Y_d$ ) and consumer spending. The gradient of the consumption curve gives the marginal propensity to consume. As income rises, so does total consumer demand (Keynes, 1936). A change in the marginal propensity to consume causes a pivotal change in the consumption function. In this case the marginal propensity to consume has fallen leading to a fall in consumption at each level of income. According to Keynes's theory, aggregate consumption was a positive but diminishing function of aggregate income (Veganzones, 2005).

Consumption is, or shall be defined to be, the total quantity of goods and services that people in the economy wish to purchase for the purpose of immediate consumption. As such, it is one of the main determinants of an economy's aggregate demand (that is, the sum of all planned expenditures in the economy). Other determinants of aggregate demand include investment and government expenditure (with net trade taken into account for open markets), which are also defined in terms of desired rather than actual expenditure (Mishkin, 1996).

One place the public can spend more is in the stock market, increasing the demand for equities and consequently raising their prices (Mishkin, 1996). A more Keynesian view comes to a similar conclusion because it sees the fall in government expenditure and increases in taxes stemming from contractionary fiscal policy, this reduces activity at the NSE and fall in equity prices and vice versa.

### **2.3 Determinants of Performance of Securities Exchanges**

Motivated by growing theoretical evidence, which shows that stock markets play a vital role in boosting long-run economic growth, governments the world over have instituted measures aimed at enhancing stock market operations (Blancahard and Giavazzi, 2003). However, if any stock market is to play its allocative role properly, a lot more needs to be done on the macroeconomic policy framework front. Specifically, both fiscal and monetary policies formulation should be geared towards enhancing the efficacy with which resources are mobilized through the stock market (Veganzones, 2005).

A number of macroeconomic variables such as changes in interest rate, inflation rates, and economic growth are believed to affect how stocks perform. The macroeconomic approach attempts to examine the sensitivity of stock prices to changes in macroeconomic variables. Under this approach, stock prices are influenced by changes in money supply, interest rate, inflation and other macroeconomic variables (Larch and Nogueira, 2009).

There are numerous factors having impact on the performance of stock markets, such as, expansion in the country's economic activities, strength in the exchange rate, decrease in lending interest rates and improvement in recovery of outstanding loans, rescheduling and payment of foreign debts, large scale mergers and acquisitions, better relationship with the neighbour countries, investor friendly policies and strong regulatory framework (Imran Ali, 2009).

Stock market performance, economical and political condition of a country is interrelated and has been a significant debating issue. Many studies directly or indirectly have been dealing with the macroeconomic and institutional factors and their correlation with the stock market performance at both theoretical and empirical levels.

Charles Amo Yarty (2008) found that macroeconomic factors such as income level, gross domestic investment, banking sector development, private capital flows, stock market liquidity and institutional determinants such as political risk, law and order, and bureaucratic quality are important determinants of stock market development in emerging markets. He used number of listed companies, market capitalization % of GDP, value traded % of GDP, turnover ratio %, and GDP per capita(\$ as indicators of stock market development. Valeriano F. Garcia (1999) also examined the determinants of stock market development in emerging markets. He found that real income, saving rate, financial intermediary development and stock market liquidity are important determinants of stock market capitalization, macroeconomic volatility

does not prove significant and stock market development and banking sector development are complements.

Macroeconomic and institutional, both factors have significant impact on stock market performance. Valeriano F. Garcia (1999) shows that rules & regulation and law & order situation of any country have significant impact on stock market performance. For example, disclosure requirements and investor's interest protective regulations increase the investor's confidence and encourage them to invest and trade in the stock markets.

## **2.4 Empirical Literature**

The impact of fiscal policy on growth has generated large volume of empirical studies with mixed findings using cross-sectional, time series and panel data. Some of these studies are country specific while others are cross-country, few of these studied are selected for review as follows: Fuente (1997) examined the impact of public expenditures and taxation on economic growth of 21 OECD countries from 1965 to 1995. The results of the study could not provide evidence in support of fiscal policy led growth. Specifically, public expenditures tend to crowd out private investment leading to reduction in disposable income and incentive to save.

Hondroyannis and Papapetrou (2001) examined macroeconomic influences on the stock market for Greece. Among the macroeconomic variables investigated were interest rates and exchange rates. They found that stock prices do not lead changes in real economic activity but that the macroeconomic activity and foreign stock market changes only partially explained Greek stock price movements.

Several studies have also examined the underlying reasons for low efficiency of public investment, with focus on the regional allocation of public investment in Japan. Variables such as population, area size and income which reflect the scale and demand for public investment are found to be significant for different types of investments (Kondoh, 2008). Allocation can also be affected by other policy objectives such as employment polity or the regional distribution of income.

Devarajan et al. (1996) and Afonso and Furceri (2010) found that government investment has sizable negative and statistically significant effect on growth. They conducted the empirical estimation using impulse-response functions and variance decompositions from a VAR model depending on US stock market data. They showed that expansionary fiscal policy increases stock returns.

Veganzones (2005) studied determinants of investment in 40 developing economies using panel data. The results showed that growth anticipations, real interest rate and government policies explain Middle East's and North Africa's low investment rate. Insufficient structural reforms represented as poor financial development and deficient trade openness has been a crucial factor for deficit in private capital formation. Economic uncertainties of the region have constituted major deterrent for firms to invest. High external debt burden and economic volatility arise primary reasons for high uncertainty in the region.

Nyamute (1998) sought to analyse whether or not macroeconomic factors affect the performance of the Nairobi Stock Exchange. The macroeconomic variables taken into

account were inflation rate, money supply, interest rates and exchange rates. The performance of the stock exchange was represented by the movement in the stock price index. Secondary data was collected from published reports and figures from the Nairobi Stock exchange, the Central Bank of Kenya and the Central Bureau of Statistics. This data was analysed by use of multiple regression modelling. The results of the analysis indicate that macroeconomic variables do indeed impact on the performance of the stock prices. However, the four macroeconomic variables used in this study may not be the only ones that affect stock prices. Hence the study recommends that further research need to be carried out with more variables entered into the model.

Mongeri (2011) examined the impact of foreign exchange rates and foreign exchange reserves on stock markets performance at NSE. Monthly time series for NSE share index, foreign exchange rates and reserves covering the period 2003-2010 were used. Multiple regression analysis techniques were employed to ascertain long run relationships between the variables. The study was guided by several theories including market efficiency theory, classical monetary, portfolio theory and empirical studies from India, Ghana and Kenya. The study concludes that Foreign exchange rates and foreign exchange reserves had an impact on the stock performance at NSE. Foreign exchange rates had negative impact on stock performance which was more significant. Foreign exchange reserves had positive mpact on stock performance which was significant. The study also revealed that no significant relationship between Foreign exchange rates and foreign exchange reserves.



The study also shows NSE efficiency is not yet strong even with increased flow of information at capital market. Further research area can be extended by analyzing more fundamentals of the Kenyan economy and the stock markets. The major implication of this study can be for government to use the conclusion to address the fluctuations of the foreign exchange rate as the empirical result indicate that it has negative impact in the stock market hence the whole economy. This can be managed by government through central bank to influence the supply side of exchange rates by using foreign exchange reserves. Future studies should broaden the study in more than one country, across regions or within economic blocks e.g. East African community countries in order to draw stronger conclusions.

Ambunya (2012) did a study to establish the relationship between exchange rate movement and stock market returns volatility at the Nairobi Securities Exchange. The study adopted a quantitative design. The target population for this study included 56 companies quoted at the NSE as of December 2011. Since the population was small and the study is using secondary data, the study conducted a census. The study used secondary data collected from the Nairobi Securities Exchange and the Central bank of Kenya for the period 2007-2011. The study regressed stock market returns volatility against exchange rate movement. From the regression output, the study established that exchange rate movements greatly affected the stock market return volatility owing to its information content to the investors. With high fluctuations in the exchange rates, the exchange rates movement became bigger accompanied by a

huge stock market return volatility. Study concludes that there is a strong relationship between exchange rate movement and stock market returns volatility.

This is especially carried through the information content of exchange rate movement on the security's business. The study concludes that exchange rate movement also affects the stock market performance greatly through its spiral effects. Through over macroeconomic variables, exchange rate movement indicates the state of the economy hence the likely future state of the economy. These variables would include things like interest rate and the money supply in the economy which has great impact on the activity level of the security's performance. The policy makers need to factor the effects of exchange rate movement on the performance of the stock exchange.

Ngigi (2000) investigated the impact of fiscal and monetary policy actions on stock market performance in Kenya. It sought to answer the question on the nature and extent of the impact of monetary and fiscal policies on the performance of the NSE. It further sought to determine which specific components of these policies (anticipated or unanticipated), affect the NSE performance. The study proceeded by first testing for stationarity and cointegration of the variables used in the estimation process. Having specified the fiscal and monetary policies error correction models, it went on to determine the anticipated and unanticipated components of the same, by use of the general-to specific model specification and reduction. The values for the anticipated and unanticipated fiscal and monetary policies attained thereof, were then used in the estimation of the stock market performance function, as measured by the stock price index. The empirical results attained showed that both anticipated monetary policy

actions, and unanticipated fiscal policy actions affect the stock market negatively, whilst unanticipated monetary policy adjustments affect it positively. Anticipated fiscal policy actions on the other hand, were found to have no impact on the stock market. These findings suggest that policy makers need to exercise considerable caution regarding fiscal-monetary policy stance and stock market regulation in Kenya

Kariuki (2003) studied the determinants of gross fixed capital formation in Kenya and found that government expenditure was the most significant determinant. The research also showed that increases in real interest rates do not deter private sector private investment while monetary policy plays a less significant role. FDU is very significant as a determinant of fixed capital formation, while output growth was insignificant.

Mwanza (2012) conducted a descriptive and correlational study was to determine the relationship between monetary policy and performance of the Nairobi Securities Exchange. The Performance measure of the Nairobi Securities Exchange used was the NSE 20-Share Index which was regressed against the monetary policy instruments including 91-day Treasury bill rate, exchange rate (US dollar), money supply (M3), repo rate, cash ratio requirement (CRR) and Central Bank rate (CBR). The period of the study was six years from June 2006 to June 2012. The study period was relevant because one of the variables, Central Bank rate (CBR), was introduced in Kenya for the first time in June 2006 as the rate at which Central Bank of Kenya lends money to commercial banks through the overnight Lombard window. The study employed monthly secondary data which was obtained from the Central Bank of Kenya and

Nairobi Securities Exchange. Data were analyzed using the Ordinary Least Square method which assumes linearity between the dependent variable and the independent variables and the analysis technique was multiple regression aided by research software “eviews” version 7. The study found that the monetary policy instruments jointly influenced the variation in the NSE 20-share index with a strong adjusted R<sup>2</sup>. Furthermore, the NSE 20-Share Index was found .The rest of the paper is organized as follows: chapter one covers introduction by addressing issues related to background of the study, statement of the problem, study objective and the significance of the study; chapter two focuses on literature review; chapter three is about the research methodology; chapter four covers data analysis, results and discussion; and lastly chapter five addresses summary, conclusion and recommendations.

Muchiri (2012) examined the impacts of macroeconomic variables on stock market performance in the NSE. The study used a descriptive research design. The population of this study comprised all the 59 listed companies in the Nairobi Securities Exchange as at 30th June 2012. In this study secondary data was used to investigate the relationship between independent and dependent variables. The data was analysed using descriptive analysis, correlation analysis and regression analysis. The study found that there was a general rise in share prices, money supply, exchange rate, inflation, and interest rate over the period under study. The study also found that money supply and inflation rate had positive but insignificant effects on share prices while interest rate had a negative but insignificant effect on share prices. Further, exchange rate has a negative and significant effect on share prices. The variables

jointly accounted for 95.6% of the variance in share prices. The F statistic was also significant suggesting that the model was fit to explain the determinants of share prices. The study concludes that exchange rate has a significant negative impact on stock market performance. The study recommends that in order for the stock market performance in Kenya to improve, there is need for the Government to initiate measures that will control the exchange rate in Kenya. The study also recommends that there is also need for the Government to control the broad money supply in Kenya as there is some evidence to suggest that higher money supply may lead to better stock market performance. The study further recommends that there is need for the government to initiate policies that will lower the interest rates in Kenya as lower interest rates may translate to higher stock market performance.

## **2.5 Summary of Literature Review**

Fiscal policy affects aggregate demand, distribution of wealth, and the economy's capacity to produce goods and services. In the short run, changes in spending or taxing can alter both magnitude and the pattern of demand for goods and services. With time, this aggregate demand affects the allocation of resources and the productive capacity of an economy through its influence on the returns to factors of production, the development of human capital, the allocation of capital spending, and investment in the technological innovations (Njenga, 2012).

From the review of the empirical studies very few studies have focused on the relationship between fiscal policy and stock market behavior. More specifically, these studies examined primarily stock market efficiency with respect to fiscal actions

(Rogalski and Vinso, 1977; Darrat, 1987; Darrat and Brocato, 1994; and Lee, 1997). No study has investigated empirically how fiscal policy and the stock market have been interacting intertemporally. However, the theoretical motivation on the effects of fiscal policy on the stock market (or asset prices) have been laid out more than thirty years ago (Tobin, 1969; Blanchard, 1981; and Shah, 1984), the empirical front on the issue has been lagging, both for the US and other countries (Darrat, 1987) and Ali and Hasan, 2003).

The review of literature clearly found a research gap in Kenya as most of the studies done in the area are conducted in the developed countries and there is still a question for developing countries like Kenya, regarding the empirical relationship between fiscal variables and stock market index. The current study therefore seeks to contribute towards this research gap by establishing the relationship between the fiscal policy instruments used by the Kenyan government to manage the economy and the NSE 20-share index, as a measure of the NSE performance.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Research Design**

The research design outlines the methods for data collection, measurement and analysis. The study used time series empirical data on Nairobi Stock Exchange (NSE) 20- share index and the fiscal policy tools as provided by the Kenya Revenue Authority and Kenya National Bureau of Statistics publications to examine the relationship between fiscal policy and the performance of NSE by establishing correlation coefficients between the NSE 20-share index and the fiscal policy variables.

#### **3.2 Population**

Population refers to an entire group of individuals, events or objects having a common observable characteristic (Mugenda and Mugenda, 2003). Further, the authors note that researchers define the population to which the results would be generalized. The target population comprised all listed companies at the NSE as of December 2013 that constitute the NSE 20 share index.

#### **3.3 Study Sample**

The study used the NSE 20- share index as a sample since NSE performance is measured by the same and as such was used for purposes of the study.

### **3.4 Data Collection**

The study used secondary data on the NSE 20-share index, monthly government tax revenue, monthly government expenditure and monthly public government debt and Gross Domestic Product. The data on NSE 20-share index was obtained from the NSE while data on monthly government tax revenue, monthly government expenditure, monthly public government debt and GDP was obtained from the KNBS and KRA. The period of study for which data will be obtained will focus on a ten year period between January 2004 and December 2013. Given the sources of this data, the data was deemed very reliable hence no further reliability tests will be carried out.

### **3.5 Data Analysis**

The study employed computer software 'E-views' version 7 to analyse the data. Given that the study model is a multivariate one, the study used multiple regression technique in analyzing the relationship between the fiscal policy tools and NSE 20-share index. The analyses entailed the computation of the various coefficients of correlation denoted as ' $\beta$ ' in the model to determine the relationship between individual fiscal policy instruments and NSE 20-share index.

The variables of the study comprised the NSE 20-share index as the dependent variable and monthly government tax revenue, monthly government expenditure and monthly government debt (all in relation to GDP), as the independent variables.

The study sought to establish the linear relationship between the fiscal policy indicators (government expenditure, revenue and debt) and NSE stock performance;



the nature and direction of linear relationship. Pearson Correlation analysis was used to achieve this end at 95% confidence level ( $\alpha = 0.05$ ).

Multicollinearity (collinearity) was tested to determine if two or more predictor variables in the multiple regression models are highly correlated. This violates multiple regression assumption as one variable linearly predicts from the others with a non-trivial degree of accuracy. It also increases the standard errors of the coefficients. The study employed Variance Inflation Factors (VIF) and tolerance to detect multicollinearity between the independent variables used in the model.

The regression model was multivariate model stating the NSE 20-share index as a function of the stated fiscal policy tools. Thus, the regression equation was as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$$

Where

Y = monthly NSE 20-share index;

$\beta_0$  = Y intercept/ Constant

X1 = monthly government tax revenue in relation to monthly GDP;

X2 = monthly government expenditure in relation to monthly GDP;

X3 = monthly government debt in relation to monthly GDP;

$\varepsilon$  = the error term to capture the effect of other factors other than fiscal policy instruments on the NSE performance and helps in stabilizing the model.

The study further used error correction term which is used together with the stationary variables in co-integrating relationships to construct the error correction model (ECM)

which integrates short run and long run dynamics of the model. This owes to the fact that the data employed time series properties. The coefficient of error correction term (ECT) which represents the speed of adjustment to the long run equilibrium ought to be negative and significant if the disequilibrium is to be corrected in the subsequent period and long-run restored. If insignificant, then correction term is otherwise ignored.

Regression on non-stationary series generates a spurious regression. The study used Engle and Granger test to establish this. The Engle and Granger test is a two-step procedure in which the first step involves estimating the regression equation by ordinary least squares procedure and the residuals from the regression again tested for stationarity. The procedure involved testing whether the regression residuals of the following long-run regressions were stationary.

$$\text{Stock Performance} = a_0 + a_1 \text{Fiscal Policy} + u_1$$

Where  $u_1$  and  $u_2$  are error terms assumed to be uncorrelated, with zero mean and constant variance.

## CHAPTER FOUR

### DATA ANALYSIS, RESULTS AND DISCUSSION

#### 4.1 Introduction

This chapter focuses on the results of data analysis, results and discussion of findings. It addresses issues such as the regression method; descriptive statistics; regression results; correlation coefficients among the variables; and lastly the robustness of the study model. Data analysis results were presented using tables.

#### 4.2 Descriptive Statistics

Table 4.1 gives the summary statistics of the main variables that have been included in the model including: minimum, maximum, mean, standard deviation, skewness, kurtosis and Jarque-Bera test for normality.

**Table 4.1: Descriptive Statistics Results**

	<b>NSE 20 Share Index</b>	<b>Revenue (Ksh. Bn)</b>	<b>Expenses (Ksh. Bn)</b>	<b>Debt (Ksh. Bn)</b>
Mean	4097.93	267.4994	320.0433	590.3195
Median	4043.49	232.913	264.646	484.21
Maximum	5774.19	851.19	1100.83	1189.18
Minimum	2475.61	16.3	20.442	291.22
Std. Dev.	811.7247	185.3318	237.0784	256.2382
Skewness	0.049313	0.829412	0.997059	0.698087
Kurtosis	2.03442	3.225048	3.567179	2.314897
Jarque-Bera	4.58165	13.31112	20.41645	11.48868
Probability	0.0995	0.001287	0.000037	0.003201
Sum	467853.3	30494.93	36484.94	67296.43
Sum Sq. Dev.	74457364	3881310	6351298	7419358
Observations	120	120	120	120

Source: Study data on appendix II

The results showed that NSE 20 Share Index had a mean of 4,097.93 with a minimum of 2,475.61, a maximum of 5,774.19, skewness 0.0493 and kurtosis of +2.034. Comparatively, government revenue had a mean of Ksh267 billion, minimum of Ksh16 billion, maximum of Ksh 851 billion, skewness of 0.83 and kurtosis of +3.23. Government expenses had a mean of Ksh320 billion, minimum of Ksh20 billion, maximum of Ksh1,100 billion, skewness of 0.997 and kurtosis of +3.57. Government debt had a mean of Ksh590 billion, minimum of Ksh291 billion, maximum of Ksh1189 billion, skewness of 0.698 and kurtosis of +2.31.

Analysis of skewness shows that NSE-20 share index, government revenue, expenses and debt are asymmetrical to the right around its mean. Additionally, 'Government expenses' is highly peaked compared to other regressors. Jarque-Bera is a test statistic for testing whether the series is normally distributed. It measures the difference of the skewness and kurtosis of the series with those from the normal distribution using the null hypothesis of a normal distribution. A small probability value leads to the rejection of the null hypothesis of a normal distribution. Jarque-Bera test for normality shows that NSE-20 share index ( $p = 0.0995$ ), government revenue ( $p = 0.001$ ), government expenses ( $p < 0.001$ ) and government debt ( $P = 0.003$ ). Since the p-value (probability) for the dependent variables are smaller than 0.05 for a 95% confidence level, the residuals are not normally distributed which would lead to model bias (Jarque and Bera, 1980).

The graphs in Appendix I show that none of the variable is stationary or random which violates linear regression assumption. The variables' general trend is upward

apart from NSE-20 share index that trends upward before trending downwards from its 25<sup>th</sup> observation then upwards. Appendix II shows the Quartile-Quartile plot that test for normality. Generally, the plots deviate from the regression line which shows that the variables are not normally distributed (Makkonen, Pajari and Tikanmäki, 2013). Granger causality tests found that: Government Revenue and NSE 20 Share Index are not significantly Granger causal; Government Expenses and NSE 20 Share Index are not significantly Granger causal; Government Debt and NSE 20 Share Index are not significantly Granger causal. However, while Government Expenses does not granger cause Government Revenue, the reverse is true at 90% confidence level ( $p = .0917$ ). Government Debt granger causes Government Revenue at 95% confidence level ( $p = .004$ ); the reverse is true ( $p = .448$ ). Government Debt granger causes Government Expenses at 95% confidence level ( $p = .002$ ); the reverse is true ( $p = .464$ ).

### **4.3 Correlation of Analysis**

Though the descriptive analysis on which equation yielded better results and highlighted possible problems to encounter in the inferential analysis, there was need to enhance statistic with a more insightful quantitative analysis such as the correlation matrix. Correlation matrix is an important indicator of a linear association of the explanatory variables and helped in determining the strengths of association in the model, that is, which variable best explained the relationship between economic growth and its determinants. It also helped in deciding which variable(s) to drop from the equation.

**Table 4.2: Correlation Matrix**

	<b>NSE 20 Share Index</b>	<b>Revenue (Ksh. Bn)</b>	<b>Expenses (Ksh. Bn)</b>	<b>Debt (Ksh. Bn)</b>
NSE 20 Share Index	1.000000	0.055364	0.062065	0.106380
Revenue		1.000000	0.994206	0.483676
Expenses			1.000000	0.536250
Debt				1.000000

From the Table 4.2, it can be deduced that there was a positive correlation between NSE 20 Share Index, and Revenue (0.055), Expenses (0.062) and Debt (0.106). However, these positive correlations were between stock market (NSE) performance and fiscal policy instruments (government revenue, expenses and debt) were minimal. However, the independent variables had high collinearity owing to their correlation value between them. According to Babak (2012), the limitation of Pearson correlation coefficient is that though it indicates the strength of a linear relationship between two variables, its value generally does not completely characterize their relationship, thus, the subsequent analysis.

#### **4.4 Linear Regression Modelling**

The regression method used for this study was the least square method. This was used to determine the line of best fit for the model through minimising the sum of squares of the distances from the points to the line of best fit. Through this method, the analysis assumed linearity between the dependent variable and the independent variables.

**Table 4.3: Model Summary**

<b>R</b>	<b>R Square</b>	<b>Adjusted R Square</b>	<b>Std. Error of the Estimate</b>	<b>Durbin-Watson</b>
.107	.0115	-.0154	815.90611	.0856

a. Predictors: (Constant), Debt, Revenue Ksh bn, Expenses Ksh bn

b. Dependent Variable: NSE 20 Share index

The model goodness of fit statistics shows that the regression model was weak owing to serial autocorrelation as depicted by the Durbin Watson value was 0.0856. This depict that there is autocorrelation in the data. There was no linear relationship between fiscal policy and stock performance owing to correlation value of 0.107. The model was also very weak owing to R-square values of 0.0115 which is adjusted -.0154. This depicts that the independent variables (fiscal policy) only remotely explains the changes stock performance given the time series properties inherent in the data.

**Table 4.4: Analysis of Variance**

	<b>Sum of Squares</b>	<b>df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>
Regression	1181399.782	3	393799.927	.624	.733
Residual	69371179.656	110	630647.088		
Total	70552579.439	113			

a. Predictors: (Constant), Debt, Revenue Ksh bn, Expenses Ksh bn

b. Dependent Variable: NSE 20 Share index

Table 4.4 shows that the model was insignificant owing to F-test value of 0.624 at significance value of 0.733 ( $p > .05$ ) respectively. Belle (2008) stated that insignificant F-significance indicates insignificant and weak regression model as means of the groups (independent and dependent variables) are equal. The model, with its time series properties, has a 73.3% chance of falsehood.

**Table 4.5: Regression Coefficients**

Variable	Coefficient	Std. Error		t	Sig.	VIF
C	3931.918	259.3205		15.16239	0.0000	
Revenue	-0.682604	4.381170	-0.6113	-0.155804	0.8765	139.624
Expenses	0.574508	3.454339	0.28114	0.166315	0.8682	155.325
Debt	0.290751	0.340399	0.17635	0.854147	0.3949	2.718

From the table above, the following regression equation was established:

$$\text{NSE 20 Share Index} = 3931.92 - 0.683 * \text{Revenue} + 0.575 * \text{Expenses} + 0.291 * \text{Debt}$$

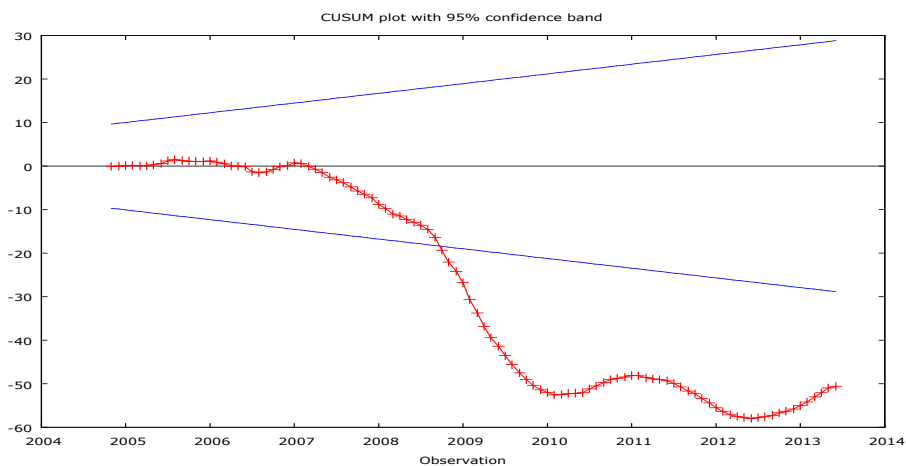
However, these results are insignificant at 95% confidence level ( $p > .05$ ). From the model, when other factors (government revenue, government expenses, government debt) are at zero, the NSE performance (NSE 20 Share Index) will be 3,931.92. Holding other factors (government expenses and government debt) constant, a unit increase in government revenue would lead to 0.683 decrease in NSE performance. However, this is insignificant given a p-value of 0.877 ( $p > .05$ )

Holding government revenue and debt constant, a unit increase in a government expenses would lead to a 0.575 increase in NSE performance. This result is insignificant owing to p-value of 0.868 ( $p > .05$ ). Furthermore, holding other factors (government revenue and expenses) constant, a unit increase in government debt would lead to a 0.291 increase in NSE performance. This result is also insignificant at 95% confidence level owing to p-value of 0.395 ( $p > .05$ ).



Variance Inflation Factors (VIF) shows that there is high collinearity amongst the independent variables as the VIF values were above the critical value of 10: government revenue (139.624), government expenses (155.325). As stated by Studenmund (2006), the variance (the square of the estimate's standard deviation) of an estimated regression coefficient is increased because of collinearity. However, government debt was not highly collinear to other independent variables as its VIF value was 2.718. Thus, the study had to correct the regression model of autocorrelation and collinearity problems.

Cumulative Sum (CUSUM) test for parameter stability presented in Figure 4.1 shows that the model is not stable over time as it deviates from lines after mid-2008 (that is, there is change in models parameters;  $t(103) > -4.95852$ ,  $p = 2.80686e-006$ ). As noted by Gujarati (2007), CUSUM is used for monitoring change detection owing to structural break; an unexpected shift in a (macroeconomic) time series which leads to huge forecasting errors and unreliability of the model in general.



**Figure 4.1: CUSUM Test for Parameter Stability**

#### **4.4.1 Error Correction**

The study determined the time series property of the data in order to establish if it is autocorrelated or its autoregressive property. As recommended by Greene (2002), this was done in order to change the variables to stationary as a key assumption in multiple linear regression analysis and other inferential statistics, and avoid yielding spurious results as a result of working with highly collinear variables. Thus, the study tested for unit root using Augmented Dickey Fuller (ADF) test. The key assumption was to test the null hypothesis that the variables were stationary around a deterministic trend owing to the trend shown in Appendix I. There was unit root in the variables as ADF test significance was greater than 0.05: NSE-20 share index ( $p = 0.342$ ), government revenue ( $p = 1.00$ ), government expenses ( $p = 1.00$ ) and government debt ( $P = 1.00$ ).

Since the data were a time series and dated in months, seasonal differencing to the second order was used to eliminate the unit root problem. Gujarati (2007) notes that seasonal differencing removes seasonal trend and can also get rid of a seasonal random walk type of non-stationarity. Appendix IV shows that unit root problem still exists in the first order seasonal differences in the case of government expenses, revenue and debt. However, the unit root problem was eliminated by the second order differences as shown the last three graphs in Appendix IV given that they exhibited no trend.

**Table 4.6: Model Summary – Error Corrected**

<b>R</b>	<b>R Square</b>	<b>Adjusted R Square</b>	<b>Std. Error of the Estimate</b>
.5047a	0.2547	0.2267	1370.456

The Model Summary in Table 4.6 illustrates that the strength of the relationship between dependent and independent variables. The diagnostic statistics shows that the regression model had a moderate strength given R-square value of 0.2547. This depicts that independent variables (government revenue, government expenses, government debt) would cause 25.4% of the variations in NSE performance.

**Table 4.7: Analysis of Variance – Error Corrected**

	<b>Sum of Squares</b>	<b>df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>
Regression	1.215000E+08	3	40484838.42	21.556	.000a
Residual	1.615000E+08	86	1878149.892		
Total	2.830000E+08	89			

The Analysis of Variance (ANOVA) was used to test whether a significant relation exists between variables (dependent and independent variables). This helps in bringing out the significance of the regression model. The ANOVA results show that the regression model has a margin of error of  $p < .001$ . This indicates that the model has a probability of less than 0.1% of giving false prediction. This point to the significance of the model.

**Table 4.8: Corrected Regression Model – Error Corrected**

Variable	Coefficient	Std. Error	Beta	t	Sig.	Tolerance	VIF
C	4113.072	87.89818		46.79360	0.0000		
Differenced Revenue	19.81862	4.213048	18.024	4.704103	0.0000	0.995	1.005
Differenced Expenses	-2.765068	2.483626	-1.153	-1.113319	0.2689	0.769	1.3
Differenced Debt	-0.302753	1.753882	0.679	-0.172619	0.8634	0.772	1.295

The following regression equation was established:

$$\text{NSE 20 Share Index} = 4113.07 + 19.819 * \text{Revenue} \quad p < .001$$

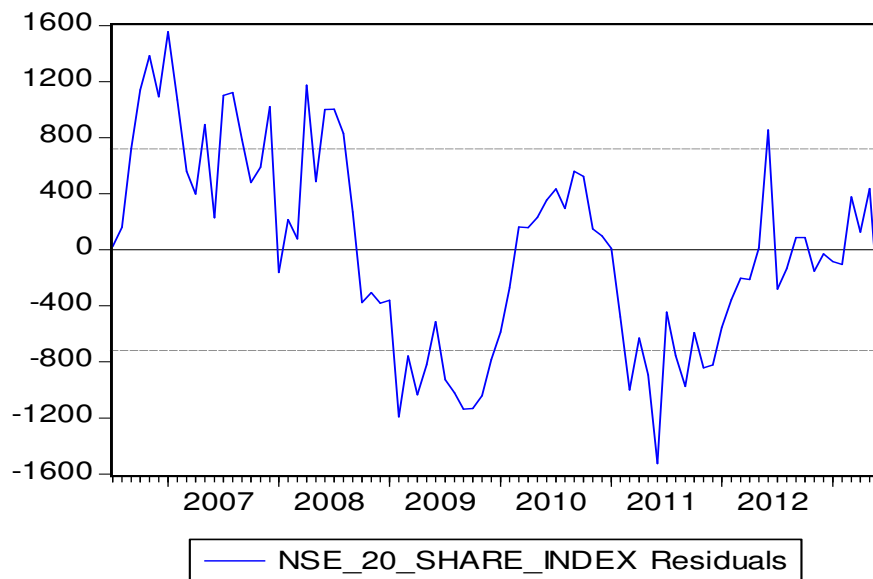
From the model, when other factors (government revenue, government expenses, government debt) are at zero, the NSE performance (NSE 20 Share Index) will be 4113.07. When government expenses and debts are held constant, a unit increase in government revenue would lead to 19.819 ( $p < .001$ ) increase in stock market performance.

Model robustness test was used to test the stability of the regression model by establishing whether least squares estimates for regression models are highly sensitive to (not robust against) outliers (observations which do not follow the pattern of the other observations) (Andersen, 2008). R squared and Rw squared goodness-of-fit and their adjusted measures which indicate that the model accounts for roughly 44-53% of the variation in the constant-only model. The statistic of 202.906 and corresponding p-value of  $p < 0.001$  indicate strong rejection of the null hypothesis that all non-

intercept coefficients are equal to zero. Thus, as stated by Anderson, the regression is robust and the validity of its results is not be compromised.

The regression results show that holding other factors (government expenses and government debt) constant, a unit increase in government revenue would lead to 19.819 ( $p < .001$ ) increase in NSE performance. Holding government revenue and debt constant, a unit increase in a government expenses would lead to a 2.765 decrease in NSE performance. Afonso and Furceri (2010) found that government investment and expenditure has sizable negative and statistically significant effect on growth and performance of stock market. Furthermore, holding other factors (government revenue and expenses) constant, a unit increase in government debt would lead to a 0.3028 decrease in NSE performance. This is in line with Barro (1979) who indicated that an increase in government borrowing raise the (short-term) interest rate which, in turn, lower the discounted cash flow value from an asset (like a share) and thus signals a reduction in stock market activity (aside from other adverse effects in the general economy).

Figure 4.2 presents the graph of the model's residuals plotted over time. The graph is balance against 0 which signifies lack of serial correlation.



**Figure 4.2: Residual Graph**

#### **4.5 Discussion of Research Findings**

From the above analysis, the study found out that there there was a positive correlation between NSE 20 Share Index, and Revenue (0.055) , Expenses (0.062) and Debt (0.106). However, these positive correlations were between stock market (NSE) performance and fiscal policy tools (government revenue, expenses and debt) were minimal. However, the independent variables had high collinearity owing to their correlation value between them. From the model, when other factors (government revenue, government expenses, government debt) are at zero, the NSE performance (NSE 20 Share Index) will be 3931.92. Holding other factors (government expenses and government debt) constant, a unit increase in government revenue would lead to 0.683 decrease in NSE performance

Holding government revenue and debt constant, a unit increase in a government expenses would lead to a 0.575 increase in NSE performance. Furthermore, holding other factors (government revenue and expenses) constant, a unit increase in government debt would lead to a 0.291 increase in NSE performance. However, the diagnostic statistics shows that the regression model was weak owing to serial autocorrelation as the Durbin Watson value was 0.085641. The model was also weak and insignificant owing to R-square and F-test significance values of 0.011549 and 0.733 ( $p > .05$ ) respectively. Variance Inflation Factors (VIF) shows that there is high collinearity amongst the independent variables as the VIF values were above the critical value of 10: government revenue (139.624), government expenses (155.325). However, government debt was not highly collinear to other independent variables as its VIF value was 2.718. Thus, the study had to correct the regression model of autocorrelation and collinearity problems.

From the model, when other factors (government revenue, government expenses, government debt) are at zero, the NSE performance (NSE 20 Share Index) will be 4113.07. Holding other factors (government expenses and government debt) constant, a unit increase in government revenue would lead to 19.819 ( $p < .001$ ) increase in NSE performance.

Holding government revenue and debt constant, a unit increase in a government expenses would lead to a 2.765 decrease in NSE performance. Furthermore, holding other factors (government revenue and expenses) constant, a unit increase in government debt would lead to a 0.3028 decrease in NSE performance.

The diagnostic statistics shows that the regression model had a moderate strength given r-square value of 0.254. This depicts that independent variables (government revenue, government expenses, government debt) would cause 25.4% of the variations in NSE performance. ANOVA statistics shows an F-test value of 9.114 at  $p < .001$ . This signifies a significant linear model.



## **CHAPTER FIVE**

### **SUMMARY, CONCLUSION AND RECOMMENDATIONS**

#### **5.1 Introduction**

This chapter presents the research summary, conclusions, limitations of the study and recommendations for further research.

#### **5.2 Summary of Findings**

The study sought to determine the relationship between fiscal policy and performance of Nairobi Securities Exchange as measured by the NSE 20-share index. To achieve the objective, the study employed monthly secondary data on fiscal policy variables and the NSE 20-share index which were obtained from the CBK, KRA, KNBS and NSE. The study regression model expressed the NSE 20-share index as a function of the fiscal policy instruments which included government revenue, government expenditure and government debt. The study covered a period from January 2004 to December 2013 and data were analysed using multiple linear regression model.

The correlation matrix for the three variables shows that there are low correlations between individual independent variables and NSE stock performance as measured by NSE-20 share Index. However, correlation coefficients between NSE 20 share index and the independent variables are positive showing that they move in the same

direction. That is, increase in government's revenues, expenses and debt would individually lead to improved stock performance.

Unit root test for the data revealed presence of unit root at levels by giving ADF statistics for the three variables (NSE-20 share index, Government revenue, expenses and debt) greater than their respective t critical values at various levels. However, this was corrected by second order seasonal differencing. From the regression results, government revenue ( $p < .001$ ) was found to be more significant in explaining Kenya's stock market performance (NSE-20 share index) than Government expenses and debt. The explanatory variables explain 22.7% of the variation in the dependent variable. Jointly, all the variables were found to be significant as postulated by the F-statistic ( $p < .001$ ).

### **5.3 Conclusion**

Fiscal policy has a multi-dimensional role in stock market performance. Stock prices, not only a reflection of the developments made in the economic sector, but also provide feedback to the government and fiscal authorities on how the economy is fairing. They also showcase the expectations of the private sector on the future course of key macroeconomic variables. The study established that government revenue has a positive effect on stock market performance. Government raise revenues through charging taxes on economic activities undertaken by its citizens reflecting a positive economic performance as tax rate in Kenya has been consistent and constant. Government revenue also reflects greater macroeconomic performance which makes stock prices (stock performance) better.

The study concludes that Government expenditure has a positive effect on stock market performance. Public spending reflects both microeconomic and macroeconomic considerations. Expenditure as outlined in the state budget reflects the economic scale, balance and direction of a country. Increasing government spending is the main tool in expansionary fiscal policy. Government can finance its spending by either taxation or issuing bonds. The result normally helps to lift stock prices. Besides, government spending change creates more immediate impact on domestic economic growth and consequently benefits the stock market.

The study findings showed that government debt has low positive effect on stock market performance and negative cumulative effect on the same. Kenya borrows through issuance of bonds and direct borrowing from foreign governments and supranational organizations like World Bank, International Monetary Fund (IMF), Africa Development Bank (ADB) *et cetera*. The interaction two sources of borrowing contributes to the growth or redundancy of an economy that seeks to outlive any impulses that slow it down. The fiscal policy is expected to influence the goods market while the monetary policy is expected to utilize its effect on asset markets. Without imposing the risk of inflation owing to interest rates on debt, debts helps cover for deficits in expected expenditure versus revenue which leads to infrastructure development and economic stimulus plan. This leads to economic growth and better firms' performance which raises their market value and stock performance. Besides, investors are inclined to allocate capital back and forth between bond and stocks facing different risks.

## **5.4 Recommendations**

From the research findings, it is evident that government fiscal policies play an important role in explaining variations on stock market performance. From the analysis made in the previous chapter, various recommendations can be made. There is need for users of stock indices to understand their computations and constituent counters in any given stock exchange. For example, the NSE 20 share index appears to be more significant in explaining variations in market capitalization which could be attributed to the fact that the 20 counters that constituent the index account for over 80% of the total turnover at the exchange on any given day. This has the likelihood to present a strong co-movement between the market capitalization and the NSE 20 share index as opposed to NASI which involves all the counters including the least traded. Inclusion of the least traded counters in the computation of the index results in smoothening out of the variations or the volatility of the stock market. As a result, NSE needs to address that selection bias and related anomalies in the indices.

## **5.5 Limitations of the Study**

A number of limitations could be pointed out for this study. Firstly, this descriptive and correlational study relied on secondary data which had already been compiled by the KNBS, KRA, CBK and NSE. Data was used as they were obtained from the sources and the researcher had no means of verifying for the validity of the data which were assumed to be accurate for the purpose of this study. The study results are therefore subject to the validity of the data used.

Secondly, the study was conducted in Kenya and its results may not be generally applicable in other countries whose economic, fiscal policy targets and stock market development conditions may be different from those of Kenya.

Finally, the study used the ordinary least square regression method of analysis which may have its own weaknesses compared to other methods which may limit the general applicability of the study results.

### **5.6 Suggestions for Further Research**

The findings of this study are only confined to the relationship between stock market performance and government fiscal policies. Based on these findings further research can be done to determine that relationship between the variables under different governments as presidents determine the fiscal policies of their governments.

This study examined the relationship and the extent of the relationship of the variables under study for a period of ten years only. A further study can be done to forecast whether such relationship will hold in longer period. In addition, effects of equity turnover on stock market performance can also be studied and its impact on the indices established.

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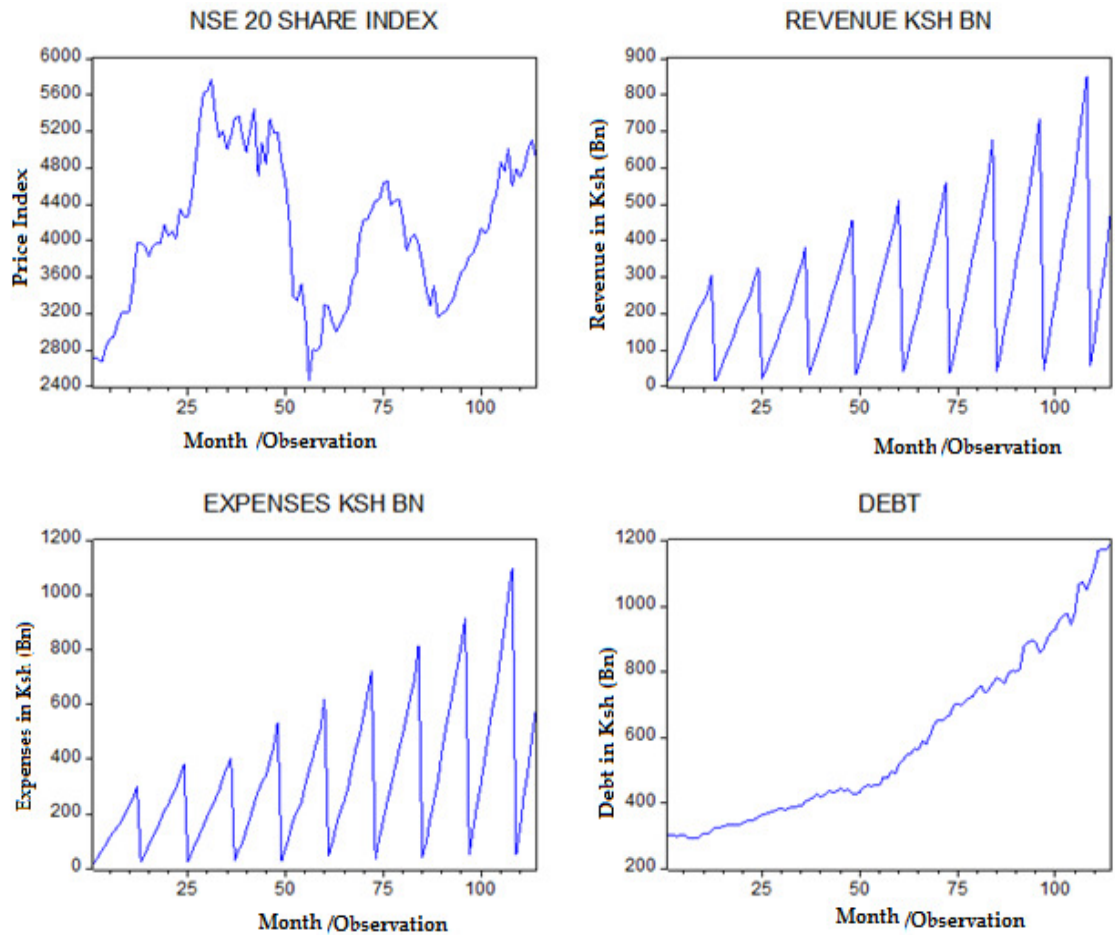
[www.kra.go.ke](http://www.kra.go.ke)

[www.mystocks.co.ke](http://www.mystocks.co.ke)

[www.nse.go.ke](http://www.nse.go.ke).

# APPENDICES

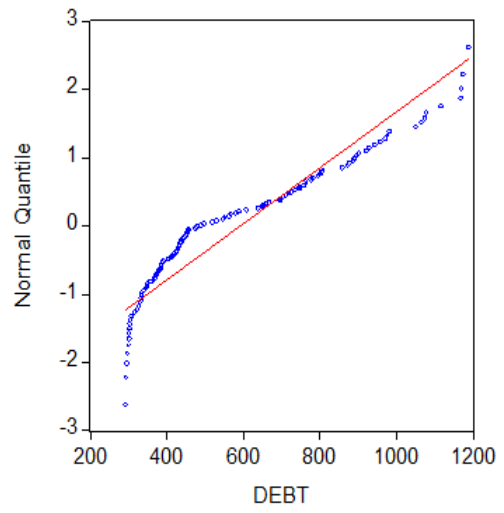
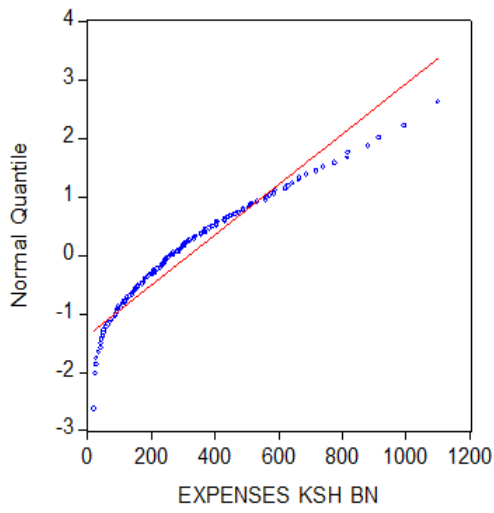
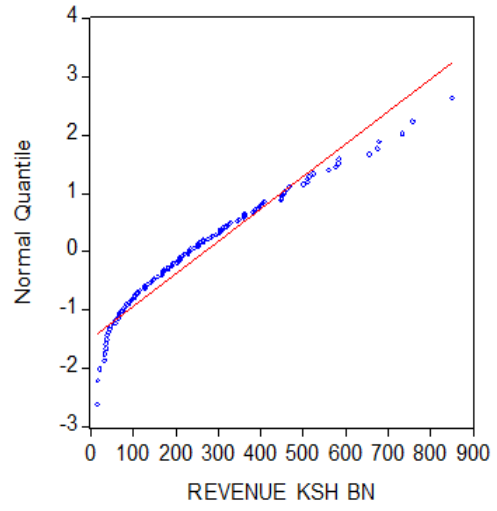
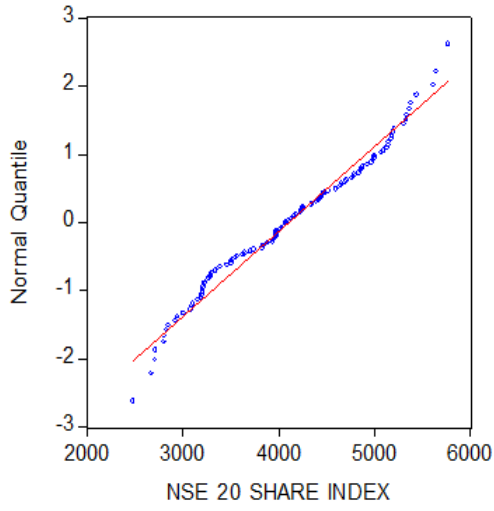
## Appendix I: Multiple Line Graphs



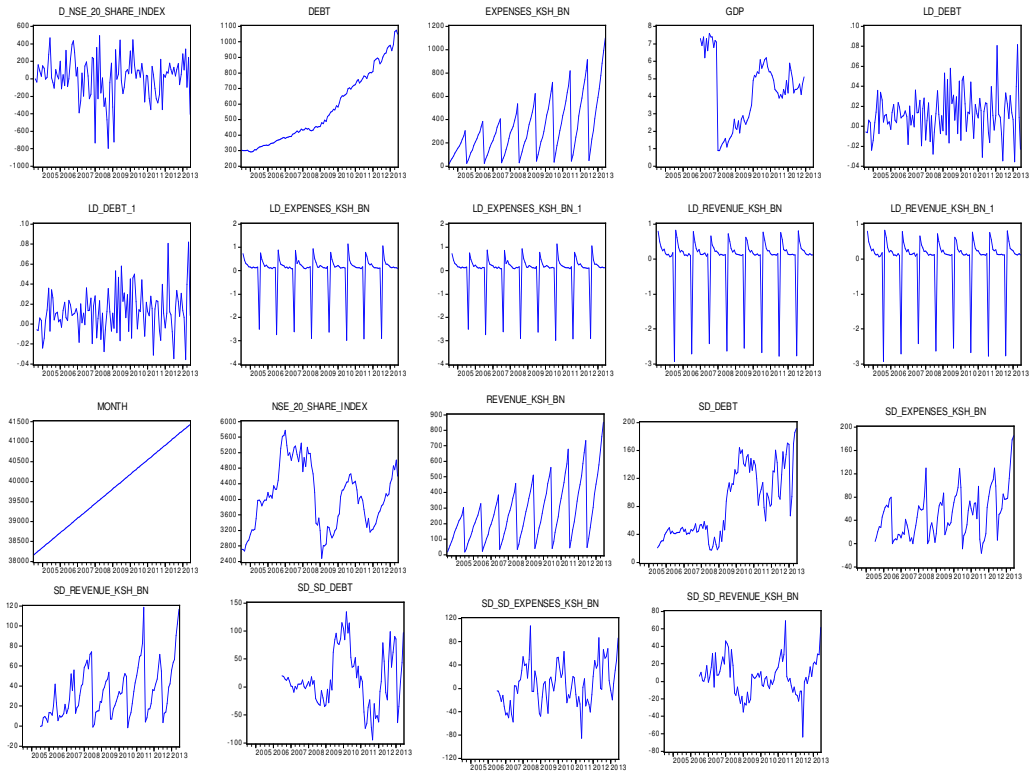


## Appendix II: Q-Q Plots

Theoretical Quantile-Quantiles



## Appendix III: Differenced Variables



### Appendix IV: Study Data

Month	Revenue Ksh bn	Expenses Ksh bn	Debt Ksh bn	GDP	NSE 20 index	Share
Jan-04	130.10	146.01	291.22	89,200		3,961
Feb-04	148.44	166.64	292.23	92,301		3,963
Mar-04	169.70	189.42	296.33	91,920		3,965
Apr-04	195.71	212.75	307.16	80,139		3,968
May-04	216.21	231.63	304.98	91,005		3,970
Jun-04	254.68	282.19	315.57	86,271		3,972
Jul-04	16.82	20.44	303.46	100,186		2,708
Aug-04	37.15	42.38	301.68	85,157		2,709
Sep-04	60.64	65.94	299.75	93,192		2,671
Oct-04	85.63	88.78	301.54	91,783		2,830
Nov-04	108.54	113.26	302.54	103,491		2,918
Dec-04	144.56	133.64	295.37	98,462		2,946
Jan-05	169.76	154.53	291.22	94,195		3,094
Feb-05	190.56	172.95	292.23	91,920		3,213
Mar-05	219.10	202.30	296.33	93,762		3,209
Apr-05	232.81	229.95	307.16	89,103		3,228
May-05	254.18	260.79	304.98	95,340		3,505
Jun-05	304.70	303.40	315.57	92,606		3,972
Jul-05	16.30	24.70	324.03	103,589		3,982
Aug-05	37.30	53.20	325.38	97,920		3,939
Sep-05	68.70	86.20	328.80	101,010		3,833
Oct-05	95.10	117.80	332.73	99,281		3,939
Nov-05	116.30	141.30	333.50	109,910		3,974
Dec-05	148.30	179.20	335.00	104,333		3,973
Jan-06	183.00	209.80	333.95	102,004		4,172
Feb-06	203.90	235.30	338.61	93,521		4,057
Mar-06	229.90	268.50	346.06	99,396		4,102
Apr-06	253.10	292.60	348.22	104,924		4,025
May-06	295.93	337.04	349.49	91,625		4,349
Jun-06	327.80	383.00	357.84	98,379		4,260
Jul-06	21.70	24.70	364.84	103,480		4,259
Aug-06	47.90	59.40	367.96	112,745		4,486
Sep-06	77.60	94.30	371.59	109,289		4,880
Oct-06	104.70	124.40	375.52	100,457		5,314
Nov-06	128.66	157.48	381.30	115,952		5,615
Dec-06	170.16	194.39	385.10	109,422		5,646
Jan-07	195.32	219.73	378.10	108,341		5,774

<b>Month</b>	<b>Revenue Ksh bn</b>	<b>Expenses Ksh bn</b>	<b>Debt Ksh bn</b>	<b>GDP</b>	<b>NSE 20 index</b>	<b>Share</b>
Feb-07	221.74	255.44	385.80	102,683		5,387
Mar-07	256.71	284.20	386.29	106,362		5,134
Apr-07	305.21	334.50	390.49	110,634		5,199
May-07	331.21	368.65	390.30	102,850		5,002
Jun-07	383.59	405.20	404.69	106,492		5,147
Jul-07	34.20	29.30	410.20	124,284		5,340
Aug-07	66.00	69.60	415.90	109,230		5,372
Sep-07	97.96	94.06	426.80	116,190		5,146
Oct-07	135.14	143.49	418.50	128,361		4,971
Nov-07	168.95	188.63	426.02	99,291		5,215
Dec-07	211.95	239.64	438.20	116,581		5,445
Jan-08	253.90	284.50	432.18	112,793		4,713
Feb-08	282.67	314.95	434.55	100,257		5,072
Mar-08	322.58	341.79	444.75	107,754		4,843
Apr-08	362.36	393.93	437.94	105,845		5,336
May-08	402.67	449.75	442.68	113,826		5,176
Jun-08	457.67	534.84	430.61	109,064		5,186
Jul-08	33.20	29.24	428.22	115,805		4,868
Aug-08	68.03	74.36	433.56	124,843		4,649
Sep-08	111.70	123.60	449.25	119,272		4,180
Oct-08	150.10	179.20	454.70	123,004		3,387
Nov-08	184.15	210.51	451.39	110,458		3,341
Dec-08	236.60	241.70	456.20	116,457		3,521
Jan-09	277.42	301.54	454.27	109,341		3,199
Feb-09	318.85	359.38	479.08	116,900		2,475
Mar-09	361.27	406.94	474.89	113,755		2,805
Apr-09	407.21	465.12	497.58	111,903		2,800
May-09	449.64	515.70	489.34	109,585		2,853
Jun-09	511.35	621.91	518.51	110,091		3,295
Jul-09	40.08	44.77	530.53	118,943		3,273
Aug-09	74.82	98.61	547.21	120,115		3,103
Sep-09	128.90	159.30	550.69	119,890		3,005
Oct-09	170.83	210.69	567.13	118,992		3,084
Nov-09	208.56	246.75	562.93	122,883		3,190
Dec-09	266.08	296.13	588.97	120,541		3,247
Jan-10	311.97	372.03	580.70	117,805		3,565
Feb-10	350.66	440.03	608.00	120,345		3,629
Mar-10	394.40	490.64	639.10	119,047		4,073

<b>Month</b>	<b>Revenue Ksh bn</b>	<b>Expenses Ksh bn</b>	<b>Debt Ksh bn</b>	<b>GDP</b>	<b>NSE 20 index</b>	<b>Share</b>
Apr-10	455.12	561.39	653.60	113,800		4,233
May-10	502.03	644.54	650.30	117,402		4,242
Jun-10	560.79	718.65	659.61	115,899		4,339
Jul-10	38.59	35.91	667.80	124,500		4,439
Aug-10	83.00	112.20	698.05	131,045		4,455
Sep-10	142.43	178.61	704.70	127,244		4,630
Oct-10	193.09	243.14	696.13	122,000		4,660
Nov-10	243.16	303.78	711.45	135,820		4,395
Dec-10	309.23	368.99	720.33	127,925		4,433
Jan-11	362.57	432.16	726.32	130,001		4,465
Feb-11	408.80	489.40	746.86	109,551		4,240
Mar-11	463.90	560.00	758.66	121,528		3,887
Apr-11	525.70	631.10	735.50	126,990		4,029
May-11	584.80	687.60	746.60	116,045		4,078
Jun-11	679.50	817.10	764.22	121,833		3,968
Jul-11	42.70	43.72	781.71	140,782		3,738
Aug-11	91.28	95.88	776.85	129,500		3,465
Sep-11	159.25	179.63	764.27	135,484		3,284
Oct-11	210.31	248.30	795.21	129,745		3,507
Nov-11	265.47	320.58	803.89	139,004		3,155
Dec-11	345.66	430.93	800.68	134,460		3,205
Jan-12	398.16	512.65	809.28	131,004		3,224
Feb-12	450.53	586.55	877.29	124,426		3,304
Mar-12	510.89	663.82	887.87	126,503		3,367
Apr-12	585.16	740.82	896.04	123,950		3,547
May-12	656.32	817.43	889.06	130,451		3,651
Jun-12	734.43	915.89	858.83	127,276		3,704
Jul-12	46.27	50.03	872.16	132,958		3,832
Aug-12	103.88	146.19	901.85	150,281		3,866
Sep-12	173.32	232.29	922.20	141,621		3,972
Oct-12	233.02	308.06	929.32	150,683		4,147
Nov-12	304.41	405.53	958.44	129,002		4,084
Dec-12	387.89	506.41	971.27	141,294		4,133
Jan-13	454.06	589.55	977.90	133,804		4,417
Feb-13	514.26	664.32	943.80	131,893		4,519
Mar-13	577.30	776.10	981.90	132,940		4,861
Apr-13	675.70	882.10	1,065.60	128,504		4,765
May-13	758.30	995.20	1,074.80	135,904		5,007

<b>Month</b>	<b>Revenue Ksh bn</b>	<b>Expenses Ksh bn</b>	<b>Debt Ksh bn</b>	<b>GDP</b>	<b>NSE 20 index</b>	<b>Share</b>
Jun-13	851.19	1,100.83	1,050.56	132,777		4,598
Jul-13	58.60	49.70	1,078.60	142,804		4,788
Aug-13	128.42	150.58	1,116.68	154,802		4,698
Sep-13	210.23	269.87	1,168.23	147,800		4,793
Oct-13	286.22	357.20	1,174.78	135,258		4,993
Nov-13	363.59	473.98	1,170.05	140,847		5,101
Dec-13	468.97	574.21	1,189.18	138,977		4,927

Source: CBK (2014), KNBS (2014)