


DECLARATION

I declare that this work has not been previously submitted and approved for the award of a degree by this or any other University. To the best of my knowledge and belief, the Research Proposal contains no material previously published or written by another person except where due reference is made in the Research Proposal itself.

© No part of this Research Proposal may be reproduced without the permission of the author and Strathmore University.

Maara Lynette Wanjiru [*Name of Candidate*]

 [*Signature*]

25/11/2016 [*Date*]

This Research Proposal has been submitted for examination with my approval as the Supervisor.

William Ng'ang'a [*Name of Supervisor*]

 [*Signature*]

25/11/2016 [*Date*]

Strathmore Institute of Mathematical Sciences

Strathmore University

ABSTRACT

Given the important role of the stock market to an economy, this study aims to explore the impact of fiscal and monetary policy on the stock market in Kenya. The study uses Structural Vector Error Correction model (VECM) while controlling for GDP and average lending rates (market interest rates). M2 is used as a proxy for monetary policy, government expenditure for fiscal policy and data on NSE-20 for stock prices in Kenya. Quarterly data spanning from 1998 to 2015 was used. Despite the results revealing that monetary policy, fiscal policy and the combined effect of the two are not significant in explaining stock price movements for the period under study, the impulse response function and error variance decomposition results suggest that the stock market variable does respond to a positive shock applied to the monetary and fiscal policy variables. However as the stock market in Kenya continues to develop, the fiscal and monetary policy variables may become significant and may have a sizeable influence on the movement of stock prices. Therefore there may be a need for coordination.

Table of Contents

ABSTRACT	3
List of Abbreviations	6
CHAPTER 1	7
INTRODUCTION	7
1.1 BACKGROUND	7
1.2 Problem Statement	9
1.3 Research Objectives	10
1.4 Research Questions	10
1.5 Significance of the research	10
CHAPTER 2	11
LITERATURE REVIEW	11
2.1 Theoretical Literature	11
2.2 Empirical Literature	17
CHAPTER 3	21
METHODOLOGY	21
Introduction	21
3.1 Data Description and Sources	21
3.2 Data Analysis	21
3.2.1 Empirical model	21
3.2.2 Optimal Lag Length	23
3.2.3 Stationary Test	23
3.2.4 Co-integration test	24
3.2.5 Post-estimation tests	24
3.2.6 Additional Tests	24
3.2.7 Conclusion	24
CHAPTER 4	25
RESULTS AND FINDINGS	25
4.1 Introduction	25
4.2 Stationarity test	25
4.3 Test for co integration	26
4.4 VECM Estimation	28

4.5 Indirect effects	29
4.6 Post estimation results.....	29
4.6.1 Serial Correlation test.....	29
4.6.2 Heteroscedasticity test.....	30
4.6.3 Normality test.....	30
4.7 Impulse responses	30
4.8 Error Variance Decomposition.....	31
CHAPTER 5	33
DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS.....	33
5.1 Introduction.....	33
5.2 Summary.....	33
5.3 Discussion.....	33
5.4 Conclusion	35
5.5 Recommendations.....	35
5.6 Limitations of Study	35
Bibliography	36
APPENDIX 1	37
APPENDIX 2	40

List of Abbreviations

ADF	Augmented Dickey-Fuller
CBK	Central Bank of Kenya
GDP	Gross Domestic Product
GE	Government Expenditure
IRF	Impulse Response Function
LR	Lending Rate
M2	Money Supply
NSE-20	Nairobi Stock Exchange 20-share index
SVAR	Structural Vector Autoregressive model
VECM	Vector Error Correction Model

CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

Stock market performance is an important indicator of a country's economic health. It is therefore crucial to determine the various factors that affect the performance of a stock market. Such factors include inflation, world events, interest rates, internal developments and changes in economic policy, just to mention a few. However some studies have placed more emphasis on the impact of changes in economic policies on the stock market. Such policies include monetary and fiscal policy.

In recent years, especially after the 2007-2008 financial crises, great emphasis has been placed on studying the impact of fiscal and monetary policy decisions on the economy. It is believed that the impact of both policies should not be done in isolation as the two policies have significant effects on the economy and especially the stock market. However, a considerable number of studies have focused on the independent impacts of either policy on the stock market. Majority of the studies have concentrated more on monetary policy effects to stock market performance such as (Thorbeke, 1997) , (Kontonikas C. I., 2006), (Roberto Rigobon, 2004) but few such as, (Darrat, 1988) and (Luca Agnello, 2011) have directed their focus on fiscal policy and stock market performance. Less attention was directed towards fiscal policy since it was believed that fiscal policy did not have significant effects on the stock market.

Monetary policy actions can affect stock market performance through various channels such as the interest rate channel, asset price channel and the credit channel. According to theory, stock prices are equal to the future expected cash flows discounted at a market rate used by market participants. Hence a change in monetary policy stance may affect the future cash flows or the market rate used by the market participants. Policymakers place great importance on the reactions of asset prices to changes in the monetary policy. "From the perspective of monetary policymakers, having reliable estimates of the reaction of asset prices to the policy instrument is a critical step in formulating effective policy decisions. Much of the transmission of monetary policy comes through the influence of short-term interest rates on other asset prices, as it is the movements in these other asset prices— including longer-term interest rates and stock prices—

that determine private borrowing costs and changes in wealth, which in turn influence real economic activity” (Roberto Rigobon, 2004).

The effects of fiscal policy actions on the stock market, according to theory, depend on the view of the economy that is taken up. These views include the classical view, Keynesian view and the Ricardian view. According to the Keynesian view, an expansionary fiscal policy leads to an increase in aggregate demand which boosts the economy and potentially drives up stock prices. However, the Ricardian perspective posits that fiscal policy has no significant effect on stock prices. Contrary to the Ricardian perspective, a study conducted by (Darrat, 1988) revealed that fiscal policy actions do indeed have an effect on the stock market. The effect can either be direct or indirect. In light of the current economic crisis and the increasing emphasis on the role of fiscal policy both as a tool of economic stabilization and a potential source of destabilization it is increasingly important to gain a better understanding of the effects of fiscal policy on the economy, in general, and the stock market, in particular (Ioannis Chatziantoniou, David Duffy, George Filis, 2013).

Investigating the impact of either policy on the stock market is simply not enough. These two policies affect the economy and most importantly the stock market, which as mentioned earlier is an indicator of a country’s economic health. It is therefore essential to examine how the stock market is affected by the effects of the two policies. Some studies have analyzed the impact of both policies on the stock market of different countries and had different findings. According to (Geraldo, 2011) and (Ioannis Chatziantoniou, David Duffy, George Filis, 2013) both monetary and fiscal policies have significant effects on the stock market. Additionally, (Ioannis Chatziantoniou, David Duffy, George Filis, 2013) further discovered that there exists a relationship between interest rates and fiscal expenditure therefore establishing a link between fiscal and monetary policy. Furthermore, (Gowriah, Seetanah, John, & Keshav, 2014) concluded that for developing countries like Mauritius, their stock markets are not as developed as those in developed countries hence fiscal policy would not have a direct effect on stock markets.

The stock market in Kenya is not as developed as other stock markets in other developed countries. Hence, given the findings of (Gowriah, Seetanah, John, & Keshav, 2014) on the Mauritius stock market, my research intends to identify whether similar results will be uncovered in the Kenyan context in regards to fiscal policy.

Given the above empirical studies, my research also aims to analyze the stock market in Kenya in relation to changes in the stances of fiscal and monetary policy. The studies done on the stock market in Kenya have mainly focused on the impact of either policy on the stock market but none has focused on the joint effects of both policies on the stock market. Furthermore, my research aims to fill this gap by analyzing the direct or indirect effects of the impact of both policies on the stock market.

1.2 Problem Statement

In light of previous studies done on monetary policy, fiscal policy and the stock market, there have been conflicting results and conclusions. Some economists mainly focused on the effect of monetary policy on the stock market and neglected fiscal policy as it was common belief that its effects were insignificant. However, according to theory and research done by economists such as (Darrat, 1988) , fiscal policy should not be neglected as it has significant effects on the stock market. “Fiscal policy as a subset of information, on the other hand, has been virtually ignored. Yet, Tobin's theoretical analysis, when consistently applied, suggests that both money growth and budget deficits may have significant impacts upon stock returns” (Darrat, 1988).

Then again, it is not sufficient to study the impact of either policy in isolation. This is because according to theory and a few empirical studies done, these two policies interact and this interaction may have considerable effects on the stock market. Examining the effects of monetary policy or fiscal policy on stock market performance is only half of the picture, unless the interaction of the two policies is also considered (Ioannis Chatziantoniou, David Duffy, George Filis, 2013).

The studies done for the Kenyan economy and more specifically, the stock market have mainly focused on the effect of either monetary or fiscal policy on the stock market. Given that over the years, especially after the financial crisis of 2007-2008, great emphasis has been placed on scrutinizing the effect of both policies on the economy. Therefore, my research aims to fill this research gap for the Kenyan economy by analyzing the impact and significance of the two policies on the stock market.

1.3 Research Objectives

1. To identify the significance of fiscal policy on the stock market
2. To identify the significance of monetary policy on the stock market
3. To determine the combined effect of fiscal and monetary policy on the stock market in Kenya

1.4 Research Questions

1. Does fiscal policy have a significant effect on the stock market?
2. Does monetary policy have a significant effect on the stock market?
3. What is the combined effect of fiscal and monetary policy on the stock market?

1.5 Significance of the research

This study stands to benefit the monetary and fiscal policy authorities as well as investors. Investors who would gain a better understanding of some of the factors that affect changes in the stock prices. The results of this research would help the monetary and fiscal authorities gain a better understanding of how the changes in the respective stances affect stock prices in the economy and to determine how much more or less the two policies should be coordinated in order to bring about stability in the financial markets.

CHAPTER 2

LITERATURE REVIEW

This section of the paper outlines the existing literature of the subject matter of this research. This chapter begins by discussing the theoretical underpinnings of monetary policy, fiscal policy and the relationship of these two policies with the stock market. Thereafter, the empirical studies formerly done in regards to the subject matter are reviewed.

2.1 Theoretical Literature

2.1.1 Monetary policy and stock market performance

The main objective of the monetary policy authorities in many countries is price stability in the long run to promote a sustainable economic growth. This objective can be achieved through various transmission channels such as the interest rate channel, asset price channel and credit channel. The traditional channel used is the interest rate channel. Stock market returns are affected by changes in interest rates. Stock prices can be determined using a discounted cash flow model where the expected future dividends of a stock are discounted by a market rate used by market participants. Using the discounted cash flow model, the effect of changes of monetary policy on stock market returns can be easily discerned.

$$s_T = E_t \left[\sum_{j=1}^k \left(\frac{1}{1+R} \right)^j D_{t+j} \right]$$

Where;

s_T = Stock Price

R = rate of return used by market participants to discount the returns

k = time horizon of investor

D = future expected dividends

The assumption made using this model is that the discount rate used by market participants is linked to the market interest rates, which the Central Bank can easily alter. Hence an expansionary or tightened monetary policy affects the movements of the discount rate used. If

the monetary policy is expansionary, then interest rates decline which leads to a corresponding decrease in the discounting rate causing the stock prices to rise. Furthermore, monetary policy changes have an effect on the value of a firm's stock by modifying the expected future cash flows. When the monetary policy is expansionary, this fosters an increase in economic activity. With the increase in economic activity, investors expect higher future cash flows; therefore increase in investments which lead to a rise in the stock prices.

Tobin q theory

Tobin q theory can be used to explain transmission mechanism of monetary policy to the economy whereby monetary policy can bring about changes in the economy through its influence on the valuation of equities. This is explained using a ratio (q) which is defined as:

$$q = \frac{\text{Market Value of Firms}}{\text{Replacement Cost of Capital}}$$

When q is high, this means that the market value of the firm is high compared to cost of replacing capital. Therefore to acquire new physical capital such as equipment or a new plant would be cheap as compared to the market value of the firm. Conversely, when q is low, the market value of a firm is low as compared to the cost of replacing capital. Hence it would be expensive to acquire new capital.

An expansionary monetary policy would lead to an increase in money supply. With an increase in money supply, the public has more than enough money to spend and would spend the excess money in assets such as equities. An increase in the demand for stocks would lead to an increase in the stock prices. This raises the market value of firms and consequently q rises.

2.1.2 Fiscal policy and stock market performance

There are three theories that strive to describe the impact of fiscal policy on stock market performance. These theories include: the Keynesian view, the classical view and the Ricardian view. According to modern-day Keynesians, government spending leads to an increase in demand. This further facilitates an increase the level of income in the economy, thereby fostering a rise in private sector spending. Therefore government spending is seen to stimulate job and wealth creation which may lead to a rise in the stock prices. However, according to the Ricardian

perspective, changes in fiscal policy have no effect on the changes in aggregate demand, thereby not affecting the level of investments/stock prices in an economy. This is because, for a particular channel of government spending, a budget deficit financed through a cut in current taxes will lead to higher future taxes, whose present value will be equal to the initial tax cut. Hence, due to the anticipated increase in future taxes; the taxpayers will save more of their current income, in preparation for payment of higher taxes in the future. This leads to a corresponding decrease in private demand. Consequently, a decrease in government savings through a tax cut brings about an offsetting rise in national private savings therefore no changes in the desired national savings. Thus, in a closed economy, with no changes in the desired national savings, the real interest rates do not have to increase so as to retain the balance between investment demand and national savings. As a result of this, there is no change in the level of investments in the country.

2.1.3 Monetary and Fiscal policy interactions

In order to explain the interaction of fiscal and monetary policies, I shall use the loan-able funds theory which focuses on how these two policies affect the interest rate level in the economy and consequently affect the returns in the market. Loan able-funds theory posits that interest rates in the economy are determined at the point where the demand and supply of credit are at equilibrium. The interest rates are treated as the price of credit. There are two main assumptions associated with this model. The first assumption asserts that the loan able funds market is fully integrated and there is perfect mobility of funds in the market while the second assumption postulates that perfect competition exists in the loan able funds market such that the borrowers and the lenders are price takers. Furthermore, only one interest rate exists in the market at any given instance of time.

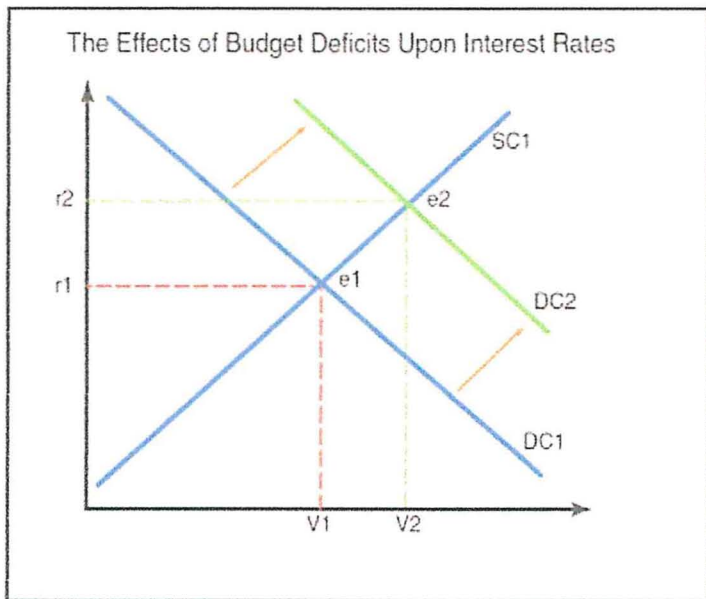
This model has both the demand and supply curve of credit. The demand curve for funds (credit) represents the demand by borrowers. There are two types of borrowing: private borrowing and government borrowing. Private borrowing is related to consumers and businesses. Furthermore, demand for credit can be satisfied by obtaining loans through loan applications and/or by selling financial assets such as corporate or government bonds.

The supply curve illustrates the supply of credit by lenders. Such lenders include banks, mortgage companies and those who purchase financial assets such as corporate or government bonds. Additionally the supply of credit is also influenced by central banks. Central banks can affect the supply of credit through various monetary tools such as open market operation, setting required reserve requirements and altering discount rates. This in turn affects the level of interest rates directly.

The next section describes the individual and combined effects of monetary and fiscal policy actions on the demand and supply of credit and consequently on interest rates.

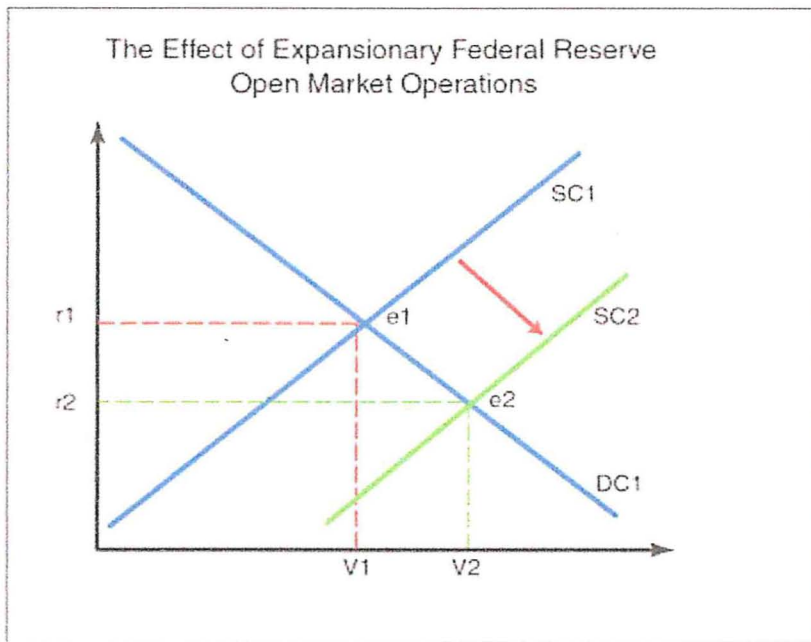
Fiscal policy and Interest rates

An increase in government consumption relative to government revenues may result in a budget deficit. This budget deficit can be financed by selling government securities such as bonds or treasury bills. This increase in the demand for credit by the government causes the demand curve for credit to shift to the right. This leads to an increase in the level of interest rate in the economy. This rise creates a possibility of crowding out private borrowers. This is because, according to theory, when interest rates rise, this reduces the demand for credit by private borrowers since credit has become expensive. Furthermore, when the government sells its securities to the public, the buyers would prefer to buy government securities as compared to corporate bonds because government securities are safe investments. Hence this led to the crowding out of companies. Therefore, budget deficits have the tendency to cause interest rates to rise.



Monetary policy and interest rates

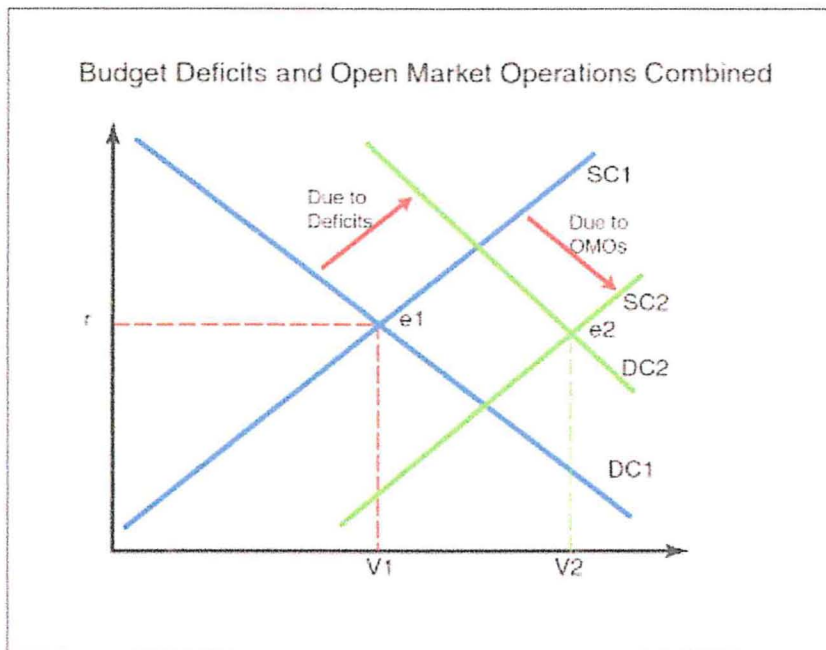
If a central bank increases the supply of credit to the economy through an expansionary monetary policy, the supply curve shifts to the right causing a fall in the interest rate. This is shown by the figure below.



Combined effect of fiscal and monetary policy on interest rates

An expansionary fiscal policy (increase in government expenditure) can give rise to a budget deficit which has the tendency to raise interest rates. However, an expansionary monetary policy can lead to a fall in interest rates. Hence the actions of the two policies may have offsetting effects. However, the resulting interest rate in the economy depends on the net effect of the two influences combined. The final interest rate will depend upon which influence from either policy is the dominant influence. For example if interest rates are observed to be falling when there is a prevailing budget deficit, then one would conclude that expansionary monetary policy is aggressive enough to offset the effects of the budget deficit. Conversely, if interest rates are rising during an expansionary monetary policy, then it can be concluded that efforts by the government to finance the budget deficit are too aggressive hence offsetting any effects of an expansionary monetary policy.

The figure below, however, demonstrates the combined effect of the two policies given that the influence of one does not dominate the influence of the other.



Since monetary and fiscal policy both affect the level of interest rates in the economy, as portrayed by the loanable funds theory, this shows how both policies interact through their influence on interest rates. This research aims to exploit this interaction and its impact on the

overall interest rates (market interest rate). Instantaneous changes of interest rates brought about by this interaction cause investors to revalue their equity holdings since changes in the market rates alters the discount rate used by investors . This revaluation causes equity prices to change as well. It is important to note that this theory exhibits how monetary and fiscal policies indirectly affect changes in the stock prices through their influence on the overall market interest rate.

2.2 Empirical Literature

2.2.1 Impact of Monetary Policy on Stock market Performance

Several studies have been carried out to analyze the impact of monetary policy changes on stock market performance. (Thorbeke, 1997) , carried out several tests to determine the relationship between monetary policy and stock market returns. One of the techniques used was the Boschen and Mills index which categorized monetary policy into 5 groups namely: Strong anti-inflationary, anti-inflationary, neutral, pro-growth and strongly pro-growth. His research revealed that there is a positive relationship between a “pro-growth” monetary policy and industry stock returns.

Furthermore, (Roberto Rigobon, 2004) carried out a similar research on the US stock market using a different approach. The research focused on obtaining an estimator that measures the reaction of stock prices to monetary shocks that took place on particular days such as during FOMC (Federal Open Market Committee) meetings. The sample ran covered the period between 1994 and 2001, a period when majority of these meetings took place. This estimator was obtained using the Generalized Method of Moments (GMM). Using the estimator, it was concluded that an increase in the short term interest rate negatively impacted stock prices. Hence interest rates and stock prices are negatively correlated.

In addition to the above findings, (Kontonikas C. I., 2006) researched on the relationship between stock market performance and monetary policy of 13 OECD countries .A regression model was used to determine the relationship between stock prices and interest rates, where the stock prices were the dependent variables while interest rates where the independent variables. Furthermore the non-normality of the stock returns was taken into consideration. Hence to estimate the regression equation, Ordinary Least Squares and “Newey-West heteroskedasticity

consistent covariance matrix estimator” were used. It was concluded that out of the 13 countries tested, 10 countries revealed that during periods of a tight monetary policy (increase in interest rates), the stock prices declined.

Drawing attention to the Kenyan context, (Muthama, 2014) examined the relationship between monetary policy and stock prices in Kenya from 2003-2013. The Ordinary Least Squares method of estimation was adopted to study this relationship. Variables such as Open Market operation, repurchase rate, cash reserve requirement and the velocity of money (money supply multiplier) (M2/M0) were used as proxies for the monetary policy stance. Results from the estimation of OLS revealed that the monetary policy variables (explanatory variables) only explained 24.6% of the variations in the stock prices while other variables that were not included in the model explained 75.4% of variations. The money supply multiplier was found to have a positive significant effect on the stock market while the other variables were found to be insignificant.

2.2.2 Impact of Fiscal policy on stock market performance

Numerous studies have mainly focused on the effect of monetary policy on the economy and particularly on the stock market. However, inasmuch as fiscal policy does affect the economy in numerous ways, its impact on the economy and specifically on asset prices has not been given adequate attention especially in developing countries.

In a research carried out by (Darrat, 1988) on the Canadian stock market, a regression model was used to determine the significance of changes in fiscal policy stance on stock prices. Other variables were also included in this model such as contemporaneous short-term interest rates and lagged values of monetary policy actions, inflation, Gross National Product and time trend. The results after running the regression model clearly depicted that changes in fiscal policy stance have significant effects on stock market returns. Hence when trying to determine the factors that affect stock market returns, fiscal policy should not be excluded unlike other studies that did not include it.

A similar study was done by, (Luca Agnello, 2011) analyzed the relationship between fiscal and stock prices across a panel of 10 industrialized countries using a Panel Vector Auto-Regression model (pVAR) using quarterly data. The results indicated that an expansionary fiscal policy has a negative impact on the stock prices. This is because when the government increases

government spending relative to government revenue (budget deficit), this triggers a rise in the real interest rates. When real interest rates rise, a “crowding out” effect may occur on private investments. Hence a decline in investments creates a downward pressure on stock prices. This shows that fiscal policy affects the stock market indirectly through interest rates.

Additionally, (Onyemachi Maxwell Ogbulu, 2015) carried out a study on the relationship between Nigeria stock market (an emerging market) and fiscal policy. In order to study this relationship, a parsimonious Error Correcting Mechanism in line with Autoregressive Distributed Lag (ARDL) model which uses lagged values of the variables, was used to determine the relationship between stock market and fiscal policy. Additional variables were also included such as domestic debt, non-oil revenue and broad money supply. The findings suggested that there is a significant relationship between stock prices and fiscal policy.

2.2.3 Impact of Monetary Policy and Fiscal Policy on stock market performance.

Numerous studies have mainly focused on determining the impact of either policies on the economy and especially the stock market. However, few have directed their attention on the combined effect of the interaction of the two policies on the stock market and whether or not coordination is necessary for improved performance of the stock market. A research conducted by (Hsing, 2013) examined the impact of fiscal and monetary policy on Poland’s stock market using a GARCH model. The ratio of government expenditure to GDP was used as a proxy for fiscal policy while change in policy interest rates was used as a proxy for monetary policy. The research uncovered that fiscal policy did not have a substantial effect on Poland’s stock index and that tightening of the monetary policy by increasing interest rates has a negative effect of the stock prices. However, if monetary easing leads to an increase in money supply relative to the level of GDP beyond a certain critical value, then this may negatively affect the stock prices.

Additionally, (Gowriah, Seetanah, John, & Keshav, 2014) carried out a similar study for the Mauritius stock market. The Autoregressive Distribution Lag model (ARDL) was used to test for co-integration of the variables in the long run and the Error Correction Model, based on ARDL was used to determine the short term relationships of the variables. It was concluded that there exists a positive long and short term relationship between stock prices and actions monetary policy. In this study, money supply was used as a proxy for monetary policy activities. Therefore

they found a significant relationship between stock prices and actions of monetary policy. It was further discovered that budget deficit, which is a proxy for fiscal policy, had no direct impact on the stock prices reason being that Mauritius is a developing country and stock markets in developing countries are not as developed as those in developed countries. In addition to the above findings, a causal relationship between stock prices and interest rates was uncovered after a pair-wise causality test was carried out between stock prices and the proxies for monetary and fiscal policy actions.

Moreover, a research was also done by (Ioannis Chatziantoniou, David Duffy, George Filis, 2013) on the stock markets of developed markets in the U.S, Germany and the U.K. A structural Vector Autoregressive model (SVAR) was used to test the relationship between monetary policy, fiscal policy and the stock market and also to determine whether fiscal policy is an important variable. The research revealed that the effects of fiscal and monetary policy shocks on the individual countries stock markets can either be direct or indirect. For the U.S economy, the fiscal and monetary policy shocks had direct effects on stock market performance. However, similar effects were not realized for Germany and the U.S economy. For both countries, there was an indirect effect of fiscal policy shocks on the stock prices through the interest rate channel. They further discovered that there is an interaction/relationship between interest rates and fiscal policy.”... given that a link between fiscal expenditure and money supply is established, we argue that the interaction between fiscal and monetary variables is also important in deciphering the US stock market developments” (Ioannis Chatziantoniou, David Duffy, George Filis, 2013).

Given the above empirical evidence, the study aims to fill the research gap by determining the impact of the two policies on the stock market in Kenya and the combined effect as well.

CHAPTER 3

METHODOLOGY

Introduction

This chapter represents the methodology of the research. It gives a detailed description of the type of data used and their various sources, the research design employed, the econometric model and econometric techniques used in analyzing the data. This chapter provides a clear outline of how the research questions of this research will be answered. This chapter will help in the presentation of results in the following chapter.

3.1 Data Description and Sources

Quarterly data will be used from 1998(q1) to 2015(q4) from Kenya. The variables that will be used in this research include GDP, average lending rate (as a proxy for interest rate variable), M2 money supply (as proxy for monetary policy), government expenditure (as a proxy for fiscal policy) and NSE 20 Index (as a proxy for stock prices).

The average lending rate and GDP are also included in this research because movements in stock prices are also influenced by other variables in the economy other than fiscal and monetary policy variables. They will be used as control variables in this research. Data on NSE 20 Index will be obtained from Nairobi Stock Exchange while data on government expenditure, GDP and money supply will be obtained from the Kenya National Bureau of Statistics. The lending rate however will be obtained from Central Bank of Kenya.

3.2 Data Analysis

3.2.1 Empirical model

Stock prices represented by the NSE 20 index in this research, is a function of government expenditure (fiscal policy instrument), money supply (monetary policy instrument) and other economic variables such as GDP and interest rates (represented by the average lending rate).

This can be represented using the following model;

$$\text{NSE} = f(\text{GDP}, \text{GE}, \text{M2}, \text{LR}, \text{MG})$$

To study the dynamic inter-relationship among fiscal policy, monetary policy and the stock market, a Structural VAR is employed. A structural model is used in order to isolate the shocks to the independent variables, more specifically the monetary and fiscal variables and see how the stock market will react to this shock. This model is assumed to be based on economic theory hence it is quite relevant to this research.

The structure of the VAR model is as follows:

$$BY_t = \alpha_o + \Gamma \sum_{i=1}^n Y_{t-i} + \gamma \sum_{j=1}^q X_{t-j} + \varepsilon_t \dots\dots\dots(1)$$

Where:

- 1. Endogenous variables include:

$$Y_t = \begin{bmatrix} NSE \\ LR \\ GDP \\ GE \\ M2 \end{bmatrix} \text{ And } Y_{t-i} = \text{lagged values of } Y_t$$

- 2. Exogenous variables include:

$$X_t = [MG]$$

LR= average lending rate, NSE= NSE 20 Index, M2= Money Supply, GE= Government Expenditure, MG= (M2*GE)

MG is the interactive variable that measures the joint effect of fiscal and monetary policy on the stock market.

In this model, money supply and government expenditure are endogenous variables, that is, they are determined within the model. Although, previously money supply and government expenditure were considered to be exogenous variables, in this research they shall assumed to be endogenous.

However, a Structural VAR cannot be estimated directly hence the starting point is a reduced form of SVAR. This can be obtained by dividing both sides of equation (1) by the B matrix. The resulting equation takes the following form:

$$\begin{aligned}
Y_t &= B^{-1}\alpha_0 + B^{-1}\Gamma \sum_{i=1}^n Y_{t-i} + B^{-1}\gamma \sum_{j=1}^q X_{t-j} + B^{-1}\varepsilon_t \\
&= A_0 + A_1 \sum_{i=1}^n Y_{t-i} + A_2 \sum_{j=1}^q X_{t-j} + U_t \dots\dots\dots (2)
\end{aligned}$$

A structural model normally isolates exogenous shocks and therefore measures impact of the shocks on the various variables in the model. Hence, in order to do so, the matrix B needs to be identified and the reduced form VAR is multiplied by matrix B in order to get the structural form of the model.

3.2.2 Optimal Lag Length

The optimal lag length that will be used in the model will be selected based on a number of criteria and not just the AIC which is recommended in several studies. The other lag selection criteria that will also be used include: the modified LR statistic, Final Prediction Error, Schwartz Information Criteria and Hanna-Quinn information criterion. The optimal lag to be used will be the one chosen by majority of the five lag selection criteria.

3.2.3 Stationary Test

This is a test carried out on time series data to test the stationarity of variables. This is crucial as VAR requires that the variables should be stationary. Therefore for this study, the Augmented Dickey Fuller (ADF) test shall be employed to test for stationarity. If all the variables are stationary, then SVAR shall be employed to conduct the research. If all the variables are non stationary, then a corrective measure shall be undertaken. If the variables are non stationary but stationary in their first differences, that is I (1), and the variables are co-integrated, then the SVAR can be transformed into a Vector Error Correction Mechanism. The advantage of using a VECM is that it takes into account the co-integrating relationships that exist among the variables and the variables do not have to be differenced in order to make them stationary. VECM already accounts for the non stationary variables that are stationary in their first differences. The Vector Error Correction Model takes the following form.

$$V_t = \Pi \Delta V_{t-1} + \sum_{i=1}^{k-1} \Pi_i \Delta V_{t-i} + u_t$$

If the stationarity test carried out on the data reveals that some of the variables are stationary while others are non stationary, then the non stationary variables will be differenced to make them stationary. Thereafter the SVAR will be estimated. However, the limitation of differencing the non stationary variables is that the long term relationships may be lost in the process.

3.2.4 Co-integration test

There are two main tests that can be used in testing relationships among non stationary variables; the Johansen (1991) co-integration test and the Engle and Granger test (1987). Co-integration is a statistical property of time series data where a linear combination of non stationary series results in variables that are $I(0)$. To determine the number of co-integrating relationships among non-stationary variables, the Johansen co-integration test will be applied.

3.2.5 Post-estimation tests

Other tests shall also be carried out to support this research. Such tests will be carried out on the error terms. These include tests for heteroscedasticity, autocorrelation and normality of the error term. Breusch-Godfrey Serial Correlation LM test shall be used to test for autocorrelation while the Breusch-Pagan-Godfrey test shall be employed to test for the presence of heteroscedasticity.

3.2.6 Additional Tests

To test for the significance of fiscal policy effects on the stock market an Impulse Response Function (IRF) shall be employed. IRF determines how stock market (the dependent variable) will respond to shocks applied to the fiscal policy variable. To supplement this, Variance Decomposition will also be used to analyze how much of the error variance of the stock market variable is explained by the shocks in the fiscal policy variable.

3.2.7 Conclusion

The beta coefficient of $MG=LN(M2*GE)$, the interactive variable, obtained after SVAR or VECM has been estimated shall be used to analyze the joint effects of the fiscal and monetary policy on the stock market. After the SVAR has been estimated, IRF and Variance Decomposition shall be used to determine the impact of shocks to the fiscal and monetary policy variables on the stock market variable.

CHAPTER 4

RESULTS AND FINDINGS

4.1 Introduction

This chapter represents the results and findings of the research after the execution of the methodology. This includes the various tests carried out on the data of the individual variables and the results, estimation of the model and the results of this estimation.

4.2 Stationarity test

Given the six variables, that is, the stock prices(nse), gdp, lending rate(lr), government expenditure (ge), money supply(m2) and the interactive variable(mg), stationarity test was carried out using the Augmented-Dickey fuller test and this revealed that all variables are I(1) variables. This means that at level the variables are non stationary but given their first differences, they become stationary. This is shown in table 1. The 5% confidence is used.

Table 4.1

VARIABLE	STATIONARITY AT LEVEL (ADF)	PROB.	STATIONARITY AT 1ST DIFFERENCE (ADF)	PROB.
NSE	-2.2427	0.3074	-5.5060	0.0001
LR	-2.4216	0.3656	-8.8960	0.0000
GDP	-0.4462	0.9839	-8.6330	0.0000
GE	0.9366	0.9998	-3.5037	0.0477
M2	-1.7422	0.7197	-6.05619	0.0000
MG	1.1763	0.9999	-6.115	0.0000

The order of the structural VAR model is identified using the five lag selection criteria as shown in **Table 4.2**.

Table 4.2

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-2282.189	NA	2.76e+25	72.76792	73.10810	72.90171
1	-2013.391	477.8646	1.21e+22	65.02827	66.21891*	65.49656
2	-1970.792	68.96977	7.02e+21	64.46958	66.51066	65.27234
3	-1955.174	22.80664	9.90e+21	64.76743	67.65896	65.90468
4	-1865.288	116.9952	1.37e+21	62.70754	66.44952	64.17928
5	-1810.148	63.01617	6.08e+20	61.75074	66.34317	63.55697
6	-1769.720	39.78644*	4.66e+20	61.26096	66.70384	63.40167
7	-1738.769	25.54721	5.44e+20	61.07203	67.36536	63.54722
8	-1691.083	31.79058	4.44e+20*	60.35184*	67.49562	63.16152*

* indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

Given the above results, three out of the five lag selection criteria select eight lags as the optimal number of lags to be used.

4.3 Test for co integration

Given the optimal number of lags (8) the model was tested for co integration using the Johansen co-integration test. The test revealed that the variables are co integrated having four co-integrating equations at 5% level of significance. This is shown in **Table 4.3**.

Table 4.3

Unrestricted Cointegration Rank Test (Trace)				
Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.993256	641.3322	95.75366	0.0001
At most 1 *	0.955352	331.3853	69.81889	0.0001
At most 2 *	0.808077	138.6307	47.85613	0.0000
At most 3 *	0.330823	36.28956	29.79707	0.0078
At most 4	0.156262	11.38374	15.49471	0.1890
At most 5	0.013602	0.849087	3.841466	0.3568
Trace test indicates 4 cointegrating eqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesized		Max-Eigen	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.993256	309.9469	40.07757	0.0001
At most 1 *	0.955352	192.7546	33.87687	0.0001
At most 2 *	0.808077	102.3411	27.58434	0.0000
At most 3 *	0.330823	24.90582	21.13162	0.0140
At most 4	0.156262	10.53466	14.26460	0.1791
At most 5	0.013602	0.849087	3.841466	0.3568
Max-eigenvalue test indicates 4 cointegrating eqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				

The existence of four co integrating relationships means that combinations of four linearly independent relationships of the non stationary variables will be stationary.

NB: Since the variables are co integrated an error correction model (VECM) was used instead of a Structural VAR.

4.4 VECM Estimation

The VECM model was estimated to obtain the co-efficients of the variables. Since the main focus of this research is the stock market, I shall focus on the effects of the variables on the stock market performance. **Table 4.4**(Refer to appendix) reveals the coefficients of the independent variables with regards to the stock market variable, which in this case is the NSE returns.

[TABLE 4.4]

Below is the regression equation which displays the dependent variable (NSE) and its independent variables together with the error correction terms.

$$D(NSE) = C(1)*(NSE(-1) + 0.00733346571111*GE(-1) - 5818.90852816) + C(2)*(LR(-1) + 6.52581330358e-06*GE(-1) - 17.98619613) + C(3)*(GDP(-1) - 0.00102309576526*GE(-1) - 114.655821504) + C(4)*(M2(-1) - 9.2731547011e-05*GE(-1) - 1.1104837259) + C(5)*D(NSE(-1)) + C(6)*D(NSE(-2)) + C(7)*D(NSE(-3)) + C(8)*D(NSE(-4)) + C(9)*D(NSE(-5)) + C(10)*D(NSE(-6)) + C(11)*D(NSE(-7)) + C(12)*D(NSE(-8)) + C(13)*D(LR(-1)) + C(14)*D(LR(-2)) + C(15)*D(LR(-3)) + C(16)*D(LR(-4)) + C(17)*D(LR(-5)) + C(18)*D(LR(-6)) + C(19)*D(LR(-7)) + C(20)*D(LR(-8)) + C(21)*D(GDP(-1)) + C(22)*D(GDP(-2)) + C(23)*D(GDP(-3)) + C(24)*D(GDP(-4)) + C(25)*D(GDP(-5)) + C(26)*D(GDP(-6)) + C(27)*D(GDP(-7)) + C(28)*D(GDP(-8)) + C(29)*D(M2(-1)) + C(30)*D(M2(-2)) + C(31)*D(M2(-3)) + C(32)*D(M2(-4)) + C(33)*D(M2(-5)) + C(34)*D(M2(-6)) + C(35)*D(M2(-7)) + C(36)*D(M2(-8)) + C(37)*D(GE(-1)) + C(38)*D(GE(-2)) + C(39)*D(GE(-3)) + C(40)*D(GE(-4)) + C(41)*D(GE(-5)) + C(42)*D(GE(-6)) + C(43)*D(GE(-7)) + C(44)*D(GE(-8)) + C(45) + C(46)*MG$$

The results in table 4 reveal two significant variables: NSE lagged once [D(nse(-1))] and the fourth lag of GDP [D(GDP(-4))]. The other lagged variables of NSE, GDP, M2, GE and interactive variable MG are insignificant. Given hypothesis testing where we have a null hypothesis and an alternative hypothesis, in this case:

H_0 : The co-efficients of the variables are insignificant.

H_1 : the co-efficients of the variables are significant.

However, since their p values are greater than 5% ($p > 0.05$) we fail to reject the null hypothesis.

4.5 Indirect effects

The main focus here is to uncover the results of the impact of the fiscal and monetary policy on the lending rate. This is a measure of the effects of the two policies on the stock market through the interest rate channel which in our case is the lending rate, that is, how the monetary and fiscal policy affect the lending rate which in turn affects the stock market returns(indirect effect). Table 4.5 in the appendix shows the coefficient results of the independent variables with regards to the lending rate variable.

[TABLE 4.5]

From the table, we can see that the lagged values of the monetary and fiscal variables, M2 and GE respectively are insignificant.

4.6 Post estimation results

4.6.1 Serial Correlation test

Breusch-Godfrey Serial Correlation LM test reveals that the model suffers from serial correlation. This is because the p value of the observed R^2 is less than 0.05. Therefore, since our null hypothesis states that there is no serial correlation, we reject the null because $p < 0.05$. For this reason, we conclude that there is serial correlation. Table 6 reveals the results of the test.

Table 4.6

Breusch-Godfrey Serial Correlation LM Test:			Prob.
F-statistic	0.770945	Prob. F(6,10)	0.6099
Obs*R-squared	19.60878	Prob. Chi-Square(6)	0.0032

4.6.2 Heteroscedasticity test

The Breusch-Pagan heteroscedasticity test shows that the model does not suffer from heteroscedasticity since the p value of the R^2 is greater than 0.05 which prompts us to accept the null hypothesis of no heteroscedasticity. Table 4.7 exhibits the results of the test.

Table 4.7

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	0.931383	Prob. F(46,15)	0.5949
Obs*R-squared	45.92216	Prob. Chi-Square(46)	0.4755
Scaled explained SS	10.17989	Prob. Chi-Square(46)	1.0000

4.6.3 Normality test

The model was also tested for normality. The results uncovered that the residuals are normally distributed as shown in **Figure 1** in the appendix.

4.7 Impulse responses

In this section, the results of the impulse response functions are presented, showing how positive shocks to the monetary policy variable, fiscal policy variable and the other variables affect the stock market variable. **Table 4.8** outlines the tabulated results of the impulse response functions.

Table 4.8

Response of NSE20 :					
Period	NSE20	LR	GDP	M2	GE
1	324.8843	0.000000	0.000000	0.000000	0.000000
2	471.5394	80.99825	56.80822	65.73784	24.88739
3	467.8284	37.32949	68.41244	107.1191	65.87729
4	426.2667	-49.45197	79.68973	-20.46532	71.82993
5	215.0830	-114.4015	149.6327	-98.90409	64.57804
6	104.7384	-137.0524	120.0684	0.712790	38.73535
7	143.9543	-98.18293	77.22251	-40.35924	11.93950
8	46.53567	0.321507	94.15945	-174.9344	-6.520508
9	-131.4474	-4.393853	36.31003	-87.73826	58.05114
10	-200.4780	-104.9867	-80.00243	-53.47322	57.63049

Having forecasted for 10 quarters, a positive shock to the NSE variable causes the NSE variable to gradually decrease and becomes negative from the 9th quarter. Hence after the 9th quarter, the NSE variable reacts negatively to its own shock.

A positive shock to money supply (m2) has a positive effect on the NSE variable. However, after the 3rd quarter, the impact of a shock to m2 results in a decline in the stock market and thereafter becomes negative. This means that after the 3rd quarter an increase in money supply negatively impacts the stock market.

A positive shock to the government expenditure variable has a positive effect on the NSE variable apart from the 8th quarter where a shock causes the stock market to react negatively. However, in genera when GE increases, this positively affects the stock market.

Furthermore, a shock to the gdp variable results in a positive effect on the NSE variable. However after the 9th quarter, an increase in gdp negatively impacts the NSE.

The graphical representations of the impulse responses are revealed in **Figure 2**.

4.8 Error Variance Decomposition

Table 4.9 represents the error variance decomposition of the variables. We shall focus on the short run and long run effects by referring to the 3rd and 10th quarter respectively.

Table 4.9

Period	S.E.	NSE	LR	GDP	M2	GE
1	324.8843	100.0000	0.000000	0.000000	0.000000	0.000000
2	585.3443	95.70125	1.914822	0.941889	1.261270	0.180774
3	763.7928	93.72333	1.363471	1.355453	2.707666	0.850081
4	882.8687	93.45812	1.334224	1.829208	2.080268	1.298178
5	935.4933	88.52524	2.683822	4.187616	2.970563	1.632760
6	959.5929	85.32590	4.590564	5.545528	2.823284	1.714723
7	979.2426	84.09700	5.413472	5.947087	2.880981	1.661464
8	1000.296	80.81066	5.188003	6.585457	5.819375	1.596510
9	1015.025	80.15942	5.040402	6.523686	6.398887	1.877602
10	1045.979	79.15894	5.753947	6.728300	6.287124	2.071691

As shown above, in the 3rd quarter, a shock to the NSE variable contributes 93.72% fluctuation in the variance of the NSE variable. This can be referred to as own shock. However, in the 10th quarter, a shock to the NSE variable contributes 79.16% to the fluctuation in the variance of the NSE variable.

With reference to money supply, a shock to this variable contributes 2.707% to the fluctuation in the variance of the NSE variable but contributes 6.28% in the 10th quarter. This shows that the fluctuation of the stock market variance increases from the 3rd quarter to the 10th quarter when money supply is shocked.

Furthermore, a shock to the government expenditure variable in 3rd quarter results in a 0.85% fluctuation in the variance of the NSE variable. The contribution to the variance increases to 2.07% in the 10th quarter. However as seen this variable does not have a great impact on the variance of the stock market variable.

Gdp on the other hand contributes about 1.35% to the fluctuation of the variance in 3rd quarter and 6.72% in 10th quarter while the lending rate contributes 1.36% in 3rd quarter and 5.75% in the 10th quarter.

However, it clear that a shock to the NSE variable (own shock) contributes greatly to the fluctuations in its own variance.

CHAPTER 5

DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter represents the discussion based on the major finding in chapter 4, the main conclusions drawn from the research as well as the recommendations that could be undertaken for practice or improvements. A brief summary of the purpose of the paper, the objectives and the major results shall also be provided.

5.2 Summary

The main purpose of this research was to uncover the impact of fiscal policy, monetary policy and a combination of the two policies on the stock market in Kenya. These model used to carry out this research was a Vector Error Correction Model and the results showed that fiscal, monetary policy and interactive variable are not significant.

5.3 Discussion

This discussion is based on the findings in chapter 4 and an interpretation of the results. From the results, there is no significant relationship between monetary policy and the stock prices of the NSE 20 index. This is contrary to the findings of (Thorbeke, 1997), (Gowriah, Seetanah, John, & Keshav, 2014) and (Muthama, 2014) who discovered that monetary policy has a significant and positive relationship on the stock prices in their respective studies. From my research for the period 1998-2015, monetary policy is not a significant variable in explaining the movement of stock prices in Kenya. However, using the impulse response functions and variance decomposition where the monetary policy variable is shocked, there is a response from the NSE variable. This is in line with the findings of (Ioannis Chatziantoniou, David Duffy, George Filis, 2013) where a positive shock to the monetary policy variable causes a decline in the stock market. Therefore, inasmuch as the monetary policy variable is not significant, it does have some effects when it is shocked.

With reference to the fiscal policy variable (government expenditure GE), similar findings to the research done by (Gowriah, Seetanah, John, & Keshav, 2014) were also uncovered in relation to the stock market in Kenya. From the results, government expenditure is not a significant variable in determining the movement of stock prices in Kenya. This means that fiscal policy has no

direct impact on the stock prices in Kenya. According to (Gowriah, Seetana, John, & Keshav, 2014) who concluded that the Mauritius stock market is not developed enough for the fiscal policy actions to have direct effects on the stock market, the same reasoning could be applied in the case of the stock market in Kenya. However from the impulse response function results, there is a significant reaction of the stock market variable when the fiscal policy variable is shocked. Therefore, even though the variable is not significant, it still has some effects on the stock market.

Fiscal and monetary policies, as explained by the loan-able funds theory, have an indirect effect on the stock market through the interest rates. The results from this research are contrary to this theory. Both fiscal and monetary policy variables are insignificant variables in explaining the movements of the interest rates which in this case is proxied by the lending rate. The findings are also inconsistent with the findings of (Luca Agnello, 2011) with regards to the indirect effects of fiscal policy on the stock market who discovered that fiscal policy affects the stock market indirectly through interest rates.

The interactive variable (MG), which is the product of the fiscal and monetary variables, is also not significant in explaining the movement of stock prices in Kenya. There are no prior studies that have included this interactive variable in the research. Furthermore, since this variable is exogenous, it is not possible to compute the impulse response functions and variance decomposition therefore in order to make a conclusion of the combined impact of fiscal and monetary policy on the stock market, the research has heavily relied on its significance.

5.4 Conclusion

In this study, a Vector error Correction Model is used to investigate the effects of both the fiscal and monetary policy on the stock market. Having used quarterly data from 1998Q1-2015Q4, the results from the model reveal that both fiscal and monetary policies are insignificant variables in describing the movement of stock prices. The fiscal policy may not have a direct effect on the stock market because the stock market in Kenya is still developing and hence may not capture the full effects of fiscal policy actions. Nonetheless, the results from the impulse response functions and the error variance decomposition prove that even though these variables are insignificant, applying a positive shock to them causes the stock prices to react in some way.

5.5 Recommendations

The results from this research are important especially for analysts and investors who, in their best efforts, try to understand the relationship between the two policies (monetary and fiscal) and the stock market. Therefore in an effort to understand this relation, monetary and fiscal policy should be studied in tandem and not separately.

Furthermore, as the stock market continues to develop in Kenya (evidenced from the introduction of new instruments for trade such as derivatives and improvement of the infrastructure), the fiscal and monetary policy authorities should be keen to make decisions that do not negatively affect the stock market. They should try to coordinate their efforts such that their actions are not detrimental to the development of the stock market.

5.6 Limitations of Study

The data used was from 1998 to 2015. However, a larger sample could not be obtained since some variables such as the NSE 20 did not have historical data from 1985 therefore the sample size was restricted to start from 1998 since from this year data was available for all the variables relevant to this study.

Bibliography

- Brooks, C. (2008). *Introductory Econometrics for Finance*. Cambridge University Press.
- Darrat, A. F. (1988). On Fiscal Policy and the Stock Market. *Journal of Money, Credit and Banking*, Vol. 20, No. 3, Part 1 (Aug., 1988), pp. 353- .
- Divino, H. S. (2012). Fiscal and Monetary Policy Interactions: a Game Theoretical.
- Dwyer, G. (2015). The Johansen Tests for Cointegration. *White Paper* .
- Engle, R., & Granger, C. (1987). Co-Integration and Error Correction: Representation, Estimation, and Testing. *Econometrica* , Vol. 55 (No. 2), pp. 251-276.
- Geraldo, E. Y. (2011). Fiscal Policy, Monetary Policy and Stock Market Activity in Ghana. *PG2045808*) .
- Gowriah, S., Seetanah, B., John, L. M., & Keshav, S. (2014). The effects of monetary and fiscal policies on the stock exchange:. *The Business & Management Review*, Volume 4 Number 4 .
- Hsing, Y. (2013). Effects of Fiscal Policy and Monetary Policy on the Stock Market in Poland. *Economies 2013*, 1, 19-25 doi:10.3390/economies1030019 .
- Ioannis Chatziantoniou, David Duffy, George Filis. (2013). Stock Market Response to Monetary and Fiscal Policy Shocks: Multi-Country Evidence. *C32,G15,E44,E52.E62,H50* .
- Johansen, S. (1991). Estimation and Hypothesis Testing of Cointegration Vectors in Gaussian Vector Autoregressive Models. *Econometrica* , Vol. 59 (No. 6), pp. 1551-1580.
- Kontonikas, C. I. (2006). Monetary Policy and Stock market: Some International Evidence.
- Kontonikas, C. I. (2006). Monetary Policy and the Stock Market: Some International Evidence. *JEL classifications: E44;E52;E60* .
- Luca Agnello, R. M. (2011). Can Fiscal Policy Stimulus Boost Economic Recovery? *Revue économique*, Vol. 62, No. 6 .

Muthama, M. C. (2014). THE RELATIONSHIP BETWEEN stock market return and monetary policy decisions in Kenya.

Onyemachi Maxwell Ogbulu, L. L. (2015). Assessment of the Impact of Fiscal Policy Operations on Stock Price Performance: Empirical Evidence from Nigeria. *International Journal of Financial Research Vol. 6, No. 2* .

Ricardian Equivalence and Keynesian Macroeconomics. (n.d.). Retrieved November 23, 2016, from Muddy Water Macro: <https://muddywatermacro.wustl.edu/fiscal-policy-intro/basic-logic/ricard-equiv>

Roberto Rigobon, B. S. (2004). The Impact of Monetary Policy on Asset Prices.

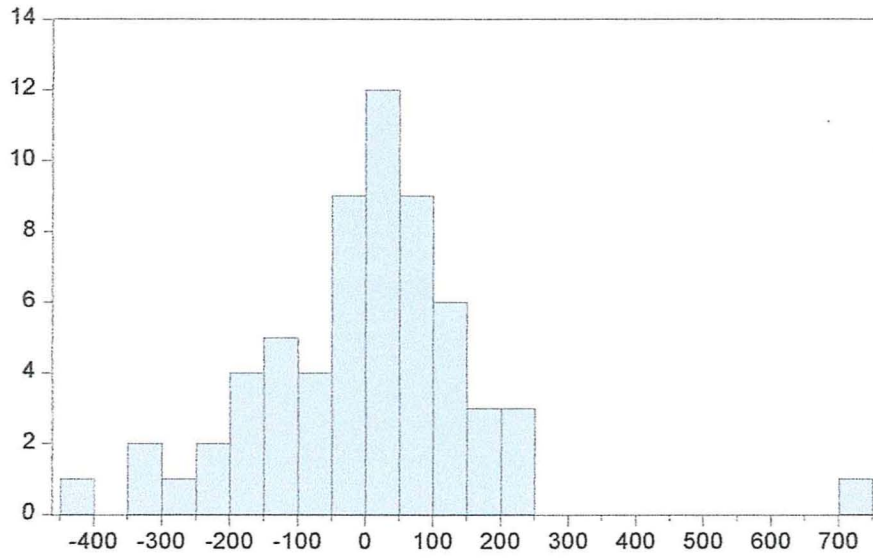
Spalding, W. C. (2016). *thisMatter.com*. Retrieved November 23, 2016, from <http://thismatter.com/economics/interest-rates-loanable-funds.htm>

Thorbeke, W. (1997). On Stock Market Returns and Monetary Policy. *The Journal of Finance, Vol LII, No. 2* .

Transmission Mechanisms of Monetary Policy. (n.d.). Retrieved November 23, 2016, from ntu.edu:
<http://homepage.ntu.edu.tw/~nankuang/transmission%20mechanisms%20of%20monetary%20policy-1.pdf>

APPENDIX 1

Figure 1



Series: Residuals	
Sample 2000Q3 2015Q4	
Observations 62	
Mean	-9.01e-14
Median	10.90788
Maximum	720.6746
Minimum	-437.1332
Std. Dev.	166.3887
Skewness	0.793041
Kurtosis	7.657241
Jarque-Bera	62.53100
Probability	0.000000

Response to Cholesky/One S.D. Innovations

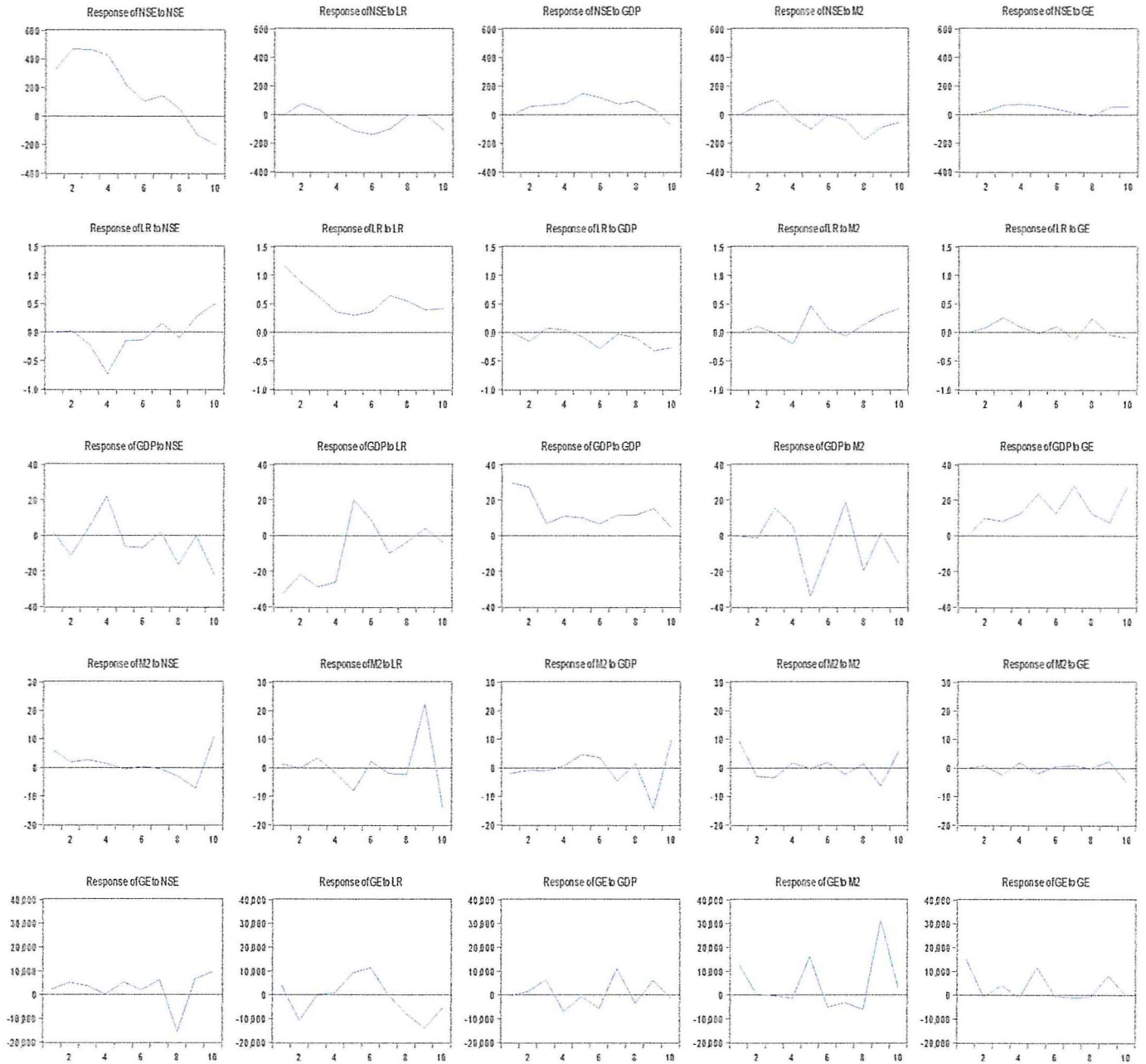


Figure 2. Impulse response functions of all the variables in the model.

APPENDIX 2

Table 4.4 VECM Coefficients NSE as dependent variable

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	-0.158230	0.119830	-1.320459	0.1904
C(2)	-45.94320	38.55424	-1.191651	0.2369
C(3)	-1.719857	1.947366	-0.883171	0.3798
C(4)	0.503496	32.32446	0.015576	0.9876
C(5)	0.494637	0.215262	2.297839	0.0242
C(6)	-0.036102	0.304865	-0.118420	0.9060
C(7)	0.281760	0.309302	0.910955	0.3651
C(8)	-0.340546	0.318729	-1.068451	0.2885
C(9)	0.099688	0.297391	0.335208	0.7383
C(10)	0.342347	0.303610	1.127590	0.2629
C(11)	-0.281635	0.287608	-0.979235	0.3304
C(12)	-0.114603	0.269625	-0.425045	0.6719
C(13)	163.8274	89.21552	1.836311	0.0700
C(14)	29.75228	94.20891	0.315812	0.7530
C(15)	38.39260	81.90468	0.468747	0.6405
C(16)	63.40182	93.19043	0.680347	0.4982
C(17)	35.99025	85.29717	0.421940	0.6742
C(18)	56.31694	71.70309	0.785419	0.4345
C(19)	-2.423333	64.93587	-0.037319	0.9703
C(20)	37.99201	69.84521	0.543946	0.5880
C(21)	3.926191	2.104793	1.865358	0.0658
C(22)	2.451669	1.994081	1.229473	0.2225
C(23)	2.157365	1.820193	1.185240	0.2394
C(24)	4.043908	1.807094	2.237797	0.0280
C(25)	1.645691	2.493099	0.660098	0.5111
C(26)	3.171955	2.676766	1.184995	0.2395
C(27)	3.332516	2.574916	1.294223	0.1993
C(28)	3.759505	2.944445	1.276813	0.2054
C(29)	4.205822	29.07090	0.144675	0.8853
C(30)	6.911933	27.40842	0.252183	0.8015
C(31)	-4.105420	26.59950	-0.154342	0.8777
C(32)	-9.358437	21.88434	-0.427632	0.6701
C(33)	3.900247	17.28555	0.225636	0.8221
C(34)	3.852840	13.95171	0.276155	0.7831
C(35)	-9.004743	12.67401	-0.710489	0.4795
C(36)	4.121184	9.329295	0.441747	0.6599
C(37)	0.001390	0.004920	0.282420	0.7784
C(38)	0.001219	0.004402	0.276924	0.7826
C(39)	-0.000402	0.004044	-0.099482	0.9210
C(40)	0.000659	0.004051	0.162568	0.8713
C(41)	-0.004996	0.003677	-1.358451	0.1781
C(42)	-0.005456	0.003293	-1.656887	0.1015
C(43)	-0.003720	0.003346	-1.111773	0.2696
C(44)	-0.005149	0.002971	-1.733380	0.0869
C(45)	-126.8553	305.7841	-0.414852	0.6794
C(46)	5.84E-07	1.22E-06	0.477292	0.6345

Table 4.5

VECM Coefficients LR as dependent variable

	Coefficient	Std. Error	t-Statistic	Prob.
C(47)	-0.000203	0.000437	-0.464310	0.6487
C(48)	-0.213106	0.140698	-1.514633	0.1494
C(49)	-0.006343	0.007107	-0.892579	0.3853
C(50)	0.008841	0.117963	0.074948	0.9412
C(51)	0.000172	0.000786	0.219429	0.8291
C(52)	-0.000322	0.001113	-0.289129	0.7762
C(53)	-0.000949	0.001129	-0.841029	0.4127
C(54)	0.000772	0.001163	0.664071	0.5161
C(55)	0.000388	0.001085	0.357529	0.7254
C(56)	0.000215	0.001108	0.193739	0.8488
C(57)	-0.000587	0.001050	-0.559440	0.5836
C(58)	0.000964	0.000984	0.979640	0.3418
C(59)	-0.195869	0.325579	-0.601604	0.5559
C(60)	0.064203	0.343801	0.186744	0.8542
C(61)	-0.099674	0.298899	-0.333472	0.7431
C(62)	0.084370	0.340084	0.248085	0.8072
C(63)	-0.112984	0.311279	-0.362966	0.7214
C(64)	-0.062813	0.261670	-0.240046	0.8133
C(65)	-0.106199	0.236974	-0.448147	0.6601
C(66)	0.213861	0.254890	0.839035	0.4138
C(67)	0.001746	0.007681	0.227308	0.8231
C(68)	0.009484	0.007277	1.303244	0.2109
C(69)	0.002164	0.006643	0.325841	0.7488
C(70)	0.006716	0.006595	1.018456	0.3236
C(71)	0.000948	0.009098	0.104151	0.9183
C(72)	0.017869	0.009768	1.829227	0.0861
C(73)	0.008101	0.009397	0.862151	0.4013
C(74)	-0.011546	0.010745	-1.074476	0.2985
C(75)	-0.005119	0.106090	-0.048250	0.9621
C(76)	-0.036812	0.100023	-0.368037	0.7177
C(77)	-0.048868	0.097071	-0.503423	0.6215
C(78)	0.014018	0.079864	0.175526	0.8629
C(79)	-0.017805	0.063081	-0.282251	0.7814
C(80)	-0.036813	0.050915	-0.723042	0.4801
C(81)	-0.023704	0.046252	-0.512494	0.6153
C(82)	-0.011657	0.034046	-0.342396	0.7365
C(83)	2.89E-06	1.80E-05	0.161023	0.8741
C(84)	2.01E-05	1.61E-05	1.251385	0.2288
C(85)	1.41E-05	1.48E-05	0.953804	0.3544
C(86)	4.47E-06	1.48E-05	0.302151	0.7664
C(87)	1.35E-05	1.34E-05	1.003665	0.3305
C(88)	-4.16E-06	1.20E-05	-0.346202	0.7337
C(89)	6.04E-06	1.22E-05	0.495024	0.6273
C(90)	1.11E-05	1.08E-05	1.023589	0.3213
C(91)	-1.338750	1.115913	-1.199690	0.2477
C(92)	4.97E-09	4.47E-09	1.111900	0.2826



Strathmore

UNIVERSITY

**IMPACT OF FISCAL AND MONETARY POLICY ON STOCK MARKET PERFORMANCE
IN KENYA**

MAARA LYNETTE WANJIRU

075585

**A research project submitted in partial fulfillment of the requirements for
the Degree of Bachelor of Business Science, Financial Economics**

Strathmore Institute of Mathematical Sciences

Nairobi, Kenya

November 2016