EFFECTS OF GOVERNMENT ECONOMIC POLICIES AND CAPITAL MARKETS
FORCES ON FIXED INCOME MARKETS IN KENYA

BY

SIMON IKUA MUHAMI

UNITED STATES INTERNATIONAL UNIVERSITY AFRICA

Summer 2018
EFFECTS OF GOVERNMENT ECONOMIC POLICIES AND CAPITAL MARKETS FORCES ON FIXED INCOME MARKETS IN KENYA

BY

SIMON IKUA MUHAMI

A Research Project Submitted to the Chandaria School of Business in the Partial Fulfillment of the Requirement of the Award of the Degree of Masters in Business Administration (MBA)

UNITED STATES INTERNATIONAL UNIVERSITY - AFRICA

Summer 2018
COPYRIGHT

All rights reserved. No part of this report may be photocopied, recorded or otherwise reproduced, stored in a retrieval system or transmitted in any form by electronic or mechanical means without prior permission of the copyright owner.

DECLARATION

I, the undersigned, declare that this is my original work and has not been submitted to any other college, institution or university, other than the United States International University Africa in Nairobi, for academic credit.

Signed…………………………………………Date ………………………………………..

Simon Ikua Muhami (Student Number: 654344)

This project has been presented for examination with my approval as the appointed supervisor.

Signed ………………………………………….. Date……………………………………..

Dr. Peter Kiriri

Signed ………………………………………….. Date……………………………………..

Dean, Chandaria School of Business
DEDICATION

I dedicate this research project to my wife and children who understood and continued supporting me as I engaged in the research.
ACKNOWLEDGEMENT

My sincere gratitude and appreciation to my supervisor, Dr. Peter Kiriri, for his invaluable guidance, patience, and support during the research process.

Special thanks and appreciation to my family for their encouragement and for understanding my absence from important family occasions during the period of the research. Thank you and much love always.
ABSTRACT

The purpose of the study was to determine the effects of government economic policies and capital markets forces on fixed income markets in Kenya. The research was guided by three research questions were to determine the effects of fiscal policy on fixed income markets, to determine the effects of monetary policy on fixed income markets, and to determine the effects of capitals markets’ forces on fixed income markets.

The research was designed as an explanatory study with quantitative data that was collected from the official website of Central Bank of Kenya as well as from the website of Nairobi Securities Exchange. Data was collected for a period of five years beginning October 3, 2012 and ending on October 2, 2017. The data included the central bank rate, fiscal deficit, Kenya NSE Govt. Bond Index, and the computed spread between the market-weighted average rate (ask) and the weighted average of accepted bids (bid). Data analysis used multiple linear regression model, correlation analysis, and covariance analysis. Data analysis was conducted in Microsoft Excel using XLSTAT features.

Findings of the study on the effects of fiscal policy on fixed income markets indicate that fiscal deficits, and therefore the fiscal policies, had a weak correlation with the performance of fixed income markets. A weak correlation indicated that there was a limited extent to which fiscal policies can be used in explaining movements in the fixed income markets.

Monetary policy has a strong effect on the level of interest rates in the fixed income markets. The implications of this finding were that the monetary policy announcements, mainly announcements on central bank rate, can be used in predicting the direction of interest rates charged on treasury bills by the investors. However, the monetary policy announcements had a limited impact on the spread between the market-weighted average rate (ask) and the weighted average of accepted bids (bid) indicating the existence of a random walk in the determination of prices of Treasury bill instruments.

On effects of capitals markets’ forces on fixed income markets, FTSE NSE Kenya Govt. Bond Index has little to no impact on the interest rates charged on Treasury bill instruments in the primary market. The findings indicate that the performance of the FTSE NSE Kenya
Govt. Bond Index would not be an accurate predictor of the level of interest rates for treasury instruments in Kenya. However, the performance of the treasury instruments may be used in predicting the performance of FTSE NSE Kenya Govt. Bond Index.

The study concluded that while fiscal policy, monetary policy, and capital markets forces can be used in predicting the direction of interest rates in the fixed income markets, the monetary policies had the greatest impact while the effect of both fiscal policy and capital markets forces is of low explanatory power.

The study recommends further research focusing on the impact of fiscal policy on liquidity in the economy and how this links to the performance of fixed income markets. Secondly, the study recommends the interaction between monetary and fiscal policies be considered in setting future policy. Thirdly, the study recommends that the investors keenly consider monetary policy when making investment decisions on the capital markets. Lastly, investors should continually monitor endeavors on the concurrent application of monetary and fiscal policies in the country. This interaction would be expected to enhance the deepening of the capital markets and hence influence returns in the capital markets.
TABLE OF CONTENTS

COPYRIGHT ................................................................................................................. i
DECLARATION ............................................................................................................. ii
DEDICATION ............................................................................................................... iii
ACKNOWLEDGEMENT ............................................................................................... iv
ABSTRACT ................................................................................................................ v
TABLE OF CONTENTS ............................................................................................... vii
LIST OF TABLES ........................................................................................................ ix
LIST OF FIGURES ...................................................................................................... x
LIST OF ACRONYMS AND ABBREVIATIONS ..................................................... xi

CHAPTER ONE .......................................................................................................... 1

1.0 INTRODUCTION .................................................................................................. 1
  1.1 Background of the Study ..................................................................................... 1
  1.2 Statement of the Problem .................................................................................... 5
  1.3 Purpose of the Study ........................................................................................... 7
  1.4 Research Questions ............................................................................................ 7
  1.5 Significance of the Study .................................................................................... 7
  1.6 Scope of the Study ............................................................................................... 8
  1.7 Definition of Terms ............................................................................................ 8
  1.8 Chapter Summary ............................................................................................... 9

CHAPTER TWO .......................................................................................................... 10

2.0 LITERATURE REVIEW .......................................................................................... 10
  2.1 Introduction ......................................................................................................... 10
  2.2 Effects of Fiscal Policy on Fixed Income Markets ............................................ 10
  2.3 Effects of Monetary Policy on Fixed Income Markets ..................................... 16
  2.4 Effects of Capital Markets’ Forces on Fixed Income ....................................... 21
  2.5 Chapter Summary ............................................................................................... 26

CHAPTER THREE .................................................................................................... 27
3.0 RESEARCH METHODOLOGY .................................................................................. 27

3.1 Introduction .......................................................................................................... 27

3.2 Research Design .................................................................................................. 27

3.3 Population and Sampling Design ......................................................................... 28

3.4 Data Collection Methods ...................................................................................... 31

3.5 Research Procedures ............................................................................................ 32

3.6 Data Analysis Methods ......................................................................................... 33

3.7 Chapter Summary ................................................................................................ 34

CHAPTER FOUR ........................................................................................................ 35

4.0 RESULTS AND FINDINGS .................................................................................... 35

4.1 Introduction ........................................................................................................... 35

4.2 General Findings .................................................................................................. 35

4.3 Effects of Fiscal Policy on Fixed Income Markets ............................................... 42

4.4 Effects of Monetary Policy on Fixed Income Markets .......................................... 43

4.5 Effects of Capital Markets Forces on Fixed Income Markets .............................. 44

4.6 Chapter Summary ................................................................................................. 45

CHAPTER FIVE .............................................................................................................. 47

5.0 DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS .......................... 47

5.1 Introduction .......................................................................................................... 47

5.2 Summary ............................................................................................................... 47

5.3 Discussion .............................................................................................................. 49

5.4 Conclusions .......................................................................................................... 54

5.5 Recommendations ............................................................................................... 56

APPENDICES .............................................................................................................. 62

Appendix I: Data Collection Tool ............................................................................. 62

Appendix II: Data from CBK & NSE ........................................................................ 64
LIST OF TABLES

Table 3.1: Sampling Frame .................................................................................................................. 29
Table 4.1: Summary of Regression Analysis ..................................................................................... Error! Bookmark not defined.
Table 4.2: Covariance Analysis ......................................................................................................... 40
Table 4.3: Correlation Analysis ......................................................................................................... 41
LIST OF FIGURES

Figure 4.1: Treasury Bill Auction Results-91 Days................................................................. 36
Figure 4.2: 91 DAYS Price per Kshs 100 at Average Interest Rate ........................................ 37
Figure 4.3: 91 DAYS Computed Spread .................................................................................. 42
Figure 4.4: Fiscal Deficit Analysis ......................................................................................... 43
Figure 4.5: Central Bank Rate Analysis .................................................................................. 44
Figure 4.6: Analysis of FTSE NSE Kenya Govt. Bond Index...................................................... 45
LIST OF ACRONYMS AND ABBREVIATIONS

CBK Central Bank of Kenya

CBR Central Bank Rate

FTSE Financial Times Stock Exchange Index

MPC Monetary Policy Committee

NSE Nairobi Securities Exchange
CHAPTER ONE

1.0 INTRODUCTION

1.1 Background of the Study

Government economic policies are tools through which the government influences the economic direction and economic growth of its jurisdiction (Ohanian, Taylor & Wright, 2013). Principally, the government economic policies were categorized into either fiscal policies or monetary policies. The fiscal policies were the means through which the government influences economic growth through controls on government spending and the levels of taxation. On the other hand, the monetary policies include all the means through which the government seeks to direct money supply in the economy and hence the economic growth.

Economists across the world may not agree on how the government policies affect the growth of the economy (Fontana & Setterfield, 2016). Classical economists, neo-classical economists, and the Keynesian economists hold different arguments on how the monetary and fiscal policies affect the economy. However, at the center of the rigorous academic-economic discourses is the agreement that the monetary and fiscal policies actually affect the growth of the economy and that they had a direct relationship with the levels of gross national income in the economy. Under the gross national incomes of a national is the hidden component of fixed incomes which were the subject of the study (Fontana & Setterfield, 2016).

Fixed income refers to an income, from investment, which is set at a particular figure and does not vary or rise with the rate of inflation (Mankiw, 2014). The two key notes from the definition of fixed income was that fixed income is set at a particular figure which does not vary. The first factor in this definition applies to fixed interest rates or fixed returns on the investment. The fixed rate is payable without any conditions whatsoever (Mankiw, 2014). For instance, if the issuer of a fixed income bond incurs a loss they still would be expect to meet the obligation on the bond simply because such a commitment is not subject to the performance of the issuing entity or any other factor for that matter. The second factor was that in case the fixed income varies, then the variation is only subject to inflation (Mankiw,
This condition applies to the index bonds, also known as the inflation-linked bond, whose income varies partially with the inflation or deflation in the economy. Common in both circumstances however, is the fact that the incomes were specific and predictable (Mankiw, 2014).

The fixed income instruments mentioned above are issued by the government and corporate bodies as bonds. If issued by corporate bodies the fixed income instruments are known as corporate bonds (Ohanian, Taylor & Wright, 2013). On the other hand the bonds issued by the government are known as treasury bonds with the naming of the instruments identifying the issuer of the instrument. In other nations there are the municipal bonds issued by local authorities. The municipal bonds are however not common in the developing nations like Kenya among other nations with reasons ranging from regulatory restrictions and the credit risk of the local authorities. In addition to the bonds there are the equally common treasury bills which represent short-dated government securities, yielding no interest but issued at a discount on the redemption price (Scarth, 2014).

The fixed income instruments trade in both the primary markets and the secondary markets. In the primary markets the securities are created and issued for the first time. It is in this market that the government auctions treasury bonds and treasury bills. The securities can then be traded in the secondary market for securities and in the secondary market, the investors are allowed to buy and sell the securities. The secondary markets for the fixed income instruments basically allow for early redemption of the fixed income instruments for the investors who wish to redeem their investments. It also allows the onboarding of new investors on the securities, especially if the investors did not manage to purchase the securities in the primary markets (Scarth, 2014).

The issuance of the fixed income instruments in the primary market aims at raising capital for the issuer. Government economic policies directly influence the rates of subscription for both the corporate and treasury bonds. The areas of influence include the subscription and uptake rates, the pricing of the fixed income instruments, and the bid-ask spread which is the amount by which the ask price exceeds the bid price for a security in the market. In the case of treasury bonds auction in Kenya, the bid ask spread is represented by the spread between
the market-weighted average rate (ask) and the weighted average of accepted bids (bid), whose results are provided by the Central Bank of Kenya every time there was an auction for the treasury instruments. Each of the metrics that investors look at when assessing the fixed income instruments communicates a message which informs the expected income from the fixed income instrument, broadly referred to as the instrument’s yield (Scarth, 2014).

The relationship between government economic policies is considerably important in the international markets with various research studies attempting to explain how the fixed income markets respond to government policies (Odell, 2014). In markets where trading in fixed income instruments is well-developed, government economic policies are met with a lot of skepticism leading to intensive and expansive assessment of the implications of such policies. Skepticism also triggers research on the implications of the economic policies and at the same time, the announcements on government economic policies became the basis of economic-policy-adjustments recommendations by economists. The USA and other developed nations had a lot research and commentaries touching on the implications of government economic policy and capital markets on the fixed income markets (Odell, 2014).

One of the studies focusing on the implications of economic policy announcements on the fixed income markets in the USA was completed by Balduzzi, Elton and Green (2001). In the study titled Economic News and Bond Prices: Evidence from the U.S. Treasury Market, the researchers tested the response of the fixed income markets to economic policy announcements. The study sampled 17 economic policy announcements and from the analysis of the markets, the research established that the announcements of economic policies had significant influence on the pricing of securities in the fixed income markets. The study also established that depending on the “surprise” in the announced economic policy, the impacts of economic policy announcements varied significantly with the maturity of the fixed income securities. Further, the study also established the presence of increased volatility in the markets for fixed income securities after the announcements (Balduzzi et al. 2001).

Dosi, Fagiolo, Napoletano, Roventini & Treibich (2015) established that majority of research studies consistently treated government economic policies separately while on majority of
occasions there was interaction between fiscal and monetary policies in the economy. In many instances the researchers provided models characterized by low explanatory power and the interactive effect of the government policies was not fully explained. To a large extent, Dosi et al. (2015) asserted, separating the study of fiscal policies from monetary policies with respect to any variable in the economy is in itself self-defeating. Dosi et al. (2015) emphasized the need for researchers to expand the scope of research on the effect of government economic policies to all the variables at play in the economy.

The effects established in the US market for fixed income securities were consistently established in research studies focusing on Europe. In 1999 most of the incumbent nations in the European Union renounced their fiscal and monetary policies in favor of the policies established by the European Economic and Monetary Union (Furceri & Zdzienicka, 2015). The creation of European Economic and Monetary Union created a research void which was quickly picked by researchers who intended to establish the implications of the supranational monetary and economic policy of the economies of European member states. Research established that the creation of supranational monetary and fiscal policy had major implications on the bond markets of the countries considering the different member states exhibited varied risk profiled (Schimmelfennig, 2014). Kay (2015) established that the risk profile of Greece could not be considered the same as that of Germany yet this happened when the supranational monetary and fiscal policies were formed in Europe. Monetary and fiscal policies were observably critical factors in influencing the fixed income markets as demonstrated in the case of the European Union, with a good example being the case of Greece (Kay, 2015).

Hanson and Stein (2015) narrowed down their research to monetary policy and its impacts on the long-term lending rates. In the study the researchers established the existence of a direct relationship between monetary policy and long-term lending rates. Secondly, the researchers established that the fixed income markets were influenced by monetary policy statements. However, the most important observation made by the researchers was the fact that by focusing on monetary policy alone, the research exhibited bias which would be effectively dealt with by focusing on both monetary policy and fiscal policy.
The need to conduct studies that focus on both monetary and fiscal policy was also established in a research conducted by Sobrun and Turner (2015). While their research focused on the emerging markets, the researchers made the assertion that bond markets, and hence fixed income markets, were greatly influenced by higher and at times divergent economic policies in the advanced economies. In the study, the assessment of the phrase “divergent policy” established that there were instances in which the monetary policy can be counterproductive to the fiscal policy. For instance, when the government increases spending and quantitative easing but at the same the interest rates were high through the action of monetary policy then it can be concluded that there was the existence of divergent economic policy. By extension, this has implications on the pricing of fixed income instruments.

The research by Sobrun and Turner (2015) also established that in the emerging economies monetary and fiscal policies were influenced by externalities which mainly include economic policies in the advanced economies. This is because the emerging economies were considered capital-demanding economies in which fiscal deficits were common. The implications were that the emerging economies became heavily reliant on external borrowing with the lenders and donors exerting pressure on the economic policy in such countries. Through the influence on the monetary and economic policy, the externalities also influence the local bond markets in the emerging economies. Consequently, there was the need to study the implications of such policy in the emerging economies.

1.2 Statement of the Problem

Bringing the discussion closer home, fixed income markets in Africa have been on the rise. However, there has not been adequate research focusing on the African context of fixed income. This is because majority of the research embarked the impact of government economic policy on the stock markets, but not on the fixed income markets. Further, majority of the research studies in the African context continually separate monetary policy from fiscal policy when studying the markets yet the interaction between the two policy tools is already established. From a general perspective, the fixed income markets were characterized by a major research gap that was partly addressed by this study (Tavares & Valkanov, 2001).
In one of the studies that focused on the African context of fixed income markets, Mu, Phelps and Stotsky (2013) established that the African bond markets have grown steadily but they remained greatly undeveloped. The researchers indicated that the bond markets would benefit a great deal from monetary and fiscal policies that emphasize the local objectives. The assertion that monetary and fiscal policy would help in the deepening of African bond markets indicated that bond markets were correlated with the monetary and fiscal policy such that strengthening of the policy would enable deepening of the markets. In a majority of the studies available from the African context, similar to many other frontier economies, majority of research focused on one policy tool and the stock markets with little to no studies at all focusing on the fixed income markets.

The Kenyan context is not any different from the case in other African markets and the frontier economies in general. A quick search of academic literature on the implications of government economic policy on the fixed income markets indicated that majority of studies attempted to study the relationship between monetary policy and the stock markets. A few studies focused on the relationship between corporate bonds and monetary policy. There were hardly any studies focusing on the relationship between fiscal policy and either stock markets or bond markets. The worst case was that there were no studies that study the interaction between monetary policy and fiscal policy and the implications on the fixed income markets. This is consistent with the findings of Tavares and Valkanov (2001) who termed the relationship of fiscal policy and bond markets as one that is neglected. Despite being conducted more than a decade ago, the research by Tavares and Valkanov (2001) communicates to the status on the study of government economic policies in relation to the fixed income markets.

The background of the study established that there exists major research gaps in the understanding of the inter-temporal relationship between government economic policy, capital markets forces, and the fixed income markets. Past research with the example of Balduzzi et al. (2001) and Dosi et al. (2015) focused on mainly on the implications of monetary policy and the fixed income markets. Hardly is there research focusing on the implications of fiscal policy the fixed income markets. Other than the neglect of fiscal policy and it impact on the fixed income markets, the research also established that many
researchers ignored the interaction between monetary policy and fiscal policy and the fact that they all had an impact on the fixed income markets. This created a research gap on the understanding of how interaction in government economic policy tools affects the markets for fixed income.

1.3 Purpose of the Study
The purpose of the study was to determine the effects of government economic policies and capital markets forces on fixed income markets in Kenya.

1.4 Research Questions
1.4.1 To determine the effects of fiscal policy on fixed income markets.
1.4.2 To determine the effects of monetary policy on fixed income markets.
1.4.3 To determine the effects of capitals markets’ forces on fixed income.

1.5 Significance of the Study
The research serves critical importance to various user-groups. These include the investors, policy makers, and the researchers in academia.

1.5.1 Investors
The study enables the investor to understand the implications of fiscal policy, monetary policy, and capital markets forces on the fixed income markets. The study sought to create predictive multivariate model that can be used in the prediction of the movements in the fixed income markets. The model appreciates the fact that government economic policies do not affect the fixed income markets in isolation but rather it is the interaction between the policies that affects the markets.

1.5.2 Policy Makers
The study enables the policy makers to understand the manner in which the interaction between fiscal policy and monetary policy, and at the same time the capital market forces, affects the fixed income markets. Consequently, the policy makers should consider the findings of the study in informing future government economic policy. This is important considering that the fixed income markets were not only important in raising funds for the government but also for the purposes of stabilization of the economy and spurring economic
growth. The findings of the study will be used as a basis for evidence-based policy-making with respect to monetary and fiscal policy in Kenya as well as with any other policy that may affect the capital markets.

1.5.3 Researchers and Academia
To the researchers and the field of academia the study contributes to narrowing the research gap in the study of interaction between fiscal and monetary policy and the implications of this on the fixed income markets. This is in addition to the capital markets forces. In future, researchers will build upon the findings of the study in consideration of the effects of government economic policies and capital markets forces on fixed income markets.

1.6 Scope of the Study
The scope of this study was limited to the Kenyan context of the fixed income markets. Emphasis was on the treasury instruments issued by the government of Kenya in the period between October 3, 2012 when FTSE Group launched the first bond index (FTSE Kenya Govt. Bond Index) and ending on October 2, 2017. The government of Kenya auctions treasury bonds on a monthly basis and on the same length, the Monetary Policy Committee (MPC) meets on monthly basis to deliberate on monetary policy. The study covered both primary and secondary markets for treasury bonds (fixed income instruments). This was because the study attempted to find the implications of and correlation between capital markets forces (secondary market) and the bid-ask spread in the primary market for treasury instruments.

1.7 Definition of Terms
1.7.1 Fixed Income Securities
A fixed-income security is a debt instrument issued by a government, corporation or other entity to finance and expand their operations. Fixed-income securities provide investors a return in the form of fixed periodic payments and eventual return of principal at maturity (Mankiw, 2014).

1.7.2 Government Economic Policy
The economic policy of governments covers the systems for setting levels of taxation, government budgets, the money supply and interest rates as well as the labor market, national ownership, and many other areas of government interventions into the economy (Ohanian, Taylor & Wright, 2013).

1.7.3 Capital Markets Forces
Forces of demand and supply representing the aggregate influence of self-interested buyers and sellers on price and quantity of the goods and services offered in a market (Graham & Seldon, 1991).

1.7.4 Fiscal Balance
Amount of money government has from tax revenue and the proceeds of assets sold, minus any government spending. When the balance is negative, the government has a fiscal deficit. When the balance is positive, the government has a fiscal surplus (Ohanian, Taylor & Wright, 2013).

1.7.5 Bid-Ask Spread
A bid-ask spread is the amount by which the ask price exceeds the bid price for an asset in the market. The bid-ask spread is essentially the difference between the highest price that a buyer is willing to pay for an asset and the lowest price that a seller is willing to accept to sell it (Fontana & Setterfield, 2016).

1.8 Chapter Summary

The first chapter of the study introduces the reader to the study. It includes the background information, the statement of the problem, and the objectives of the study. The chapter also includes the statement of scope, significance of the study and definition of operational terms. In chapter two the study covers the review of literature while chapter three provides the research methodology. Chapter four presents results and findings while chapter five provides summary, discussion of findings, conclusions, and recommendations.
CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Introduction

Chapter two focused on the review of literature based on the purpose of the study which was to determine the effects of government economic policies and capital markets forces on fixed income markets. The literature review is organized on the basis of the three specific research objectives which include to determine the effects of fiscal policy on fixed income markets, to determine the effects of monetary policy on fixed income markets, and to determine the effects of capital markets forces on the fixed income markets.

2.2 Effects of Fiscal Policy on Fixed Income Markets

2.2.1 Effects of Fiscal Policy on Fixed Income Markets in Advanced Economies

Fiscal policy refers to the means by which governments adjust the spending levels and the levels of taxation with the goal of influencing a nation’s economy (McKay & Reis, 2016). Fiscal policy is anchored on the economic theories of John Maynard Keynes who asserted that governments can influence productivity in the economy by increasing or decreasing the tax levels and the levels of government expenditure. The implications of fiscal policy were seen through regulated inflation levels, regulated employment levels, and maintenance of healthy value of money (McKay & Reis, 2016).

In the advanced economies, fiscal policy is mainly observable during periods of economic slowdown. A good example is the period during and after the global financial crisis of 2008-09 when the governments in the advanced economies engaged in reduction of taxes and increased spending in order to spur economic growth and reverse the implications of the global financial crisis. According to Gruber and Kamin (2012) a study of fiscal positions in the USA and other OECD countries indicated that in the period during and after the global financial crisis the countries had to deal with a fiscal cliff since in that there were increases in tax rates and simultaneous reductions in government spending with failure to quickly adjust
the fiscal policy being one of the reasons why it was difficult to quickly reverse the impacts of the financial crisis. The study also established that apart from affecting the general state of the economy in the OECD countries, the fiscal positions were associated with a marginal effect on the fixed income markets. In particular, the U.S bond yields moved by 60 basis points in the wake of the fiscal policies adopted by the government in the period covered by the research. Further the researchers also indicated that the effects of fiscal positions on bond yields were found to be smaller in the G7 countries. The interpretation of this finding was that the smaller economies recorded greater fluctuations in the bond yields as a result of the fiscal policies adopted by the respective nations.

Aizenman, Hutchison and Jinjarak (2013) focusing on Greece, Ireland, Italy, Portugal and Spain attempted to identify the implications of fiscal policy on the fixed income markets and sovereign debt defaults. The study covered the period between 2005 and 2010, long before Greece started defaulting on its bonds, and the study indicated that the fiscal policies adopted in the region had a statistically and economically important effect on sovereign risk. European Union member states continued the adoption of supranational economic policies which ignored the fundamentals of specific countries. Because of the supranational economic policies, the default risk of specific countries was ignored with fatal economic results of gaping spreads in the government bond yields as observed in 2010 and the subsequent default on sovereign bonds for the countries studied by Aizenman, Hutchison and Jinjarak (2013). The study underscored the view that fiscal policy has statistically and economically significant on the fixed income markets with respect to both default risk and the spreads.

McKay and Reis (2016) refer to fiscal policies, in the context of the United States, as automatic stabilizers. The researchers asserted that economic stabilizers (fiscal policies) had a major effect on the stability of the economy. However, they had little effect to volatility in aggregate output and consequently, minimal effect on the volatility in the fixed income markets among other specific areas of the economy. The researchers also attempted to explain the reason behind the minimal effects of fiscal policy on fixed income markets and according to the research the interaction between monetary and fiscal policy is the reason behind the observation. In essence, McKay and Reis (2016) asserted the impact of fiscal policy would be observed better in an environment where the monetary policy is constrained.
by the zero lower bound. In all, the study was important in asserting the fact that both fiscal policy and monetary policy had an implication on fixed income and since the policies will be at play in every single moment, it was prudent for the study to focus on the effects of both fiscal and monetary policy on fixed income markets without separating the policies as has been in previous studies.

Ferraresi, Roventini and Fagiolo (2015) focused on a longer period covering the years between 1984 and 2010. In the study the researchers studied the spread between BAA-rated corporate bond yield and 10-year treasury constant maturity rate as the proxy for the credit conditions. The researchers observed that the impact of fiscal policy is stronger and more persistent in times when the economy is in tight credit regimes. The findings of the study provided a model for the specifications of fiscal foresight for corporate bodies which would better understand the directions of the capital markets. The research also recommended the need for the study on the interaction between fiscal and monetary policy and how this affects the fixed income markets considering the fact that fiscal and monetary policy were in play at the same time hence the need to understand the impacts of the policies.

In summarizing the findings from the advanced economies, fiscal policy had minimal but statistically and economically significant effect on the credit markets. Research studies from the advanced economies also indicate that while fiscal policy has an impact on the fixed income markets, the impact would be best understood if the interaction between fiscal and monetary policies is studied simultaneously.

2.2.2 Effects of Fiscal Policy on Fixed Income Markets in Emerging Economies

Focusing the review of literature on the emerging economies, research indicated that these economies operate in tight credit environments in that the fiscal balance has on many occasions been a fiscal deficit. Further, research indicated that the fiscal deficit in the emerging economies is has been widening as a result of the fiscal policies adopted by the respective economies. As a result, the impact of fiscal policy is considered to have a greater impact on the emerging economies than in the advanced economies.
The study by Žigman and Boris (2011) focused on the emerging economies in a period when the world was pulling out of the last global financial crisis. To start with, the study indicated that the spreads on government bonds were not merely indicators of movements in fixed income. Rather, the spreads on government bonds represented a collective expression of differences in the level of development, risk, and expected returns among other essential characteristics of the economies that issue the bonds. In the study Žigman and Boris (2011) observed that fiscal policy in emerging markets has a major impact on the government borrowing costs. Expansionary fiscal policies in the emerging economies result in a widening fiscal deficit, increased borrowing by the government, and widening spreads which indicate both increased risk and increased borrowing costs for the government. From the perspective of the fixed income markets, the fiscal policy in the emerging markets has direct implications on the spreads both in the primary and secondary markets for the fixed income instruments and this translates to observable volatility in the fixed incomes of investors.

Apart from the observations in the paragraph above as noted by Žigman and Boris (2011), the researchers also observed that separating fiscal policy effects from non-fiscal policy effects play an important role in informing fiscal policy in the economy and preventing negative implications of fiscal policy. However, the separation of fiscal policy from non-fiscal policies does not provide a full picture of the implications of government policy on the credit markets considering the fiscal policy does not operate in isolation, especially in the emerging economies. This observation underscored the need to study the interaction between government economic policies and how they influence spreads on government bonds.

The impact of government economic policy missteps on the bond markets was also emphasized in the case of China. According to a white paper authored in Aberdeen by Blanchard & Giavazzi (2016), the adoption of policies that devalued the yuan in China were a major reason for the slowing down in the debt markets. The authors however recognized the fact that in order to correct the slowing down of the bond markets, it would be necessary for the Chinese government to support growth of the economy through a combination of both fiscal policy. The white paper presents the admission of the impact of government economic policy on the fixed income markets and by extension, the need to simultaneously consider fiscal and monetary policy Blanchard & Giavazzi (2016).
Gubareva and Borges (2016) emphasized the fact that while the income markets were gaining traction in the emerging economies, there has been systemic insensitivity to the interest rates. The researchers focused on data collected pre-crisis and post crisis and as a result of quantification of the data the research established that the markets were consistently insensitive to interest rates. However, the study found that the same could not be said about the implications of government economic policy to the corporate bond markets simply because at the height of the global financial crisis government economic policies became the major factor influencing the fixed income markets. In particular, the study explained the phenomenon as one in which investors would consider whether to buy into corporate bonds based on whether the government adopted policies that increased expenditure. This observation places the study at the center of importance in consideration of the fiscal policy as a factor influencing the fixed income markets. However, it is also important to note that Gubareva and Borges (2016) did not discriminate any given economic policy which is why the study sought to focus on both fiscal and monetary policies.

2.2.3 Effects of Fiscal Policy on Fixed Income Markets in Kenya and Frontier Economies

Kenya was considered among the frontier economies and like Žigman and Boris (2011) indicated, the fixed income markets remained largely undeveloped even though growth is observable in both corporate bonds and Treasury bond markets. Research on frontier markets indicated that in many frontier states the government expenditure is funded to the tune to 30% to 45% by government borrowing, both sovereign and local borrowing, and as a result the fiscal position is considered a consistent key factor in the performance of the fixed income markets. Despite this observation, research also indicated that the effect of the fiscal position in the frontier markets has been generally neglected with the available research on the fiscal position focusing on the crowding out effect and not on the volatility in the fixed income returns.

Uppal (2011) in a study focused on Pakistan indicated that fiscal policy feeds the bond market development but at the same time, the bond market provides signals to the prudent
conduct of fiscal policy. Consequently, instilling fiscal discipline remains as a critical factor in the deepening of the fixed income markets and the capital markets in general.

Mu, Phelps and Stotsky (2013) in an IMF-sponsored working paper reiterated the view that the African bond markets had been steadily growing even though they remain undeveloped. The study indicated that the determinants were influenced by many things including interest rate volatility and the strength of institutions. However, one of the most important observations from the research was the fact that the capitalization of government bond markets were inversely related to fiscal balance. This places the fiscal policy at the center of the performance of fixed income markets which were characterized by a large number of treasury instruments.

Bringing the discussion to Kenya, researchers attempted to explain the relationship between Fiscal policy and the fixed income markets. However, majority of the studies generalized their focus to capital markets, a few focused on the corporate bond markets, while hardly any studies focused on the treasury bond markets both in the primary market settings and the secondary market settings for the treasury instruments. Those that attempted to study the treasury markets used the treasury instruments as a control variable in research rather than the primary variable yet research from both the advanced economies, emerging economies, and other frontier economies indicated that fiscal policy among other government economic policies had a direct impact on the Treasury bond markets.

In one study conducted by Wanjiru (2015), the researcher tested the impact of the Treasury bond market deepening on the economy. Ndonga (2014) used government spending as a proxy for fiscal policy in testing its impact on the general economic growth while Mwangi (2013) used the government benchmark bonds to test the impact of fiscal policy on the liquidity of bond market in Kenya. This trend is also evident in research by Koka (2012) which again used the government bond index as a proxy for the study of the economic performance of the economy. These were just a few of the studies that either consistently ignored fiscal policy or considered fiscal policy only from the perspective of how it affected the economy but just as a proxy. In other words, systematic neglect of the impact of fiscal policy not on the economy and the capital markets but on the performance of the government
treasuries has been consistent. The closest study to this effect was conducted by Muyanga (2014) who tested the effect of fiscal policy on the performance of the Nairobi Securities Exchange. This created a research gap that the study sought to close.

2.3 Effects of Monetary Policy on Fixed Income Markets

2.3.1 Effects of Monetary Policy on Fixed Income Markets in Advanced Economies

Monetary policy refers to the process by which the monetary policy of a nation controls the supply of money often by targeting the interest rate or the rate of inflation in the economy (Mankiw, 2014). Through monetary policy the government monitors the supply of money, ensures price stability, and instills trust in the currency of the economy (Mankiw, 2014). Like fiscal policy, monetary policy traces its roots to the economic theories of John Maynard Keynes who observed that the government could assert the sanity of the financial systems by controlling money supply (Mankiw, 2014). Monetary policy is however applied more commonly and frequently than fiscal policy especially when considering that in many economies the monetary authority meets every month and when needed the frequency of the monetary authority meetings can be higher (Mankiw, 2014).

The impact of monetary policy on the fixed income markets appears to be well studied and understood in the advanced economies. This is because a quick search academic information the impact of monetary policy on fixed income markets returns many research studies detailing information on this impact. In fact, studies went as far as testing the impact of anticipation for monetary policy announcements on the fixed income markets (Fontana & Setterfield, 2016).

While there was a lot of research focusing on the effect of monetary policy announcements on the fixed income markets, majority of past research studies focused on the market for corporate bonds as well as the secondary market for treasury instruments. Very few studies focused on the government bond spreads in the primary markets yet the government bond spreads were the primary target of monetary policy tools including the interest rates, such as Federal Reserve rate, and the open market operations (Fontana & Setterfield, 2016).
indicated the existence of a research gap with respect to the understanding of the impact of monetary policy on the government bond spreads in the primary markets.

In one of the unique commentaries focused on the EU, Praet (2012) opined that the sovereign debt crisis recently experienced in the EU was a pointer to imperfect implementation of economic policy but clearly, it was not imperfect implementation of monetary policy by the European Monetary Union. Further, Praet (2012) cited the rationale of ensuring the reinforcement of monetary policy with fiscal policy anchored on solid institutions. The two assertions point to the fact that while monetary policy’s effect on government bonds is largely ignored as a study area, there was the need to focus on it as an area of research and secondly, studying monetary policy alone would not be enough but rather, there was the need for studied that focus on both monetary and fiscal policy.

Lulaj (2016) also took interest on the monetary policy implementation in the EU and the impact that it has on sovereign debt in the EU. The researcher expressed doubt on the working of the unified monetary union in Europe and in one of the reasons, the researcher asserted that the fact that fiscal policy in European Union was not unified was one of the reasons why Europe’s monetary union was likely to collapse. Further, the researcher asserted the existence of excessive deficits in some member states and that with unified monetary policy and independent fiscal policies then there was a high likelihood for the failure of monetary policy and that the effects of this failure would be felt in the unified debt markets across Europe Lulaj (2016).

Focusing on the United States, the role of monetary policy on the performance of the fixed income markets is not in doubt. In a book published by Odell (2014) evidence that announcement of monetary policy affects the fixed income markets has been emphasized. Odell (2014) asserts that there was no doubt that monetary policy plays an important role in the determination of the pricing of government securities as well as the pricing of corporate bonds. Further, the author indicated that the impact of monetary policy on fixed income instruments is found to be higher than that of the fiscal policies. This observation emphasized the observations made by Gruber& Kamin (2012). The study however observed that there
exists the need to simultaneously study the effect of monetary and fiscal policy especially in times of crisis when fiscal policies mainly come into play.

The views from the advanced economies were that monetary policy undoubtedly plays an important role in the pricing of government debt, the spreads, and even the capitalization (Gruber& Kamin, 2012). However, the research from the advanced markets also indicated that in times of crisis there was a lot of interaction between monetary policy and fiscal policy and often the interaction is ignored. This is the reason why the US faced a fiscal cliff in 2012-13 period while the PIGS in Europe defaulted in sovereign debt over the same period (Kay, 2015). This warrants the conduct of research on the interaction between monetary policy, fiscal policy, the capital markets forces, and the fixed income markets.

2.3.2 Effects of Monetary Policy on Fixed Income Markets in Emerging Economies

Like in the advanced economies, monetary policy and its effect on the bond markets has been widely studied in the emerging economies. In India, Sensarma and Bhattacharyya (2016) studied the impact of monetary policy on the yield curve. The study established that monetary policy has a dominant role in determining the yield curve at the shorter end. This is interpreted to mean that monetary policy has short-term implications on the yield curve and credit spreads. On the other end, the government yield curve and credit spreads leads to changes in monetary policy.

Monetary policy in the emerging economies is not only a microeconomic factor and so is the case of capital flows. In countries such as Brazil, India, South Africa, and Turkey, the period between 2012 and 2013 was characterized by volatility in the monetary policy. At the end of 2012 the emerging economies were focused on reducing credit exposure but when the US made its monetary policy more friendly capital flows to the emerging economies increased thereby affecting the fixed income markets and at the same time, the monetary policies in the emerging economies changed. The observations made Aoki, Benigno and Kiyotaki (2016) point to two important observations. Firstly, the fixed income markets were affected by the monetary policies of the advanced economies in addition to their own monetary policies. Secondly, for monetary policies to work in the emerging economies there was the need for
the governments in the emerging economies to manage the capital and accounts irrespective of the exchange rates. This assertion underscored the importance of fiscal policy in making monetary policy implementation effective in the emerging economies. This was the very reason why the study focused on both monetary and fiscal policies in addition to the capital markets forces.

Sobrun and Turner (2015) recognized the influence of monetary policy in bond markets in the emerging economies as a dilemma. The monetary policy dilemma was also referred to by Burger, Warnock and Warnock (2017) who recognized that monetary policy in the USA affects the government policy in emerging economies. Burger, Warnock and Warnock (2017) indicated that though emerging economies structure monetary policy with local objectives, the emerging economies should worry about monetary policy in the advanced economies. This creates the need to reinforce the monetary policy with other economic policy (fiscal policy) but often this comes with a number of tradeoffs.

To summarize the views from the emerging economies, monetary policy had identifiable and dominant impact on the fixed income markets. However, the local monetary policy though designed with the local objectives were influenced by policies in advanced economies especially the United States. Lastly, because of the implications of monetary policies in the advanced economies there was the need to reinforce monetary policy with fiscal policy. It is based on this finding that the study on both fiscal and monetary policies is herein pursued.

2.3.3 Effects of Monetary Policy on Fixed Income Markets in Kenya and Frontier Economies

The state of monetary policy research in the frontier economies, including Kenya, focused on the capital markets in general (Kibet, 2015). One of the reasons for this observation was that the fixed income markets remain underdeveloped and in many cases, the level of activity in the secondary markets for fixed income has been considerably low. The implications were that there were inherent biases in the study of monetary fiscal policy and to deal with the biases there was the need for accelerated research in the frontier economies (Musanga, 2006).
One of the recent studies focusing on or closely related to monetary policy and the capital markets in Kenya was conducted by Kibet (2015) who indicated that the issuance of government bonds enhances activity and growth in the Kenyan capital markets. However, the research did not demonstrate how the issuance of government bonds impacts the capital markets. Instead, Kibet (2015) made recommendations that the government should put in place economic policies that would encourage more companies to access the capital markets. This would contribute to the deepening of the capital markets in Kenya.

According to a study completed by Mang’ang’a (2014), monetary and fiscal policies in Kenya had a notable impact on the interest rates in the country. However, monetary policy was found to have a higher impact on the interest rates than fiscal policy which was factored into the research through the increment to the national debt in the national expenditure. Another study was conducted by Mwanza (2012) focusing on the relationship between monetary policy and performance of the Nairobi Securities Exchange. The study established that there exists a small but significant influence of monetary policy on the Nairobi Securities Exchange.

In 2006, Musanga conducted an evaluation of the implementation of policy measures for development of the Nairobi Stock Exchange (currently Nairobi Securities Exchange). The study focused on qualitative information assessing the impact of policy on deepening of the capital markets. In one of the findings, the study indicated that the direction of monetary policy and fiscal policy, even though not recognized by the ordinary Kenyan, has a major factor in the direction of the capital markets and particularly the market for fixed income instruments. Njihia (2005) in an earlier study had attempted to test the determinants of corporate bond market in Kenya and the study produced a highly disputed finding that monetary policy did not have any significant effect on the corporate bond markets.

Considering all the studies selected above, one particularly notable observation was that all past research in the frontier markets and particularly in Kenya has focused on the impact of monetary policy on the capital markets and the stock markets in general. The research could not identify local studies that focused either on how fiscal policy or monetary policy impacts the spreads in government bonds particularly in the primary markets. This explains why it is
important to design the study not from the aspect of studying how monetary policy affects the secondary markets but how the policies affect the primary markets for fixed income instruments.

2.4 Effects of Capitols Markets’ Forces on Fixed Income

2.4.1 Effects of Capitols Markets’ Forces on Fixed Income in Advanced Economies

Fixed income instruments trade in both the primary markets and the secondary markets (Ohanian, Taylor & Wright, 2013). Consequently, the fixed income instruments were subject to the market forces in the markets in which they trade. The importance of market forces on the direction of fixed income is further explained by the fact that market statistics show that the fixed income instruments remain a major part of investment portfolio. Market statistics from the advanced economies also indicate that fixed income instruments, though not increasing in portfolio allocations of many investors, remain to be a large component of many investment portfolio in an environment where many investors were consistently tracking reducing portfolio allocations to equities (Ohanian, Taylor & Wright, 2013). This underscored the consistent observation of the fixed income instruments and the forces that influence fixed income.

The factors affecting the fixed income instruments in the advanced economies were a little different from the factors affecting the same in the emerging and frontier economies. To start with, Davis (2014) in an article titled The Fixed Income Capital Markets Jam explained some of the factors that influence the fixed income markets in the United States. First on the article was the issue of portfolio allocation by investors whereby adjustments in individual and institutional portfolios were found to greatly influence the fixed income markets. Davis (2014) also observed that in the advanced economies the rates were unsustainably low and that over time, the price direction of the bonds will be down and the yields higher. The research analysts also indicated that the level of regulation in the markets affects the fixed income markets and the capital markets in general with the Dodd Frank and Volcker rules being the major regulatory factors affecting the capital markets. Further, Davis (2014) observed that the fixed income markets were affected by the changing in the demand of
credit-related bond in comparison with the non-credit related bonds. Banks in the US reduced the demand for credit-related bonds as the uptake of loans in the banks reduced and this affected the fixed income markets. Other than the factors stated above the fear of the Fed tapering bond purchases was considered a major factor in the fixed income markets. In a nutshell Davis (2014) confirmed that at any given moment there could be a number of factors affecting the markets for fixed income instruments.

Focusing on the case of Europe, the factors affecting the fixed income markets wereas well diverse. Casey and Lanno (2005) found that globalization of capital markets has major impacts on the fixed income markets. The authors used the term globalization of capital markets first with respect to the harmonization of the policy-setting body in Europe and secondly, the possibility that investors could invest in bonds anywhere across the world. At least, the concept of globalization of the capital markets was considered of critical value to the markets in Europe especially given the fact that the formation of EU had merged the capital markets in Europe into one in which people from any of the member states could freely trade.

Other than the forces identified above, the authors also indicated that in Europe the low rates consistently affected the bond markets with anomalies in the measurement of risk especially for many sovereign bonds (Casey & Lanno, 2005). This is because the unification of Europe also unified the monetary policy and in a way made it easier for countries such as Greece to raise funds without due consideration of risk in the issuing country. Other than that there were consideration of the yield curve and the fiscal policies of the particular nations involved in the capital markets Casey & Lanno, 2005).

To summarize on the effects of capital markets forces on fixed income markets in he advanced economies, the review of literature indicated that there was a wide array of factors affecting the fixed income markets. This places the capital markets factors affecting the fixed income markets at the center of economy environment in which the capital markets were located. This explains why the factors in the US market were slightly different from those observed in European Union. A similar trend would be expected for the emerging and
frontier economies with the differences placing emphasis on why it was important to focus on the research question as established in the study.

2.4.2 Effects of Capitals Markets Forces on Fixed Income in Emerging Economies

In one of the particularly important pieces of literature in the study, Min (1998) provide an account of some of the most important factors that affect the fixed income markets. The article indicated that emerging economies changed the process of financing corporate bodies and infrastructure and as a result, the changes were felt in the capital markets. The corporate bodies and even the government is consistently favoring corporate bonds over bank financing. These include both local bonds and sovereign bonds. The implications were growth in the fixed income markets. The second consideration is the fact that there were differentials in the yield curves from the local perspectives of the emerging economies in comparison with the international perspectives. The differentials lead to the emergence of carry trade whereby corporate bodies in the emerging economies borrow low in the advanced economies and lend high in the emerging markets. Other than that, the emerging economies were characterized by rising deposits as well as rising demands for loans in the emerging economies. This has led to increased participation to banks in the fixed income markets with banks issuing bonds and those that trade bonds participating heavily in the fixed income markets. These dynamics changed the business in the fixed income economies with increased frequency of transactions as well as capitalization being experienced in the emerging economies’ fixed income markets. Other than that, the factors identified by Min (1998) affect the bond spreads in the emerging economies.

In a more recent write-up focusing on the period during and after the last global financial crisis the researchers identified globalization of financial markets as one of the factors affecting the fixed income markets in emerging economies. Calvo and Mendoza (2010) also indicated that the performance of the fixed income markets was also largely due to the yield curve differentials in the emerging markets as compared to advanced economies. However, these were not the only factors affecting the state of the fixed income markets in the emerging economies. The involvement of the government in the fixed income markets through borrowing is a major factor affecting the fixed income markets. Government
borrowing through the primary markets for fixed incomes affects the capital markets directly especially where the fiscal deficits were high and widening. Other than that, the differences in risk levels between the corporate bonds and the fixed income instruments is also another factor affecting the fixed incomes. Lastly, Calvo and Mendoza (2010) also indicated that the deepening of the capital markets had a lot of implications on the fixed income markets.

To summarize views from the emerging economies on the effects of capital markets forces on fixed income markets, the globalization factor has contributed immensely. The emerging markets were characterized by growing fiscal deficits which affect the fixed income markets and other than that, the fixed incomes were affected by the yield curves differentials between the fixed income markets and the markets from the advanced economies.

2.4.3 Effects of Capitals Markets Forces on Fixed Income in Kenya and Frontier Economies

Kenya is considered as a frontier economy. The trading in fixed income instruments mainly attracts institutions, banks, professional investment managers, and high net worth individuals. The implications were that the fixed income markets in Kenya were considered highly undeveloped and this is evident from the low volume of activity or turnover in the fixed income markets. Nonetheless, there were various capital markets factors that affected the fixed income markets in the frontier economies including Kenya (Kibet, 2015).

Research places the fiscal balance as the major factor affecting the fixed income markets, both primary and secondary, in the frontier economies. A high fiscal deficit indicated that the government must borrow locally and usually internationally. Borrowing locally increases the government bond spreads in the primary markets and also increases the spreads between treasury instruments and the corporate bonds in the secondary markets (Njihia, 2005). Further, research indicated that crowding out effect is also recorded in the secondary markets with low uptake of corporate bonds being observed. Mainly, this is also because the investors place more trust in the government securities as opposed to the corporate bonds (Njihia, 2005).
The status of the frontier economies is such that interest rates were high as compared to both the emerging economies and the advanced economies. The implications were that trends in the interest rates were linked to the functionality of the performance of the fixed income markets. In times of high volatility in the fixed income markets, the investors’ preferences may shift from corporate bonds to fixed income markets. In times of low interest rates in the markets, the banks invest in treasuries (Njihia, 2005). The movements play an important role in directing the performance of the fixed income markets but most importantly, they affect the spreads in the primary markets for the treasury bonds.

A quick review of literature from the Kenyan context indicated that the major factors studied in relation to the performance of the fixed income markets were the government policies (Mwanza, 2012, Mwangi, 2013). These include both fiscal policy and monetary policy but the latter has attracted a lot of researcher especially based on the fact that it is directly involved in setting the interest rates. Further the regulatory environment was also found to have major implications on the fixed income markets with the capping of interest rates pushing many banks and financial institutions to investing in treasury instruments and corporate bonds in place of advancing loans and other lines of credit to customers (Mwangi, 2013). These corporate markets factors had a direct effect on the yield curves and the coupons on bonds hence the consideration of the factors with a lot of interest on the markets.

In summary, there were various capital markets factors affecting the fixed income markets in frontier economies under which Kenya is included. The underdevelopment of the capital markets is the first factor affecting the markets. Secondly, the markets were dominated by institutional investors, banks, professional investors, and high net worth individuals. Thirdly, the market interest rates and yield curves were a major factor affecting the functionality and performance in the fixed income markets. However, the fiscal policies, monetary policies, and regulatory environment were the major factors affecting the fixed income markets and this justified the conduct of research on effects of capitals markets forces on fixed income in Kenya.
2.5 Chapter Summary

In summary, Chapter Two covered the review of literature guided by the objectives of the study which were to determine the effects of fiscal policy on fixed income markets, to determine the effects of monetary policy on fixed income markets, and to determine the effects of capital markets forces on the fixed income markets. The literature demonstrated research gaps on the effects of government economic policies and capital markets forces on fixed income markets. In Chapter Three the study presented the research methodology followed.
CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Introduction

Chapter three of the study focused on the research methods applied in the completion of the study. The chapter is organized into several subtopics that include the research design, population and sampling, data collection methods, research procedures, and the data analysis techniques. The purpose of the study was to determine the effects of government economic policies and capital markets forces on fixed income markets in Kenya.

3.2 Research Design

The research employed an explanatory research design. Explanatory research focused on answering the “why” question meaning that it conceptualizes research by not only attempting to describe the observed phenomenon but also attempting to use hunches in explaining why the observed phenomenon exists as observed (Bloemraad, 2013). In this particular study, explanatory research was applicable in the explanation of why the government adopts particular fiscal and monetary policies and how these policies impact the performance of the fixed income markets in Kenya.

The election of explanatory research design was anchored and founded on past research. Zikmund (1984) explained that the degree of uncertainty determines the research design adopted for any research. In the study of the effects of government economic policies and capital markets forces on fixed income markets in Kenya, there exists a number of uncertainties and unknowns with respect to whether the government policies impact the treasury bonds in the same way as the corporate bonds. Additionally, there exists uncertainties with respect to how the capital market forces affect both the corporate bonds and the fixed income bonds both in the primary markets and the secondary markets (NSE, 2017).
3.3 Population and Sampling Design

3.3.1 Population

The population refers to all the people, items, or objects that would qualify to be considered for a particular research (Zikmund, 1984). In this particular investigation, the population included the indices in the capital markets that would be used as indicators of the capital market forces, the bonds across all maturities and in both corporate and treasury bond markets, and the monetary and fiscal policy instruments used by the government of Kenya through the central bank together with all committees and bodies involved in the setting and direction of both monetary and fiscal policy.

Focusing on the capital markets forces, there are a number of indices provided by the Nairobi Securities Exchange. For equities the indices include the NSE All Share Index (NASI), NSE 25 Share Index (NSE 25), and NSE 20 Share Index (NSE 20). The equity indices provide summary statistics on the performance of Kenya’s equity market. For the fixed income instruments the NSE provides FTSE NSE Kenya Govt. Bond Index which was launched on October 3, 2012 at a base of 100 points. The index tracks the performance of bonds under five sub-indices according to maturity. The five maturity sub-indices include: 1 – 3 years, 3 – 5 years, 5 – 7 years, 7 – 10 years, & Over 10 years (FTSE Russell Factsheet, 2017). Considering that the study focused on the bond market, the research elected to work with FTSE NSE Kenya Govt. The purpose of the FTSE NSE Kenyan Shilling Government Bond Index is to measure the average performance that holders of the relevant types of bonds experience over time. This is achieved by creating a representative portfolio of bonds, and measuring their performance with the index being reviewed at the end of each month (NSE, 2017).

The bonds market comprises of both the corporate bonds and the government bonds, the number of which depends on how the bonds were issued in the primary market by corporations and the government respectively and how they were traded at the secondary market in the NSE (NSE, 2017). The bonds have varying maturities and it was for this reason that sampling was considered particularly important in the study, with the consideration of
the various categories considered under the FTSE NSE Kenya Govt. Bond Index. Other than that, there were the treasury auction results issued the government during periodic bond auctions. The auctions take place weekly and the auction results published by central bank. The auction reports were an important reference in the research as a source of primary data on the direction of the fixed income markets.

3.3.2 Sampling Design

3.3.2.1 Sampling Frame

The sampling frame includes all the elements in a population that would be considered for inclusion in the study (Creswell, 2013). In this context, the sampling frame included all the periods for which the data was potentially available. This is because the sampling factor in the research was time. The sampling frames for the data sets were as identified in the table below.

Table 3.1: Sampling Frame

<table>
<thead>
<tr>
<th>Data Field</th>
<th>Sampling Frame</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market-weighted Average Rate</td>
<td>Mar-66</td>
</tr>
<tr>
<td>Weighted Average Rate of Accepted Bids</td>
<td>Mar-66</td>
</tr>
<tr>
<td>Computed Spread</td>
<td>Mar-66</td>
</tr>
<tr>
<td>Fiscal Deficit</td>
<td>Mar-66</td>
</tr>
<tr>
<td>Central Bank Rate</td>
<td>Jan-06</td>
</tr>
<tr>
<td>FTSE NSE Kenya Govt. Bond Index</td>
<td>Oct-12</td>
</tr>
</tbody>
</table>

3.3.2.2 Sampling Technique

Critical case sampling was elected for application in this research. By definition, critical case sampling refers to the process of selecting a small number of important cases likely to yield the most information and have the greatest impact on the development of knowledge. Critical case sampling is a type of purposive sampling technique that is particularly useful in
exploratory qualitative research, research with limited resources, as well as research where a single case (or small number of cases) can be decisive in explaining the phenomenon of interest (Creswell, 2013).

The critical case in this research was defined by the need to acquire adequate data for the analysis of the fixed income markets in Kenya. The maximum amount of data that could be acquired depended on the variable with the shortest sampling frame. In this particular concern, FTSE NSE Kenya Govt. Bond Index had the shortest timeframe beginning from October 2012. This made it critical for the research to maximize on the timeframe hence the election to focus on data after the date when the bond index was introduced.

Using critical case sampling, the sample covered a five-year period beginning October 3, 2012 and ending on October 2, 2017 (NSE, 2017). The election of the period was informed by the dates when the bond index was launched and the need for the study to include adequate data that would enable the research to make inferences about the effect of government economic policies and capital market forces on the fixed income markets. Since the index focused specifically on the government bonds, the study considered that sampling treasury bonds would be specially targeted for sampling with the objective of determining how the monetary policies, fiscal policies, and capital markets forces affect the bond markets.

In the secondary market for fixed income instruments both treasury bonds and corporate bonds were traded (NSE, 2017). However, in the Kenyan context and at the time of conducting the research there was only the index for government bonds. The fact that there was no index tracking the performance of corporate bonds in the market presented potential difficulties in the study of corporate bonds (NSE, 2017). In particular, the corporate bonds in general would require the creation of an index to track performance. The absence thereof made it difficult to include the corporate bonds for sampling in the study. However, the impact of government policies and capital markets forces on treasury bonds would not be considered materially different from the impact on corporate bonds.
3.3.2.3 Sample Size

The sample size defines the number of objects in a sample (Creswell, 2013). In particular, the sample size in the study was considered from the aspect of the number of data points per variable. The rule of thumb in the election of the sample size was that the sample size must be representative of the population being studied and that it should be adequate for statistical testing in the case of quantitative research (Creswell, 2013). The two conditions were highly considered in the study.

Having introduced the sample size, the election of systematic sampling for use in the research sought to ensure that the sample size was representative of the bond market represented by FTSE NSE Government Bond Index. For all datasets, the sample size contained data drawn from the period of five years from October 2012 to October 2017 (NSE, 2017). The five year period provided the research with the opportunity to acquire adequate data for the study. It also facilitated the explanation of short-term and medium term trends in government policy and how they influenced the performance of the fixed income markets.

3.4 Data Collection Methods

The data collection section explained how the researcher acquired data for the study. By definition, data collection methods included all the techniques, modalities, processes, and approaches enabling the acquisition of the data necessary for the completion of research (Creswell, 2013).

The study required secondary data, that is, data collected for purposes other than the study. In particular, the data used for the study was collected for purposes of informing investment decisions as well as for informational purposes. This data was primarily available from the Nairobi Securities Exchange and the Central Bank of Kenya.

The data required for this study was available in the public domain. Consequently, the data was collected through desktop search and data mining. This included searching the website of Central Bank of Kenya and the NSE website for statistics on Treasury bond auction results.
and monetary policy committee decisions and, the NSE bond index respectively. All data was collected from the websites mentioned in this paragraph.

To aid the data collection process, the researcher designed the data collection tool attached as an appendix of this research report. The tool was a table showing the date and type of data required to meet the objectives of the research.

3.5 Research Procedures

The research procedure section includes a breakdown of activities involved in the completion of the research with specific attention to data collection procedures and fieldwork. Since the study targeted to use data from secondary sources, desktop research and advanced data mining exercises were used to collect data from NSE and CBK as the primary sources of data. Some data on the bond index was requested from The Bloomberg Market Data Feed (B-PIPE) and Reuters Market Data System (RMDS).

The process of data collection begun with the pretesting of the data tool. The data tool was designed in a spreadsheet format with the columns identifying the data fields and the rows providing the dates of data collection. The data tool was designed to ensure both completeness of data and ease of data analysis. Pretesting of the tool confirmed that the tool would serve the needs of the research, with a little adjustment to the frequency of data collected.

Using the data tool, data was collected for the timeframe beginning when FTSE NSE Government Bond Index was launched. The data collection period covered five years from October 2012 to October 2017. Data was checked for completeness using Microsoft Excel which is the spreadsheet selected for data collection and collation purposes. Where data was found to be incomplete, the researcher requested for the data from relevant sources. The requests for data were accompanied by a declaration that the data was only needed and used for academic purposes.
3.6 Data Analysis Methods

Upon acquisition of the data, the research proceeded data validation, data cleaning, and data analysis using suitable Microsoft Excel. Analysis of the data entailed running the requisite statistical tests for the testing of research hypotheses which were provided elsewhere in this research report.

Data analysis was completed using a multiple linear regression model. The model sought to predict the spread between the Market-weighted Average Rate (%) and Weighted Average Rate of Accepted Bids (%), both from the CBK. The predictor variables included the fiscal deficit which was used in the research as a proxy for fiscal policy and denoted in the model as X1. Notably, changes in fiscal policy had a direct impact on the fiscal deficit. In Kenya, the case has been the increase in the fiscal deficit leading to increased use of fixed income securities by the government in raising funds. The central bank rate is set by the monetary policy committee during periodic meetings. CBR gives direction to the bank lending rates leading to changes in the options to either save in fixed income accounts or invest in fixed income securities. CBR is denoted as X2 in the model. FTSE NSE Kenya Govt. Bond Index is the other variable in the regression model and denoted by X3 in the regression model. The regression model was as shown below.

**Equation 1: Regression Model**

\[ y = a + b_1x_1 + b_2x_2 + b_3x_3 + e \]

Where:

\[ y = \text{the spread}, \]
\[ X_1 = \text{Fiscal Deficit} \]
\[ X_2 = \text{CBR} \]
\[ X_3 = \text{Bond Index} \]
\[ e = \text{error}. \]

\[ b_1, b_2, \text{and } b_3 = \text{coefficients} \]
Upon the generation of the model, the analysis will focus on the computation of both the
Pearson product-moment correlation coefficient and the coefficient of determination. Pearson
product-moment correlation coefficient is denoted by R while coefficient of determination is
denoted by R^2.

In statistics, the correlation coefficient R measures the strength and direction of a linear
relationship between two variables on a scatterplot. The value of r is always between +1 and
–1.

**Equation 2: Correlation Coefficient**

\[ R = \frac{\text{Covariance (X,Y)}}{\text{S. D. (X)S. D. (Y)}} \]

Where

S. D. = Standard Deviation

On the other hand, the coefficient of determination (R^2) is a measure of the proportion of
variance of a predicted outcome. With a value of 0 to 1, the coefficient of determination is
calculated as the square of the correlation coefficient (R) between the sample and predicted
data. The value of R^2 is always between 0 and 1.

### 3.7 Chapter Summary

Chapter three of the research report covers the research methodology under various subtopics
including research design, population and sampling, data collection methods, and data
analysis. The research adopted an explanatory research with the use of secondary quantitative
data from NSE and CBK. The data was analyzed using Microsoft Excel and tested for
seasonality as the first step in the analysis. Regression analysis was completed to determine
the relationship between monetary policy, fiscal policy, capital markets forces, Treasury
bond auction results, and the bond index. Findings from the study were presented in chapter
four of the study.
CHAPTER FOUR

4.0 RESULTS AND FINDINGS

4.1 Introduction

Chapter four presents the results and findings of the study after the collection of data. The purpose of this study was to determine the effects of government economic policies and capital markets forces on fixed income markets in Kenya. Data for this study was collected from the Nairobi Securities Exchange (NSE) and from central bank of Kenya (CBK). Data collected from NSE included NSE Bond Index while data collected from CBK included CBR, Treasury bill auction results, and government finance statistics mainly the revenue and expenditure, used on computing the deficit.

This chapter presents the analysis of the collected data. The analysis is presented in tables and graphs with sectional analysis as per the specific research questions. The sections in this Effects of Fiscal Policy on Fixed Income Markets, Effects of Monetary Policy on Fixed Income Markets, and Effects of Capital Market Forces on Fixed Income Markets.

4.2 General Findings

4.2.1 Treasury-bill Auction Results

The Central Bank of Kenya publishes the results of Treasury bill auctions on Thursday of every week. The Treasury bill auction results provide information on a number of indicators that include the amount offered, the market-weighted average interest rate, market-weighted average interest rate of accepted bids, and the prices. The statistics provided in the auction results were indicative of the performance of the fixed income markets in Kenya. Notably, the treasury bills were issued in three tenors by the government and these include 91 days, 182 days, and 364 days. With 91 days being the shortest tenor, the expectation was that the interest rates on the 91 days would respond more quickly to changes in the economy, including changes in monetary and fiscal policies. Consequently, the study sought to determine the extent to which a study of the government economic policy and capital markets
forces would be used to project the future performance of the treasury bills markets and the fixed income markets in general. More particularly, the intention of the study was to determine the extent to which fiscal policy, monetary policy, and capital markets forces could be used in predicting the spread between market-weighted average interest rate and the weighted average interest rate of accepted bids.

Data was collected on the 91 days Treasury bill for the period November 2012 and November 2017. Data on the market-weighted average interest rate and the weighted average interest rate of accepted bids was as shown in the figure below. While the trend in the data is weakly negative, the data indicated a high level of randomness with there being many instances in which the spread is zero and a few instances where the spread between the two variables in notable.

**Figure 4.1: Treasury Bill Auction Results-91 Days**

The data also include the price of 91 days Treasury bill whose output was as demonstrate in the graph below.
4.2.2 Results of Regression Analysis

Using regression analysis the data was analyzed to determine the effects of government economic policies and capital markets forces on fixed income markets in Kenya. The result of data analysis using regression was as demonstrated in the table below.

Table 4.1: Summary of Regression Analysis

<table>
<thead>
<tr>
<th>Regression Statistics</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple R</td>
<td>0.570331</td>
</tr>
<tr>
<td>R Square</td>
<td>0.325278</td>
</tr>
<tr>
<td>Adjusted R Square</td>
<td>0.289132</td>
</tr>
<tr>
<td>Standard Error</td>
<td>0.001668</td>
</tr>
<tr>
<td>Observations</td>
<td>60</td>
</tr>
</tbody>
</table>
Findings of the study were summarized into a regression equation as shown below.

**Equation 3**

\[ y = a + b_1 x_1 + b_2 x_2 + b_3 x_3 + e \]

\[ Y = -0.00595 + 2.01 \times 10^{-9} X_1 + 0.001062 X_2 - 2 \times 10^{-5} X_3 + e \]

Where:
\[ y = \text{the spread}, \]

\[ X1 = \text{Fiscal Deficit} \]

\[ X2 = \text{CBR} \]

\[ X3 = \text{Bond Index} \]

\[ e = \text{error}. \]

\[ b1, b2, \text{and } b3 = \text{coefficients} \]

The regression analysis output indicated that fiscal deficit, CBR, bond index and the spread between market-weighted average interest rate and the weighted average interest rate of accepted bids could be modelled into a multiple variable linear equation. The implication was that regression analysis can be used in modelling and forecasting the spread between market-weighted average interest rate and the weighted average interest rate of accepted bids and hence the performance of the fixed income market in Kenya.

Further, the regression analysis results indicated that the predictor variables can be used in the performance of the fixed income market with a correlation strength of 57%. This was demonstrated the coefficient of correlation (Multiple R) which was computed at 0.57. A Multiple R with a value of 1 means a perfect positive relationship and a value of 0 means no relationship at all. However, a strong correlation would in itself not enough in describing how good the regression model is. For this reason the regression analysis model produces r-squared which is used in describing the goodness of fit of the model. The analysis produced r-squared of 0.325 meaning that there was a 32.5% chance that the regression model can be used in accurately forecasting the performance of the fixed income market. It indicated that there were other variables and factors affecting fixed income market but these other factors were not captured by the model.
4.3.3 Covariance Analysis

The study also computed the covariance in the data of study. Covariance is a measure of the joint variability of two random variables. A positive covariance indicated that asset returns move together while a negative covariance means returns move inversely. The output of covariance analysis was as provided in the table below. The covariance output indicated that the dependent variable varies positively with all the independent variables with the strongest covariance being with the fiscal deficit.

Table 4.1: Covariance Analysis

<table>
<thead>
<tr>
<th></th>
<th>Computed Spread (Y)</th>
<th>Fiscal Deficit (X1)</th>
<th>Central Bank Rate- CBR (X2)</th>
<th>FTSE NSE Kenya Govt. Bond Index (X3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computed Spread (Y)</td>
<td>3.85E-06</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fiscal Deficit (X1)</td>
<td>53.2615</td>
<td>3.14E+10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Central Bank Rate- CBR (X2)</td>
<td>0.001083</td>
<td>-27467.5</td>
<td>1.2525</td>
<td></td>
</tr>
<tr>
<td>FTSE NSE Kenya Govt. Bond Index (X3)</td>
<td>0.000309</td>
<td>-972945</td>
<td>9.622931</td>
<td>398.5319</td>
</tr>
</tbody>
</table>

Besides covariance the study also computed the correlation between the variables in the study. Correlation is a statistical technique that can show whether and how strongly pairs of variables were related. The study found that there exists positive correlation between dependent variable and all the independent variables in the study. However, the correlate between the predicted variable and the predictor variables is weak with the overall correlation coefficient being at 0.57. CBR has the largest impact on the fixed income markets with a correlation coefficient of 0.49. Fiscal deficit and bond index had correlation coefficients at 0.15 and 0.0078 respectively. The implications were that all three variables
had low explanatory power on the movements in the fixed income markets with CBR explaining the most of the three variables.

**Table 4.2: Correlation Analysis**

<table>
<thead>
<tr>
<th></th>
<th>Computed Spread (Y)</th>
<th>Fiscal Deficit (X1)</th>
<th>Central Bank Rate- CBR (X2)</th>
<th>FTSE NSE Kenya Govt. Bond Index (X3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computed Spread (Y)</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Fiscal Deficit (X1)</td>
<td>0.153274</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Central Bank Rate- CBR (X2)</td>
<td>0.493444</td>
<td>-0.13853</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>FTSE NSE Kenya Govt. Bond Index (X3)</td>
<td>0.007882</td>
<td>-0.27508</td>
<td>0.430712</td>
<td>1</td>
</tr>
</tbody>
</table>

Finally, the study considered the trend in the spread between market-weighted average interest rate and the weighted average interest rate of accepted bids. The analysis of data used a graph to represent the movements. The findings produced the chart below which indicated that the variances were random, hence deduction of random walk in the levels of market-weighted average interest rate and the weighted average interest rate of accepted bids. The output was as shown in the chart below.
4.3 Effects of Fiscal Policy on Fixed Income Markets

In the literature review fiscal policy was defined as the means by which governments adjust the spending levels and the levels of taxation with the goal of influencing a nation’s economy. In the research methodology the study selected fiscal deficit as the representative of fiscal policy. The election to use fiscal deficit as the proxy for fiscal policy was informed by view that a high fiscal deficit would force the government to engage in more borrowing, both internally and externally. Based on this view, the study hypothesized that growing fiscal deficit would impact the fixed income markets in Kenya.

Data on the fiscal deficit was collected from the official website of Central Bank of Kenya. The raw data included both the revenue and expenditure statistics of the government of Kenya and it was organized in monthly frequencies. With the timeframe of the study beginning November 2012, the data demonstrating the prevailing fiscal policy was summarized as shown in figure 1 below.
Figure 4.4: Fiscal Deficit Analysis

The data shown in figure 1 above indicated a cyclical nature in Kenya’s expenditure on recurrent items and development projects, and hence a cyclical nature in the levels of fiscal deficits. The cycle runs for a whole year begin June every year and ending in June of the following year. Preliminary analysis of the data indicated that the level of expenditure peaks in June of every year, before the beginning of a new financial year, and it is at the same time that the fiscal deficit increases.

The data also demonstrates another trend with this trend being the increase in the level of government expenditure and consequently the level of fiscal deficit. The increases in expenditure and fiscal deficit indicate an increase in the nation’s appetite for borrowed financing of its budget. Presumably therefore, the study considered that where there was an increase in the fiscal deficit then there should be expectations that there will be increased borrowing from both the local market and internationally. Increased borrowing would then impact the fixed income markets mainly the market for treasury bills and treasury bonds.

4.4 Effects of Monetary Policy on Fixed Income Markets

The study also collected data on the monetary policy. Monetary policy is defined as the process by which the monetary policy of a nation controls the supply of money often by
targeting the interest rate or the rate of inflation in the economy (Mankiw, 2014). In Kenya, the central bank through the Monetary Policy Committee directs the interest rates through the Central Bank Rate. Section 36 (4) of the Central Bank of Kenya Act stipulates that the Central Bank shall publish the lowest rate of interest it charges on loans to banks and that rate shall be known as the Central Bank Rate (CBR). CBR acts as a pointer on the direction of interest rates in the economy and this includes the direction of the rates on treasury instruments. The study collected data on the Central Bank Rate for the period defined in the research methodology of the study. The data was as presented in figure 2 below.

![Central Bank Rate Graph](image)

**Figure 4.5: Central Bank Rate Analysis**

### 4.5 Effects of Capital Markets Forces on Fixed Income Markets

Focusing on the capital markets forces, the study tracked both the FTSE Performance Index and the FTSE Price Index. The study collected data for the period between November 2012 and November 2017. The data was as presented in figure 3 below.
Returns on FTSE NSE Kenya Govt. Bond Index were on the rise. This finding was demonstrated by the changes in the FTSE Performance Index and the reduction in the FTSE Price Index. A reduction in the prices indicated that the investors were paying a lower price for every Kes. 100 value of the bonds. Notably, the growth in the returns on the FTSE NSE Kenya Govt. Bond Index increase as the fiscal deficit increases. This indicated that as the government’s need for debt financing increases the investors enjoy higher returns and the government is forced to accept increasingly lower prices on the treasury instruments. The study hypothesized that this impact may be identifiable in the spread between the Market-weighted Average Interest Rate on treasury bills and the Weighted Average Interest Rate of Accepted Bids.

4.6 Chapter Summary

Chapter Four of the study focused on the analysis of data, presentation of results, and discussion of findings. Data was collected for a period of five years (60 months) beginning November 2012 and ending in October 2017. The analysis of data indicated that while fiscal policies and capital markets had marginal explanatory power on the movements in the market for treasury bills, monetary policy accounted for about 49% of the movements, given the correlation coefficient. However, the coefficient of determination on the regression model
was computed at 0.325 indicating that the goodness of fit for the model is at only 32.5%. The study found that the movements in fixed income markets were primarily influenced by monetary policy in the country. Chapter Five presented a discussion of the findings, conclusions, and recommendations of the study.
CHAPTER FIVE

5.0 DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

5.1 Introduction

Chapter five is the last chapter of the study. It provides a summary of the study together with conclusions, and recommendations. It brings together the thoughts, ideas, and findings rights from the first chapter of the study which is the introduction to the discussion of findings as presented in chapter four of the study.

5.2 Summary

The purpose of the study was to determine the effects of government economic policies and capital markets forces on fixed income markets in Kenya. The research questions under the purpose included to determine the effects of fiscal policy on fixed income markets, to determine the effects of monetary policy on fixed income markets, and to determine the effects of capital markets’ forces on fixed income markets in Kenya.

The research adopted an explanatory research design using quantitative data. The study collected data from secondary sources. The data included Treasury bill auction results for the 91 days issuances and the Central bank Rate (CBR). It also included data on government revenues, grants, and expenditure, and data on the FTSE NSE Kenya Govt. Bond Index. Data on Treasury bill auction results, central bank rate, and fiscal deficit was retrieved from the official website of the Central Bank of Kenya. On the other hand, data on the FTSE NSE Kenya Govt. Bond Index was retrieved the Nairobi Securities Exchange. All data was considered for the timeframe after the introduction of FTSE NSE Kenya Govt. Bond Index, which was introduced in October 2012. The data collected therefore covered 60 months beginning November 2012 and ending in October 2017. Monthly frequency was considered for all data and where applicable, averages were computed to comprise the monthly data for the months in consideration. The data was analyzed using multiple linear regression, correlation, and covariance computations as well as graphical analysis. The results and findings were presented in tables and figures in chapter four of the study. Consequently, the
study contains both numbers and visuals to best demonstrate the effects of government economic policies and capital markets forces on fixed income markets in Kenya.

On the effect of fiscal policy on fixed income markets, the study found a cyclical nature in Kenya’s expenditure on recurrent items and development projects, and hence a cyclical nature in the levels of fiscal deficits. The cycle runs for a whole year begin June every year and ending in June of the following year. The level of expenditure peaks in June every year, before the beginning of a new financial year, and it is at the same time that the fiscal deficit increases. The data also demonstrated another trend in the increase in the level of government expenditure and consequently the level of fiscal deficit. The increases in expenditure and fiscal deficit indicate an increase in the nation’s appetite for borrowed financing of its budget. From regression analysis, fiscal deficits, and therefore the fiscal policies, had a weak correlation with the performance of fixed income markets. A weak correlation indicated that there was a limited extent to which fiscal policies can be used in explaining movements in the fixed income markets.

On effect of monetary policy on fixed income markets, the study found that monetary policy has a strong effect on the level of interest rates in the fixed income markets. The implications of this finding were that the monetary policy announcements, mainly announcements on central bank rate, can be used in predicting the direction of interest rates charged on treasury bills by the investors. However, the monetary policy announcements had a limited impact on the spread between the market-weighted average rate (ask) and the weighted average of accepted bids (bid) indicating the existence of a random walk in the determination of prices of Treasury bill instruments.

On effects of capitals markets’ forces on fixed income markets, FTSE NSE Kenya Govt. Bond Index has little to no impact on the interest rates charged on Treasury bill instruments in the primary market. The findings indicate that the performance of the FTSE NSE Kenya Govt. Bond Index would not be an accurate predictor of the level of interest rates for treasury instruments in Kenya. However, the performance of the treasury instruments may be used in predicting the performance of FTSE NSE Kenya Govt. Bond Index.
Overall, the study found that the data could be modelled into a multiple linear equation where the spread between the market-weighted average interest rate and the weighted average interest rate of accepted bids, dependent variable, would be predicted using fiscal deficit, central bank rate, and bond index as the independent variables. The data was modelled in the form of \( y = a + b_1x_1 + b_2x_2 + b_3x_3 + e \). The data correlation coefficient for the model was recorded at 0.57 while the coefficient of determination (r-squared) was recorded at 0.325 implying that the regression model can be used to project or forecast the fixed income market but only to 32.5% accuracy. There were other factors that were not included in the model hence the limitations in the goodness of fit in the model.

In summing up the findings, the study asserted the prevalence of a random walk in the determination of the price of treasury bills in Kenya’s fixed income market. Except in the case of central Bank rate where the correlation is 0.495, the study asserts that all other factors determining the level of interest rates in the market were random. The study therefore asserts that monetary policy as represented by central bank rate has a moderate impact on the fixed income market while the impact of the capital market forces and the fiscal policies is weak.

5.3 Discussion

5.3.1 Effects of Fiscal Policy on Fixed Income Markets

The fixed income market was an important sector of any economy. As an investment sector, fixed income market may include a number of financial securities. However, the most common financial securities falling under the fixed income market were the treasury instruments that include treasury bills and treasury bonds. These investments were famous for low risk and predictable returns and it was for this reason that the fixed income market is important.

With the importance of the fixed income market, there was the need to understand how it interacts with other variables including government economic policies and capital markets. In the developed world there has been numerous studies focusing on the interactions between fiscal policy and fixed income markets, monetary policy, and capital markets forces. However, the developing markets context, Africa, and Kenya in particular is characterized by
limited research focusing on the interaction between economic and fixed income markets. It is this gap that the study sought to close.

The study found a cyclical nature in Kenya’s expenditure on recurrent items and development projects, and hence a cyclical nature in the levels of fiscal deficits. The cycle runs for a whole year begin June every year and ending in June of the following year. The level of expenditure peaks in June every year, before the beginning of a new financial year, and it is at the same time that the fiscal deficit increases. The data also demonstrated another trend in the increase in the level of government expenditure and consequently the level of fiscal deficit. The increases in expenditure and fiscal deficit indicate an increase in the nation’s appetite for borrowed financing of its budget.

Regression analysis of the fiscal deficit data against the spread in the fixed income markets indicated a weak correlation of 0.15. This indicated that fiscal deficit has a weak explanatory power to the movements in the spread between market-weighted average interest rate and weighted average interest rate of accepted bids in the market for treasury bills. The minimal impact of fiscal policies on fixed income markets is consistent with the findings of McKay and Reis (2016). The researchers found that fiscal policies play an important role as economic stabilizers. However, these policies had minimal impact on the fixed income markets. The researchers also attempted to explain the reason behind the minimal effects of fiscal policy on fixed income markets and according to the research the interaction between monetary and fiscal policy is the reason behind the observation. McKay and Reis (2016) asserted the impact of fiscal policy would be observed better in an environment where the monetary policy is constrained by the zero lower bound.

While fiscal deficit has a weak explanatory power to the movements in the fixed income markets the analysis of covariance indicated a strong covariance between fiscal deficit and the spread in the treasury bills market. Covariance is a measure of risk. Consequently, the data is interpreted to mean that increases in fiscal policy risk increases risks in treasury bills market with specific regard to the spread herein considered. These findings were consistent with what Aizenman, Hutchison and Jinjarak (2013) focusing on Greece recorded. The
authors indicated that fiscal policy has statistically and economically significant on the fixed income markets with respect to both default risk and the spreads.

The minimal impact of fiscal policy on fixed income markets is explained in different ways by different authors. Uppal (2011) in a study focused on Pakistan indicated that fiscal policy feeds the bond market development but at the same time, the bond market provides signals to the prudent conduct of fiscal policy. Further, Mu, Phelps and Stotsky (2013) in an IMF-sponsored working paper reiterated the view that the African bond markets had been steadily growing even though they remain undeveloped. One of the most important observations from the research was the fact that the capitalization of government bond markets were inversely related to fiscal balance. Tying the findings of this study to the literature, limited development of the fixed income market in Kenya as well as the granger causality between fiscal policy and fixed income markets were the two important factors of consideration when considering the interaction between fiscal policy and fixed income markets in Kenya.

To sum up the findings on the effects of fiscal policies on the fixed income markets, the study established that fiscal policies had a weak explanatory power on the movements in the fixed income markets. However, there exists strong covariance between fiscal policy and fixed income markets leading to the conclusion that increases in fiscal policy risk and would lead to increased risk of variance in the interest rates charged on fixed income instruments, majorly the treasury instruments considered in this research.

5.3.2 Effects of Monetary Policy on Fixed Income Markets

Through the Monetary Policy Committee (MPC) the Central Bank of Kenya sets the CBR which then points to the direction of prevailing interest rates in the market. The MPC meets at least once every two months. The data provided in figure 2 indicated that at the beginning of the period of study the CBR was at 11.0 before being reduced to 9.5 in January of 2013 and further to 8.5 in May of 2013. The rates were maintained at 8.5 until May 2015 when the MPC adjusted CBR upwards to 11.5. There were reductions in 2016 and 2017. However, the general trend of the CBR has been positive. Arguably, the reductions in 2016 may have been
as a result of political will to maintain low interest rates and which began earnestly with the introduction of interest rate caps in the market.

The analysis recorded the finding that monetary policy is the key influencer on the market for treasury bills, compared to the two remaining factors. There was a moderate correlation of 0.49 between the treasury bills market and the central bank rate which is the main monetary policy tool considered in this analysis. Consistent with the findings of McKay and Reis (2016) the impact of monetary policy on fixed income markets is more profound than that of fiscal policy. In essence, McKay and Reis (2016) asserted the impact of fiscal policy would be observed better in an environment where the monetary policy is constrained by the zero lower bound.

The impact of monetary policy on the fixed income markets appears to be well studied and understood in the advanced economies. Research studies considered in the review of literature explained that of the two government economic policies monetary policy has the greatest impact on the fixed income markets. In fact, from the findings of this study it would be prudent to conclude that 50% of all movements in the fixed income markets were as a result of anticipation of monetary policy (Fontana & Setterfield, 2016).

The findings on the impact of monetary policy on fixed income markets were consistent with those of various authors. Odell (2014) asserts that there was no doubt that monetary policy plays an important role in the determination of the pricing of government securities as well as the pricing of corporate bonds. Gruber and Kamin (2012). Opined that monetary policy undoubtedly plays an important role in the pricing of government debt, the spreads, and even the capitalization. Further, Sensarma and Bhattacharyya (2016) indicated that monetary policy has a dominant role in determining the yield curve at the shorter end.

Since the impact of monetary policy fixed income markets is well understood, the value add in the current research was in informing the impact of the interaction between monetary policy and fiscal policy on the fixed income markets. The analysis of data established that the explanatory power of government economic policies on fixed income markets increases marginally with the interaction of fiscal and monetary policies in consideration. Future
research on this area should focus more on investigating this interaction especially considering the extent to which fiscal and monetary policies were respectively applied in a country. The extent of application of both monetary and fiscal policies would help in strengthening the understanding of how economic policies can be used to direct the fixed income markets both in the primary markets and secondary markets. Notably, future research may also focus on establishing the impact of this interaction on corporate bonds market by use of panel data analysis methods.

5.3.3 Effects of Capital Markets Forces on Fixed Income Markets

The study of the effect of capital markets forces on fixed income markets was anchored on the random walk hypothesis. The random walk hypothesis is a financial theory stating that stock market prices evolve according to a random walk (so price changes were random) and thus cannot be predicted. Under this theory the research hypothesized that government economic policy and capital markets forces cannot be used to predict the performance of the fixed income market accurately. Narrowed down to the objectives, the study hypothesized that the Market-weighted Average Interest Rate on treasury bills and the Weighted Average Interest Rate of Accepted Bids on treasury bills follow a random walk and cannot be predicted. Therefore, the computed spread between Market-weighted Average Interest Rate on treasury bills and the Weighted Average Interest Rate of Accepted Bids cannot be predicted.

The analysis of data indicated that capital markets forces had the least predictive power when it comes to the treasury instruments market. The model of data analysis returned a correlation coefficient of 0.007, lower than both fiscal policy and monetary policy. The study however identified positive covariance between the variables meaning that when volatility increases in the market for treasury instruments then there should be expectations of increased volatility in the secondary market for fixed income instruments and more specifically the market for bonds in the country.

The relationship between the capital markets forces and the market for treasury bills is such that the primary market for treasury instruments influences the primary market for corporate
bonds and also the secondary market for the instruments in general. However, the capital markets forces with specific regard to the bond markets did not have a direct impact on the market for treasury instruments. These findings were affirmed by Njihia (2005) who asserted that borrowing locally increases the government bond spreads in the primary markets and also increases the spreads between treasury instruments and the corporate bonds in the secondary markets. Mwanza (2012) and Mwangi (2013) indicated that this phenomenon results from the fact that investors place more trust in the government securities as opposed to the corporate bonds. Therefore, there exists a causal relationship moving from the market for treasury instruments to the market for corporate bonds.

In summary, the analysis of the effects that capital markets forces had on the fixed income markets indicated that the fixed income market was only marginally affected by the capital markets forces. The finding confirmed the findings of previous researchers who found and reported that the fixed income market was affected more by the monetary policy than by what happens in the secondary capital markets. It also confirmed the finding that there was the possibility that the causal effect trickles from the treasury market to the capital markets and not the other way. The study hence recommends further research seeking to establish the extent to which movements in the primary market for treasury instruments would influence the movements in the secondary market and also the market for corporate bonds.

5.4 Conclusions

5.4.1 Effects of Fiscal Policy on Fixed Income Markets

The purpose of the study was to determine the effects of government economic policies and capital markets forces on fixed income markets in Kenya. The research questions included to determine the effects of fiscal policy on fixed income markets, to determine the effects of monetary policy on fixed income markets, and to determine the effects of capitals markets’ forces on fixed income markets in Kenya.

Focusing on the effects of fiscal policy on fixed income markets the study found that fiscal deficits and therefore the fiscal policies had a weak correlation with the fixed income markets. A weak correlation indicated that there was a limited extent to which fiscal policies
can be used in explaining movements in the fixed income markets. More specifically, the changes in fiscal policy provide a weak explanation to the movements in the interest rates offered by investors in Treasury bill instruments.

Findings of the study indicated that while there has been an increase in the fiscal deficit, there has not been significant increase in the interest rates charged on treasury bills as a result of the widening fiscal deficit. The interpretation of this finding was that despite increased borrowing by the government from both the local market and the international markets, there has not been a major increase in the levels of interest rates charged by investors on the treasury instruments. The study concluded that the spread in interest rates does not necessarily increase with the growth in the fiscal deficit.

5.4.2 Effects of Monetary Policy on Fixed Income Markets

The study also focused on the effect of monetary policy on the fixed income markets. The analysis of data indicated that monetary policy has a strong effect on the level of interest rates charged by the investors and a moderate impact on the spread between market-weighted average interest rate and the weighted average interest rate of accepted bids. The implications of this finding were that the monetary policy announcements, mainly announcements on CBR, can be used in predicting the direction of interest rates charged on treasury bills by the investors. However, the monetary policy announcement had a moderate impact on spread herein considered indicating the existence of a random walk in the determination of prices of Treasury bill instruments. The analysis indicated that the influence of human factors in the determination of the interest rates charged on treasury bills and hence the randomness in the level of price of treasury bills as well as the spread in the factors mentioned in the analysis.

5.4.3 Effects of Capital Markets Forces on Fixed Income Markets

The last question focused on effects of capital markets forces on the fixed income markets and specifically the market for treasury instruments. Analysis of data focused on FTSE NSE Kenya Govt. Bond Index as the proxy for capital markets forces. The analysis indicated that FTSE NSE Kenya Govt. Bond Index has little to no impact on the Treasury bill instruments. The findings indicate that the performance of the FTSE NSE Kenya Govt. Bond Index would
not be an accurate predictor of the level of interest rates for treasury instruments in Kenya. However, the performance of the treasury instruments may be used in predicting the performance of FTSE NSE Kenya Govt. Bond Index.

5.5 Recommendations

5.5.1 Recommendations for Improvement

5.5.1.1 Effects of Fiscal Policy on Fixed Income Markets

The study found that fiscal policy on its own has little impact on the performance of the market for fixed income instruments with specific regard to movements in the bid-ask spread of interest rates and prices offered for fixed income instruments. The study recommends further research focusing on the impact of fiscal policy on liquidity in the economy and how this links to the performance of fixed income markets.

5.5.1.2 Effects of Monetary Policy on Fixed Income Markets

Monetary policy plays a critical role in directing the market for fixed income instruments. Based on Keynesian economics, the analysis of data considers that fiscal and monetary policies should be considered simultaneously as the best economic results are generated where there was the interaction between monetary and fiscal policies. At the time of presenting this research monetary policy remained the preserve of Central Bank of Kenya while the treasury sets the direction for fiscal policy. The study recommends the interaction between monetary and fiscal policies be considered in setting future policy.

5.5.1.3 Recommendations on Effects of Capital Markets Forces on Fixed Income Markets

The study established that there exists a strong causal relationship between monetary policy as the predictor variable and capital markets performance as the predicted variable. The study recommends that the investors keenly consider monetary policy when making investment decisions on the capital markets. However, in future it is expected that the interaction between monetary policy and fiscal policy may have more implications on the capital
markets than in the current time. Investors should therefore continually monitor endeavors on the concurrent application of monetary and fiscal policies in the country. This interaction would be expected to enhance the deepening of the capital markets and hence influence returns in the capital markets.

5.5.2 Recommendations for Further Studies

The study recommends further studies focusing on the effects of government economic policies and capital markets forces on fixed income markets in Kenya. Future research should focus on expanding the range of predictor variables in order to provide a detailed understanding on how the market for treasury instruments interacts with government economic policy and capital markets forces in the secondary market for fixed income markets. Further, the future research should consider the application of granger causality studies as well and other panel data analysis methods in order to fully comprehend and understand the interaction between the variables considered in this analysis. The approach would help in strengthening the findings on the market for fixed income instruments and especially the treasury instruments.
REFERENCES


## APPENDICES

### Appendix I: Data Collection Tool

<table>
<thead>
<tr>
<th>Year</th>
<th>Month</th>
<th>Market Weighted Average Interest Rate</th>
<th>Weighted Average Interest Rate of accepted Bids</th>
<th>Computed Spread (Y)</th>
<th>Price per Kshs 100 at average Interest Rate</th>
<th>Fiscal Deficit (X1)</th>
<th>Central Bank Rate- CBR (X2)</th>
<th>FTSE NSE Kenya Govt. Bond Index (X3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>November</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>December</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td>January</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>February</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>March</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>April</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>May</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>June</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>July</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>August</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>September</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>October</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>November</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>December</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>January</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>February</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>March</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>April</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>May</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>June</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>July</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>August</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>September</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>October</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>November</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>December</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2015</td>
<td>January</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>February</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>March</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>April</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year</td>
<td>Month</td>
<td>Market Weighted Average Interest Rate</td>
<td>Weighted Average Interest Rate of accepted Bids</td>
<td>Computed Spread (Y)</td>
<td>Price per Kshs 100 at average Interest Rate</td>
<td>Fiscal Deficit (X1)</td>
<td>Central Bank Rate-CBR (X2)</td>
<td>FTSE NSE Kenya Govt. Bond Index (X3)</td>
</tr>
<tr>
<td>------</td>
<td>-------</td>
<td>--------------------------------------</td>
<td>-----------------------------------------------</td>
<td>---------------------</td>
<td>---------------------------------------------</td>
<td>-------------------</td>
<td>-----------------------------</td>
<td>---------------------------------</td>
</tr>
<tr>
<td></td>
<td>May</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>June</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>July</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>August</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>September</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>October</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>November</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>December</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2016</td>
<td>January</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>February</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>March</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>April</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>May</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>June</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>July</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>August</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>September</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>October</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>November</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>December</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2017</td>
<td>January</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>February</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>March</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>April</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>May</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>June</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>July</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>August</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>September</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>October</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Appendix II: Data from CBK & NSE

<table>
<thead>
<tr>
<th>Year</th>
<th>Month</th>
<th>Computed Spread (Y)</th>
<th>Fiscal Deficit (X1)</th>
<th>Central Bank Rate- CBR (X2)</th>
<th>FTSE NSE Kenya Govt. Bond Index (X3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>November</td>
<td>0.287%</td>
<td>-117736.73</td>
<td>11</td>
<td>99.536</td>
</tr>
<tr>
<td></td>
<td>December</td>
<td>0.074%</td>
<td>-141045.82</td>
<td>11</td>
<td>97.005</td>
</tr>
<tr>
<td>2013</td>
<td>January</td>
<td>0.075%</td>
<td>-162054.51</td>
<td>9.5</td>
<td>95.2425</td>
</tr>
<tr>
<td></td>
<td>February</td>
<td>0.048%</td>
<td>-178361.97</td>
<td>9.5</td>
<td>96.185</td>
</tr>
<tr>
<td></td>
<td>March</td>
<td>0.521%</td>
<td>-230365.11</td>
<td>9.5</td>
<td>96.45</td>
</tr>
<tr>
<td></td>
<td>April</td>
<td>0.057%</td>
<td>-205564.76</td>
<td>9.5</td>
<td>96.02</td>
</tr>
<tr>
<td></td>
<td>May</td>
<td>0.128%</td>
<td>-273328.76</td>
<td>8.5</td>
<td>97.854</td>
</tr>
<tr>
<td></td>
<td>June</td>
<td>0.199%</td>
<td>-364331.66</td>
<td>8.5</td>
<td>101.9625</td>
</tr>
<tr>
<td></td>
<td>July</td>
<td>0.001%</td>
<td>8667.9472</td>
<td>8.5</td>
<td>103.315</td>
</tr>
<tr>
<td></td>
<td>August</td>
<td>0.271%</td>
<td>-172.69828</td>
<td>8.5</td>
<td>104.06</td>
</tr>
<tr>
<td></td>
<td>September</td>
<td>0.139%</td>
<td>-16353.74</td>
<td>8.5</td>
<td>104.2175</td>
</tr>
<tr>
<td></td>
<td>October</td>
<td>0.105%</td>
<td>-26107.451</td>
<td>8.5</td>
<td>103.6475</td>
</tr>
<tr>
<td></td>
<td>November</td>
<td>0.092%</td>
<td>-34177.937</td>
<td>8.5</td>
<td>103.912</td>
</tr>
<tr>
<td></td>
<td>December</td>
<td>0.051%</td>
<td>-21251.652</td>
<td>8.5</td>
<td>104.875</td>
</tr>
<tr>
<td>2014</td>
<td>January</td>
<td>0.005%</td>
<td>-32767.484</td>
<td>8.5</td>
<td>106.256</td>
</tr>
<tr>
<td></td>
<td>February</td>
<td>0.014%</td>
<td>-56004.705</td>
<td>8.5</td>
<td>107.96</td>
</tr>
<tr>
<td></td>
<td>March</td>
<td>0.055%</td>
<td>-23229.561</td>
<td>8.5</td>
<td>110.62</td>
</tr>
<tr>
<td></td>
<td>April</td>
<td>0.008%</td>
<td>-19903.904</td>
<td>8.5</td>
<td>112.0525</td>
</tr>
<tr>
<td></td>
<td>May</td>
<td>0.024%</td>
<td>-39026.93</td>
<td>8.5</td>
<td>113.604</td>
</tr>
<tr>
<td></td>
<td>June</td>
<td>0.084%</td>
<td>-286727.71</td>
<td>8.5</td>
<td>114.4975</td>
</tr>
<tr>
<td></td>
<td>July</td>
<td>0.162%</td>
<td>20447.358</td>
<td>8.5</td>
<td>114.3775</td>
</tr>
<tr>
<td></td>
<td>August</td>
<td>0.021%</td>
<td>1290.2315</td>
<td>8.5</td>
<td>115.72</td>
</tr>
<tr>
<td></td>
<td>September</td>
<td>0.123%</td>
<td>-13064.987</td>
<td>8.5</td>
<td>116.6675</td>
</tr>
<tr>
<td></td>
<td>October</td>
<td>0.038%</td>
<td>-38265.839</td>
<td>8.5</td>
<td>117.66</td>
</tr>
<tr>
<td></td>
<td>November</td>
<td>0.074%</td>
<td>-79580.151</td>
<td>8.5</td>
<td>119.675</td>
</tr>
<tr>
<td></td>
<td>December</td>
<td>0.082%</td>
<td>-88978.407</td>
<td>8.5</td>
<td>120.24</td>
</tr>
<tr>
<td>Year</td>
<td>Month</td>
<td>Computed Spread (Y)</td>
<td>Fiscal Deficit (X1)</td>
<td>Central Bank Rate- CBR (X2)</td>
<td>FTSE NSE Kenya Govt. Bond Index (X3)</td>
</tr>
<tr>
<td>-------</td>
<td>-----------</td>
<td>---------------------</td>
<td>---------------------</td>
<td>-----------------------------</td>
<td>-------------------------------------</td>
</tr>
<tr>
<td>2015</td>
<td>January</td>
<td>0.022%</td>
<td>-150403.49</td>
<td>8.5</td>
<td>121.724</td>
</tr>
<tr>
<td></td>
<td>February</td>
<td>0.014%</td>
<td>-173661.82</td>
<td>8.5</td>
<td>121.7725</td>
</tr>
<tr>
<td></td>
<td>March</td>
<td>0.007%</td>
<td>-353800.69</td>
<td>8.5</td>
<td>123.61</td>
</tr>
<tr>
<td></td>
<td>April</td>
<td>0.000%</td>
<td>-375549.4</td>
<td>8.5</td>
<td>123.6975</td>
</tr>
<tr>
<td></td>
<td>May</td>
<td>0.015%</td>
<td>-365345.83</td>
<td>8.5</td>
<td>124.114</td>
</tr>
<tr>
<td></td>
<td>June</td>
<td>0.256%</td>
<td>-478155.97</td>
<td>10</td>
<td>125.6425</td>
</tr>
<tr>
<td></td>
<td>July</td>
<td>0.449%</td>
<td>24285.51</td>
<td>11.5</td>
<td>126.5</td>
</tr>
<tr>
<td></td>
<td>August</td>
<td>1.240%</td>
<td>5849.5386</td>
<td>11.5</td>
<td>127.135</td>
</tr>
<tr>
<td></td>
<td>September</td>
<td>0.263%</td>
<td>28286.234</td>
<td>11.5</td>
<td>127.455</td>
</tr>
<tr>
<td></td>
<td>October</td>
<td>0.237%</td>
<td>-24694.502</td>
<td>11.5</td>
<td>128.366</td>
</tr>
<tr>
<td></td>
<td>November</td>
<td>0.549%</td>
<td>-150418.48</td>
<td>11.5</td>
<td>129.7</td>
</tr>
<tr>
<td></td>
<td>December</td>
<td>0.358%</td>
<td>-184699</td>
<td>11.5</td>
<td>130.9775</td>
</tr>
<tr>
<td>2016</td>
<td>January</td>
<td>0.388%</td>
<td>-197100.51</td>
<td>11.5</td>
<td>131.288</td>
</tr>
<tr>
<td></td>
<td>February</td>
<td>0.193%</td>
<td>-222629.57</td>
<td>11.5</td>
<td>131.2525</td>
</tr>
<tr>
<td></td>
<td>March</td>
<td>0.172%</td>
<td>-292795.63</td>
<td>11.5</td>
<td>133.0575</td>
</tr>
<tr>
<td></td>
<td>April</td>
<td>0.092%</td>
<td>-339605.71</td>
<td>11.5</td>
<td>133.284</td>
</tr>
<tr>
<td></td>
<td>May</td>
<td>0.081%</td>
<td>-380206.03</td>
<td>10.5</td>
<td>134.22</td>
</tr>
<tr>
<td></td>
<td>June</td>
<td>0.036%</td>
<td>-515348.21</td>
<td>10.5</td>
<td>136.2175</td>
</tr>
<tr>
<td></td>
<td>July</td>
<td>0.105%</td>
<td>26579.329</td>
<td>10.5</td>
<td>139.392</td>
</tr>
<tr>
<td></td>
<td>August</td>
<td>0.130%</td>
<td>7600.2703</td>
<td>10</td>
<td>139.585</td>
</tr>
<tr>
<td></td>
<td>September</td>
<td>0.101%</td>
<td>-57998</td>
<td>10</td>
<td>140.93</td>
</tr>
<tr>
<td></td>
<td>October</td>
<td>0.021%</td>
<td>-116046.98</td>
<td>10</td>
<td>144.0825</td>
</tr>
<tr>
<td></td>
<td>November</td>
<td>0.042%</td>
<td>-219014.75</td>
<td>10</td>
<td>146.355</td>
</tr>
<tr>
<td></td>
<td>December</td>
<td>0.001%</td>
<td>-220691.93</td>
<td>10</td>
<td>147.804</td>
</tr>
<tr>
<td>2017</td>
<td>January</td>
<td>0.023%</td>
<td>-297260.3</td>
<td>10</td>
<td>149.0525</td>
</tr>
<tr>
<td></td>
<td>February</td>
<td>0.266%</td>
<td>-346148.54</td>
<td>10</td>
<td>150.395</td>
</tr>
<tr>
<td></td>
<td>March</td>
<td>0.331%</td>
<td>-439912.4</td>
<td>10</td>
<td>151.812</td>
</tr>
<tr>
<td>Year</td>
<td>Month</td>
<td>Computed Spread (Y)</td>
<td>Fiscal Deficit (X1)</td>
<td>Central Bank Rate- CBR (X2)</td>
<td>FTSE NSE Kenya Govt. Bond Index (X3)</td>
</tr>
<tr>
<td>------</td>
<td>-------</td>
<td>---------------------</td>
<td>---------------------</td>
<td>-----------------------------</td>
<td>-------------------------------------</td>
</tr>
<tr>
<td>April</td>
<td>0.028%</td>
<td>-528775</td>
<td>10</td>
<td></td>
<td>153.6825</td>
</tr>
<tr>
<td>May</td>
<td>0.019%</td>
<td>-560945.46</td>
<td>10</td>
<td></td>
<td>156.565</td>
</tr>
<tr>
<td>June</td>
<td>0.008%</td>
<td>-711423.95</td>
<td>10</td>
<td></td>
<td>159.642</td>
</tr>
<tr>
<td>July</td>
<td>0.323%</td>
<td>11462.843</td>
<td>10</td>
<td></td>
<td>161.5175</td>
</tr>
<tr>
<td>August</td>
<td>0.245%</td>
<td>34232.234</td>
<td>10</td>
<td></td>
<td>163.1375</td>
</tr>
<tr>
<td>September</td>
<td>0.004%</td>
<td>8889.4848</td>
<td>10</td>
<td></td>
<td>164.752</td>
</tr>
<tr>
<td>October</td>
<td>0.008%</td>
<td>-69738.061</td>
<td>10</td>
<td></td>
<td>166.1925</td>
</tr>
</tbody>
</table>