

**EFFECT OF MACROECONOMIC FACTORS ON THE DEVELOPMENT OF  
BOND MARKET IN KENYA**

**BY**

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## **DECLARATION**

I declare that this research proposal is my original work and it has not been submitted by any other person or for any degree for examination in any other institution.

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D61/86915/2016

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

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I would like to thank God for having enabled me reach this far in my studies. My supervisor Mr. Barasa for his firm, timely, decisive and invaluable advice and positive criticisms that were challenging and enabled me to strive to achieve the objective of the study.

## **DEDICATION**

I dedicate this work to my parents (Mr. & Mrs. Chege) for their love for education

Which was beyond reach and for inspiring me to be who I am today.

## **ABSTRACT**

Effective and efficient financial markets globally have sound performance that attracts foreign and regional investors. Bond securities are perceived to be less risky and has high yield. As a result, both government and corporations prefer financing their long term projects using debt securities such as bond. However, the bond market in Africa is still wanting. Though Kenya has made many strides in developing its bond market, there are still more that need to be addressed in order to reach its optimal and compete with the global bond markets. And one aspect is macro-economic factors. Therefore, the purpose of this study will be to establish the effect of macro-economic factors on the development of bond market in Kenya. The specific objectives will be; to determine the effect of exchange rate on the development of bond market in Kenya, to assess the effect of interest rates variability on the development of bond market in Kenya and to investigate the effect of inflation rate on the development of bond market in Kenya. The study will adopt causal research design with a target population of all the 81 issued government and corporate bonds in the bond market; which will be based on the census sampling method. Secondary data will be used and data collection extract will be developed to help in accessing the data from CBK, NSE, and KNBS among others. Data will be analysed using regression model scientific package of social sciences (SPSS).

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## **LIST OF ABBREVIATIONS**

<b>CBK</b>	Central Bank of Kenya
<b>NSE</b>	Nairobi Securities Exchange
<b>KNBS</b>	Kenya National Bureau of Statistics
<b>SPSS</b>	Scientific Package of Social Sciences
<b>U.S</b>	United States
<b>USIU</b>	United States International University
<b>T-Bills</b>	Treasury Bills
<b>GDP</b>	Gross Domestic Product
<b>CPI</b>	Consumer Price Index
<b>EA</b>	East Africa

# CHAPTER ONE

## INTRODUCTION

### 1.1 Background of the study

Since the financial crisis of 2007-08, there have been numerous debates on various ways to standardize and liberate the financial market in developing economies. In Kenya for example, the financial market is largely dominated by the banking sector as compared to other investment companies. To avoid the situations where the country could face such problems of 2007/8, the capital market authority together with other financial regulators has embarked on development of the domestic bond market which remains as an alternative source of finance to both government projects and also private corporations which is very needed in the emerging market where source of funding is a challenge to all the key players (Myers, 2014).

Bond market varies across the globe. Developed countries such as North America has the best bond market performance followed by Europe then part of the United States (U.S). In Africa, Kenya ranks third in terms of bond market performance and regulation after South Africa and Nigeria. According to Ocheng (2014), the Kenyan Treasury bond is well structured than the corporate bond market wherein the first quarter of 2013, outstanding T-Bills was valued at Kes765 billion while that of a corporate bond was 45 billion. Therefore, a bond is a financial debt instrument where borrower repays the lender the principal amount together with the interest incurred over the period borrowed.

Moreover, over-reliance by the government on bank lending for debt financing exposes an economy to various risks in the market. Proponents of this view argue that the banking crisis can entirely affect the economic activities in places where they are

the sole source of debt financing. This is because these companies can find themselves constrained on credit relations hence ignores making investment which leads to reduced aggregate demand cause by the multiplier effect. Therefore, the existence of sound and effective bond market in the country attracts both foreign and regional investors, which in particular improves capital market and provide the alternative for raising debt financing for both government and corporations (Kanwal & Nadeem, 2013).

The bond market is good for the economic development in various ways. It provides companies or corporations to issue their bond and borrow directly from investors which again removes the intermediary costs such as those played by the commercial banks. Looking at Kenyan perspective, the treasury department together with capital market authority, the central bank of Kenya (CBK) among other players have created a platform where even the low-income earners can access treasury bills (T-Bills) in the country at a low cost. This is a clear indication that the country's bond market is making positive strides towards financial inclusion and enhancing effective source of debt funding for the government (Ochenge, 2014).

### **1.1.1 Macro-Economic Factors**

Just like any other type of financial market, the bond market requires efficient and sound fiscal regulations as well as enabling environment to perform better. Macroeconomic factors are very influential in determining the bond market performance. Interest rates are very important in the economy. Depending on how the central bank (CBK) set the interest rate in the economy, it may have either negative or positive impact to the entire financial improvement indicators in the economy, and mostly bond market in relation to this study. Money supply, inflation rate and foreign

exchange rates as well the gross domestic product (GDP) have an impact in determining the bond market performance across the countries (Ouma & Muriu, 2014)

According to Hassan, Fauzi and Azhar (2013), inflation is the continuous increase in prices of goods in the economy over a long period with less availability of goods and services. When products of good increases, a majority of consumers with low-income earners faces a high task of accessing them hence affecting the overall economic performance. The interest rate, therefore, is the cost expressed by the lender as a percentage of the principal charged for lending the money to the borrower in the market.

Nevertheless, GDP is the total production of a country over a given time expressed in monetary value. Hence, the rate of GDP in a country reflects the economic condition of that country (Ochieng & Odhiambo, 2012). They continued that foreign exchange rate evaluates the currency of one country to another. It simply states how much of a local currency is required to access the same quantity of goods in another country using their currency. As such, economies with strong foreign exchange rates attract foreign investors, which directly or indirectly affect the growth of bond market. Across the East Africa (EA) region, Kenyan has dominated the foreign exchange currency, which makes investors to prefer investing in our bond market.

Though a number of macroeconomic variables affect the bond market as well as the economy at large both at the industry and market level, the study focused on interest rates, foreign exchange rate, GDP at purchasing power parity, Export as a proportion of GDP, Domestic credit and bank size as the major macroeconomic indicators for the bond market performance determinants. Managing macroeconomic factors accordingly by the financial regulators mostly the CBK and treasury therefore, would

suggest a healthy bond market, which creates an enabling environment to facilitate the issuance of bond securities (Ariemba et al., 2015).

### **1.1.2 Bond Market Development**

A well-regulated financial system promotes the development of various security markets such as the bond market and equity market as well as derivative markets. The development of the bond market across the world is majorly attributed to the effectiveness of macroeconomic factors on their performance. Financial markets with high volatility do not support bond market development and, for that reason the government is left with many roles to play to boost the market (Waweru, Amanja & Maana, 2014).As earlier indicated, African financial markets are still dominated by the banking sector. Banks are viewed as the source of funding for short-term developments hence the need to have availability of long-term financing of government projects. In this regard, the bond market plays a critical role.

Additionally, the bond market provides an alternative for eliminating the mismatch that has existed in the continent for decades of banking as the sole source of financing. Sound and effective bond market regulations are essential in the country. The regulators must set the guidelines, which all the market participants must adhere to and meet for them to participate. This will ensure that the information pertaining debt securities are easily available to the investors and that the market is efficient. As currently constituted, there are still steps that need to be taken to ensure that the bond market in Kenya achieves its optimal level in financing long terms projects for the government.

Additionally, Githinji (2013) explained the structure and purpose of each Treasury bond which influences the Bond market development in Kenya. Bonds issued in

Kenya range between 1-5 years as short-term while those of long-term goes for a duration of 1 – 30 years. Types of Treasury bonds may be fixed coupon bonds, zero coupons, and floating rate among others. It is, therefore, the responsibility of the government through its agent bodies to provide enough information, which assists investors to understand types of bonds issued at a particular time in the market. Providing information, therefore, would result in the significant growth of the bond market.

As currently constituted, there are only five investment companies listed at Nairobi Securities Exchange (NSE) against over 12 banks, which participate in the bond market. This clear indicator that financial sector specifically banking sector will have a significant part of promoting the advancement and growth of the bond market (NSE, 2018). The performance of corporate bonds in the country is still below the Treasury bonds. This could be attributed to the poor performance of large corporations that used to issue bonds in the bond market, leaving the government as the major player. Therefore, as of 2012, the size of the bond market in Kenya was valued at \$ billion which was about 16% of the GDP (Ochenge, 2014).

### **1.1.3 Effects of Macro Economic Factors on Development of bond Market**

Measuring the economic size of a country one can use the gross domestic product at purchasing power parity. Small size means that the country is unable to have a cohesive, stable and efficient bond market. The banking system size in a country, which is given by the financial sector to Gross Domestic Product, forms the crucial part in the development of a bond market. This is because bank serves as dealers and market makers but also both banks and bond market compete in financing. This means developing banking system may deprive the bond market share. With high interest rates, there is also high tendency low issuance of bond this is because only a



few individual investors or firms can service debts. With variability of interest rates, the investors will have low appetite to fixed interest investments. If there is flexibility in exchange rate this will encourage the growth of the bond market in the economy. When exchange rates are fixed, this will encourage foreign investors to ignore the risk exposure when they lend to large corporations and established banks, which may result to foreign competition, which may slow the growth of local investment on the bond market. (Adelegan and Radzewicz, 2009).

#### **1.1.4 Macro Economic Factors and Bond Market Development in Kenya**

This plays a pivotal role in fostering economic development in the country through offering investment opportunities to both local and foreign investors and also financing government budget deficit. The bond market in Kenya constitutes only a domestic market segment as distinct from a global market component. The domestic market constitutes the government and corporate bond segments both of which have primary and secondary bond markets. As at 2012, the size of domestic bond markets in Kenya was approximately worth \$ 6 billion which was about 16% of the GDP in 2012 (CBK, 2012; KNBS, 2013; Kenya Economic Update, 2012). Kenya's financial sector is heavily bank-dominated. Bond market development, therefore, remains a key policy issue in Kenya. The literature has identified certain factors and conditions as facilitators of faster development of bond markets (Fabella and Madhur, 2003). Banks are not the best in financing large infrastructure projects since it affects their reporting in their balance sheet. Bond market and particularly corporate bond are found to develop quickly in countries wherever the economic science environments are additional inevitable and stable. Countries wherever there is volatility in economic science atmosphere, the company bond market got to bank heavily on government support (Fabella and Madhur, 2003).

## **1.2 Research Problem**

Bond as a long-term debt financing provides borrowers with a longer repayment period, and it is on this basis that the government prefer financing its long-term projects using debt financing. Debt financing requires a well-regulated financial market. For so many years, the Kenyan government have been accessing external market to seek for debt financing in the form of Eurobond as they are the form of debt financing which is accompanied with specific advantages to the country. However, the country still faces challenges in managing these borrowed bonds from the external market.

Establishing the bond market in the country would save the country a lot of capital, which is paid to the global market to accesses Eurobond. This would provide favourable and conducive borrowing rates in terms of interest rates hence the government will have enough capital to finance its long-term projects. For so many years, the government has been funding its projects using borrowed capital from the banking sector. With the current mismanagement experience at the banking sector and high level of corruption and money laundering, it brings the question on the suitability of banks as the source of debt financing for the government's long-term projects.

As long as the government will keep on accessing the external market to seek for debt financing, it will be a clear indication that our bond market is not well developed to attract foreign and regional investors' as well corporate investors. Various investigations have been carried out on the macroeconomic variables and bond market development internationally and locally. Locally, Githinji (2013) researched on the effects of chosen economic factors on development of Bond market in Kenya. Ndunda (2016) researched on the effect of macro-economic factors on the performance of the stock market in Nairobi Securities Exchange(NSE).Ganatra (2016)

studied the impact of macroeconomic factors on performance of infrastructure bonds. However, these studies do not address how effective management of these macroeconomic factors can lead to bond market development. It is also evident that the knowledge on the effects of macroeconomic factors is still minimal among the citizens and academicians hence the need to undertake further study on the topic.

Though there is relationship between the economic growth in a country and the bond market development (Bondt and Marques, 2004), little empirical analysis has been done to assess macro-economic factors on development of bond market. A study to fill this gap is required. This is a recognition that under developed bond market can be an impediment to economic growth but well developed and functioning bond market will be required for robust economic growth. The following research questions were addressed in this study.

- I. What are the macroeconomic Variables that determines the developments of bond market
- II. What is the contribution of this factors to bond market developments
- III. What are the policy issues that will arise from(i) and (ii) above

### **1.3 Research Objectives**

#### **1.3.1 General objective**

To determine the effects of macroeconomic factors on bond market development in Kenya.

#### **1.3.2 Specific objectives**

- i) To assess the impact of foreign exchange rates in Kenya towards Bond market development.

ii) To determine the effects of rates of interest on the development of a bond market in Kenya.

iii) To investigate the result of rate of inflation on the growth of a bond market.

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

The study aimed at allowing bond market regulators as well as other players in the bond market to understand the need to have an efficient and strong bond market in the country, which will attract foreign investors. This will allow them to understand the relevance of each macroeconomic variable in developing the bond market.

To the scholars and academicians, the study adds additional literature on the topic of the study which will help scholars in debating the relevance of each variable and the extent that each can lead to bond market development. The study will assist academicians with an identification of areas of further studies.

To the stakeholders and investors, the study was to allow them to understand the importance of coming together to assist the government in developing the bond market in the country.

## **CHAPTER TWO**

### **LITRATURE REVIEW**

#### **2.1 Introduction**

The chapter looks into the availability of various studies relating to the impact of economic variables on Kenya Bond Market. The researcher was to determine the prevailing theories that contribute the study. Further, empirical studies were reviewed based on the current studies that conjointly contribute enhancement of the subject of study. The outline of the chapter is discussed.

#### **2.2 Theoretical Review**

The section discusses theories that contribute to the study.

##### **2.2.1 Market Segmentation Theory**

This theory was developed presuming that one cannot use interest rates that are short term based to predict with certainty future interest rate. Due to differences in behaviour of short-term interest rates and future interest rates, an analysis must be done on each at a time without constituting them together. It is on this note that the government and corporate bonds can be explained. Following the principle of this theory, the market variables for short-term government and corporate bonds are influenced by companies need for external financing for short-term assets like debtor and inventories (Kanwal & Nadeem, 2013).

Capital intensive investments both in government and the corporate level will determine the maturity level of long-term bonds. Investors and borrowers will try to hedge the market at each maturity length of the bond to beat the market and earn the profit. This is the point where at some time, the government or corporate can decide to recall the bond issued earlier. Understanding the behaviour of sellers and buyers of

securities at each level of financing period is therefore important to understand how interest rates both in short and long term contributes to their decision making whether to choose short-term bond or long-term bond financing (Ganatra, 2016).

The importance of this theory to the study is that it looks at the behaviour of investors and other players in the bond market such as banking sector. Banks would always prefer to finance short-term projects and issue short-term bonds while the government would go for long-term bonds. Additionally, insurance companies prefer long-term projects as well. Hence, the theory elaborates on why there is need to establish how interest rate at a given time; whether short term or long term would predict future rate which can have the impact on bond market growth in the country.

### **2.2.2 Flow Oriented Model**

The proponent of this model was Dornbusch and Fisher around 1980. According to their argument, changes in interest rates at a country level changes the international competitiveness of companies and the statement of a balance of trade, which again affects the GDP of the country. Furthermore, in the NSE and capital markets, share prices of securities are influenced by changes in foreign exchange rates which both effect to the performance of the companies listed as participants in the development of the Financial market (Ndunda, 2016).

Going forward, the model maintains that variability in exchange rates affect the competitiveness of all the financial markets such as bond and derivative markets or equity markets. It then proceeds that appreciation of exchange rates affect exporters negatively which is also likely to affect the quantities of goods and services; in this case amount of money exchanged at a time in the market. This topic, therefore, can be

connected to the topic of study as it deals with macroeconomic factors which are considered necessary for the study to achieve its objectives (Ndunda, 2016).

### **2.2.3 Market Efficiency Theory**

Understanding market the theory of market efficiency requires market participants to understand forms of market efficiency including Strong form, semi-strong form and the weak form market efficiency. According to Bodie et al. (2007), weak type market potency assumes this share costs replicate historical market knowledge, that are past share costs and commerce volumes. This can also be explained using the random walk hypothesis. On semi-strong market efficiency; past prices, publicly available information such as financial statements and fundamental data on the company's service and product chain, dividend, stock splits announcement, professionalism of management and future performance in terms of earnings are fully reflected in the share prices. Thus, no capitalist will create the superior profit by taking advantage the basic analysis in the market. Strong form of market efficiency, the past prices, all private information and publicly available information as well as of market participants are readily available hence share prices are always fair and not investor can beat the market. Connecting this theory to the topic of the study, it is evident that market efficiency determines the development of financial market such as the bond market. Market efficiency facilitates macroeconomic variables which are the biggest determinants in the success of the bond market in any world. As a result, the government should consider ensuring that market efficiency concept is well established in the market (Myers, 2014).



#### **2.2.4 Expectation Theory of Term Structure of Interest Rates**

Reilly and Brown (2000), expectations theory holds that any long-run interest rates merely represent the mean value of current and future 1-year interest rates expected to prevail over the maturity of the problem.

The theory postulates that long-run interest rates mirror the expectations of the market of future short-run interest rates; so a downward sloping yield curve implies that short-run rates are expected to fall in future, (Winfield and Curry, 1995). Bonds with the short time to maturity tend to have reduced risk of capital loss emanating from movements in interest rates as opposed to long-dated bonds thereby prompting investors to demand a risk premium on such bonds resulting in an upward sloping yield curve.

### **2.3 Determinants of a Bond Market Development**

#### **2.3.1 Interest Rate**

Level of investments for a country depends on the interest rate. People who invest their money would demand compensation either periodically or after a given time. Hence, an interest rate expressed in percentage is the amount to a borrower by the lender on the capital loaned for a specific period of time. The high-interest rate can result to drop in investment activities while a low-interest rate can spur economic activities. Most investment companies, as well as government, use more debt in form of bond to finance their long-term economic activities. This clearly demonstrates that there exists a relationship between debt financing in form of bond and interest rate in the country (Ouma & Muriu, 2014).

#### **2.3.2 Exchange Rate**

The success of the bond market in any country may be attributed to the relative effectiveness of the foreign exchange rate within the country. This is often as a result

of foreign exchange rates plays an important role in all aspects of investments within the economy. If exchange rates are stable then this is likely to have an influence on the development of the bond market as it affects the trade balance as well as monetary and fiscal policies in the country. Kenya is considered a country, which has attracted the stability of forex exchange market hence having influence in capital flight hypothesis speculation and market speculation theory in the foreign exchange market (Longei & Ali, 2017).

According to Kirui (2014), the currency volatility has an influence on bond returns in the market. In cases where currency appreciates and the country is an exporter of goods and services, there will be a decrease in the level of competition of its exports, subjecting the country's domestic bond market into negative returns. In this regard, the companies listed at the bond market which majorly deals with export services will be less profitable hence not able to issue sufficient bonds that attract investors in the market. However, the opposite can also happen in a case of depreciation of currency hence allowing investors to invest in corporate bonds.

Promoting the bond market require exchange rate flexibility. Introduction and implementation of pegged exchange rates are thought of aspects which may inspire foreign investors to underestimate the risks of lending to banks and companies. This can result in increasing competition through foreign investors investing directly into the bond market either through the government or corporate bonds. Liquidity of the secondary bond market is likely to go up as a result of an appreciation in the foreign currency. However, fluctuations in the exchange rate can cause foreign investors to transfer their bond investments back to their home countries (Ngabirano, 2016).

### **2.3.3 Economic Size**

This is one of the structural variables. Larger economy may need financing not only from the banking system but also on security market, which may meet these extra financing requirements. Less developed economies might not have strict conditions of issuing bonds because of the costs associated with issuance on the other hand, larger economies may through regulation reduce the average cost of lending and risks associated with it and hence therefore promoting easy access of government bond and private investments to the market. This can be explained by the principle of economy of scale. The size of the economy is measured using gross domestic product, which is expressed by purchasing power parity.

### **2.3.4 Trade Openness.**

This is the ratio of Exports to the gross domestic product. If a country has a higher level of openness to trade this may lead to increase in production which may need financing to enlarge in order to enhance production. As the economy becomes more open, then the domestic borrowing may be crowded by foreign borrowing.

### **2.3.5 Gross Domestic Product**

This is the total value of services and goods that are produced in a country for a certain period of time. On the other hand, economic growth is sustainable increase in the amount of services and goods generated in an economy for a given time period. Notably, economic growth is different from economic development. Economic development is as a multi-dimensional procedure of progress focused on the advance of the community and therefore the state and purpose is making additional basic wants, as an example, food, shelter, and health care and broadening their distribution, raising ways in which of life and individual shallowness, and growing economic and social selection" (Todaro, 2005).

### **2.3.6 Unemployment**

This is the level of individuals qualified and willing get employment at a reasonable employments rate, but they are unable to get opportunities for employment. On the other hand, when the employment rates are relatively is high, work it is not only difficult tom find opportunity but also it is less remunerating as individuals as of now holding employments may think that it's hard to get wage increments or advancements.

### **2.3.7 Inflation Rate**

Inflation is characterised by the general increase in prices of goods services and goods in the market over time with a reduction of the number of goods available to the consumers. Increase in inflation in an economy increases the cost of living for a majority of the consumers such as in developing countries where the high rate of unemployment is rampant. In scenarios where there is an increase in inflation rate, consumers shift their resources from investment in the security market to consumers. As a result, the demand for bond security falls leading to a decrease in the total volume of bonds traded in the bond market (Kang & Pflueger, 2013).

When this occurs, monetary policies must be put in place to counter check the balance and tighten the policies to increase nominal risk-free in order to raise the discount rate to attract investors. Additionally, proponents of inflation argue that inflation plays a significant role in equalisation the capital structure of the corporate further because the price of the firm. They argue that top inflation pushes investors to sell their bond securities in exchange for shares leading to a decrease within the debt-equity quantitative relation within the company. Changes within the rate of inflation, therefore, is seen as an element that triggers changes in wealth distribution between debtors and creditors within the firm (Kimani & Mutuku, 2013).

### **2.3.8 International Trade**

Exchange of services and goods across borders is called international trade. Since present day economies are, exceptionally related, financial specialist's frequently think about the effect of free trade agreements. They additionally consider the circumstances and end results of trade imbalances, which happen when the amount of products and ventures that a nation sends out varies essentially from the amount of merchandise and services its citizen's imports.

## **2.4 Empirical Review**

### **2.4.1 International Empirical Review**

Matias and Ignacio (2006) studied the growth of bond markets around the world. With a sample of 100,000 corporate bond issues where 90 per cent were bonds issued in developed countries. 66 per cent constituting U.S. domestic bonds. Bonds issued in less developed markets also formed part of the sample. The study observed that an effective examination of bond market development should consider a multidimensional concept, one that does not only refer to the size of the bond market but also encompasses other characteristics of the market, type of issuer and type of instruments. The indicators for bond market development enclosed the scale of the bond market as a proportion of total stock of bonds to value, the composition of the bond market i.e. government bonds, corporate bond, characteristics of instruments including bond maturity, credit rating, principal size, the currency of issuance as well as type of issuers.

Hassan, Fauzi and Azhar (2013) studied the economics factors on the determinants of stock exchange come in Asian nation for the amount of 1996 – 2011 employing a proxy from stock exchange come in Asian nation. The determinants studied were supported rate of loaning, foreign exchange rates, GDP and shopper indicant (CPI). In

knowledge analysis, Johansen co-integration check, vector error correlation model and also the granger casualty test were applied. The empirical result disclosed that there are a protracted run and short relationship between the Malaysian stock exchange come and also the determinant factors.

Eichengreen and Luengaruemitchai (2004) in their original paper, explored the determinants of the security showcase advancement of an example of 41 creating and created nations over the period 1990– 2001, more spotlight on Asia. They noted that trade openness and size of the economy, equator distance, profile of the investment, and capital accounts openness will have an influence to bond market growth. Concentration of the banks spread of rates of interest, volatility of exchange rate, bureaucratic quality; fiscal balance has a negative impact on the bond market. For the corporate bonds market, it was evident that size of the economy, openness to trade, embezzlement of funds, local credit, accounting methodologies, and the bureaucratic quality will be seen as important and positive. Burger and Warnock (2006) inspected the determinants of bond markets' advancement utilizing a sample of forty-nine created and underdeveloped countries. They found that arrangements and bonafide administrations matter. Besides, better-chronicled inflation, that reflects stable economies, supports each company and sovereign security markets. They conjointly discovered that there is complementarily between the bond markets and therefore the banking industry. The conclusion was that there are similar conditions required for bond markets to grow and banking system development.

#### **2.4.2 Local Empirical Review**

Longer and Ali (2017) evaluated the determinants of the bond market index at the NSE with consideration of key variable namely; interest rate, inflation and exchange rate. A descriptive research design was employed with a target population of 42

investment banks and 21 stockbrokers. For each category, 2 staff members were selected and the sample size of the study was 96 staff members chosen. Regression analysis was used and data were analysed by SPSS version 22. The study revealed that interest rate, inflation and exchange rate were found to be satisfactory variables in the bond market index, with a coefficient of determination of 46.2%.

Githinji (2013) investigated the impact of chosen economic science variables on bond market development in African nation. A causative analysis style was used along with secondary data for a period between 2008&2012. The target population was 56 Treasury bonds, 20 corporate bonds and 5 infrastructure bonds. Descriptive and regression analysis was done in the study. It established that three macroeconomic (bank size, exports and fiscal policy) had no effect on bond market development.

Ganatra (2016) examined the factors affecting the performance of infrastructure bonds in Kenya, a case of KenGen infrastructure bond. The research study was to determine the effect change in inflation rate, foreign exchange and interest rate on infrastructure bond performance for a period of 2010-2015 using secondary data. The study used a reciprocity and causative analysis style. Regression model and correlation analysis were disbursed to ascertain the connection of variables and to establish the strength of linear association severally. The study unconcealed that there was a negative insignificant relationship between interest rates and exchange rates and also the performance of the KenGen bond. This inexplicit that the company's bond is negatively influenced by the extent of interest rates within the market. The investigation to boot noted that the connection between rate of inflation and infrastructure bond performance is positive.

Ngabirano (2016) assessed the determinants of corporate bond performance in Kenya. The objective of the study was to examine the internal and external determinants of

corporate bond performance. A causal research design was applied to a population of 18 corporate issues listed on the NSE. Regression and correlation analysis were used together with SPSS for data analysis. The study found out that all the internal determinants had a negative insignificant relationship with bond performance except the bond issue size and the coupon that had a beta coefficient that was positive. The study also found out that all external determinants had a positive insignificant relationship with bond performance except the three determinants namely exchange rate, inflation rates, interest rates, and inflation rates that has a beta coefficient that was negative.

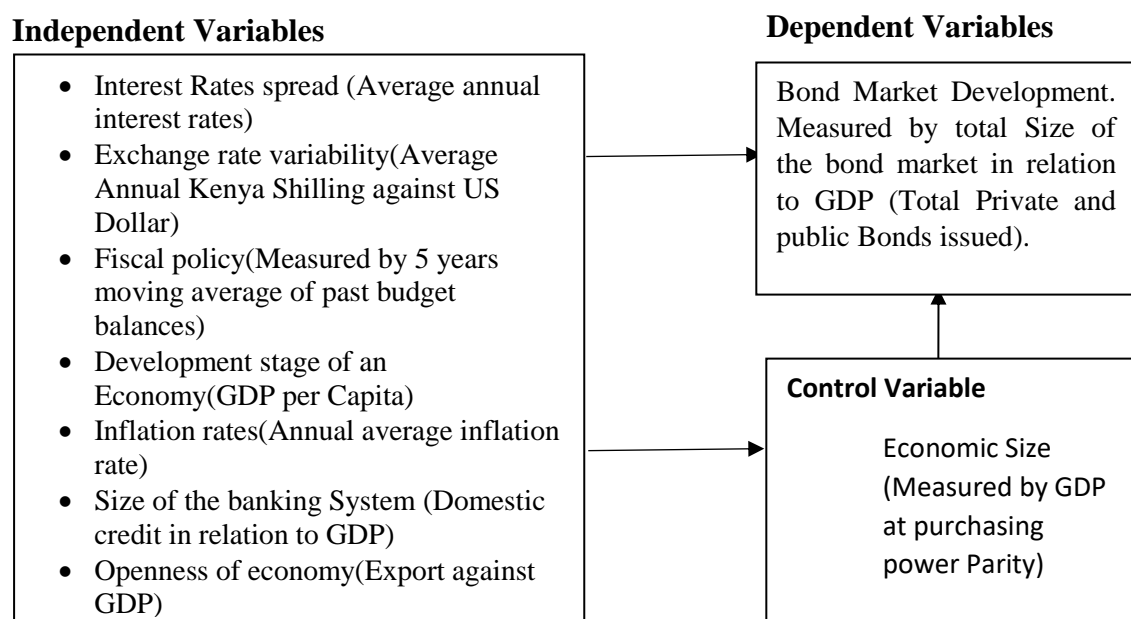
Ndunda (2016) analysed the impact of macro-economic variables on the securities market capital of Kenya Securities Exchange (NSE) with a special respect to the chosen economics factors, including rate of inflation, exchange rates, pecuniary resource, interest rates and real GDP. The study followed a descriptive analysis style and used secondary knowledge for a spanned amount of 2005 - 2014. Knowledge was analysed victimization SPSS version 21. Results indicated that there is a positive relationship between the chosen securities market performance and macroeconomics variables.

## **2.5 Conceptual framework**

Mugenda and Mugenda (2003) argued that abstract framework could be a graphical or diagrammatic illustration of the link between variables during a study. This helps the scientist to spot the link between the variables. During this study, the abstract framework supported independent variables that included rate of exchange, rate of inflation, funds and Gross Domestic Product at purchasing power parity, Export, Domestic debt, and the dependent variable is Bond market development in Kenya. It will also provide short outline on the link between economics variables and Bond



Market development.



*Figure 1.1: Conceptual Framework*

## 2.6 Summary of Literature Review

The current financial environment requires a critical review of the macro-economic factors, which may hinder or spur bond market development. As this aimed to see the impact of macro-economic factors on bond market development in Kenya, several theories have been adopted in the study. Market segmentation theory, flow oriented model and market efficiency theory. These theories try to make a case for the connection between the variables i.e. independent and dependent variables. This study has adopted exchange rate, interest rate and inflation rate to establish how they each affect bond market development.

Additionally, several studies have been undertaken on the study. The researcher identified several recent studies undertaken on the topic and revealed their findings as well as the methodology that was used. Such studies include Ngabirano (2016) and

Ganatra (2016) among others. However, there is still a low performance of the bond market in Kenya and as a result, either the previous findings have not been subjective enough in address the topic or the public is still not aware on the various macroeconomic factors. The study, therefore, relied on this existing gap to establish the effect of macroeconomic factors on the development Kenya Bond Market.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

In this chapter the focus was to analyse the collected data to in order to establish the effect of macro-economic variables in development of bond market. By the use regression analysis, descriptive statistic and correlation analysis, the results of the study were presented in table forms as shown in the following sections.

#### **3.2 Research Design**

The research design is a technique that the researcher uses to arrive at the research objectives. For this study, the causal design was adopted since it explains the cause and effect relationship among variables, which comprise of interest rate, exchange rate and inflation rate, GDP at purchasing power parity, Export, Economic size as independent variables and development of bond market as the dependent variable. According to Mugenda (2003), the casual design is important as it explores the relationship that exists between variables or that could exist.

#### **3.3 Target Population**

Population is the entire object or people under consideration for the study (Cooper & Schinder, 2003). For this study, the target population was the bond market in Kenya, which has approximately 81 issued bonds comprising of corporate, government and infrastructure bonds.

#### **3.4 Data Collection**

The method of collecting data is Census method. Census method was adopted as it considers all the target population for the study. Additionally, data collection extracts was used to help in accessing the information since they give accurate information

based on the data gathered from time series and annual reports of the Nairobi Securities Exchange (NSE), Central bank of Kenya (CBK), and Kenya National Bureau of Statistics (KNBS) for a period of 2007 – 2017)

### **3.5 Data Analysis**

#### **3.5.1 Diagnostic Test**

The study carried out normality test. This test was applied to confirm that variables employed in the analysis are normally distributed. The Jarque- Bera statistics check (Jarque and Bera 1980) was used to perform the check. The check used Skewness and kurtosis to test for normality of variables used. Kurtosis is a statistical measure used to describe the distribution; it measures the extreme values in either tail. This implies information with high kurtosis have serious tail whereas information with low kurtosis have a light tail.

The study also carried out correlation analysis. One assumptions of the classical linear regression model (CLRM) is that exact collinearity should not exist between two or more explanatory variables. Simply put no exact linear relationship between two explanatory variables should exist. When the coefficient of correlation is near to or equal to one then a case of perfect multicollinearity is inferred.

However as long as collinearity is not perfect. Ordinary Least Squares (OLS) estimators still remain Best Linear Unbiased Estimators (BLUE) even though one or more of the partial regression coefficients in a multiple regression can be individually statistically insignificant (Gujarati 1999). In this case testing Multicollinearity was looking at the degree of collinearity. Multicollinearity can be detected in different ways. Examples of these are a high R- squared but few significant t ratios which is one symptom of multicollinearity. Another way to detect this problem is to observe

high pairwise correlations among explanatory variables. If correlations are high, say in excess of 0.8, there is the possibility that some serious collinearity exists. The study measured the degree of multicollinearity using the explanatory variables to come up with a correlation matrix.

Homoscedasticity test was carried out. If all random variables inside the series have the equal finite variance, we check with that sequence as homoscedastic. It could additionally be referred as homogeneity of variance. Residuals will be tested for homoscedasticity the use of the Breusch–Pagan check, which plays an auxiliary regression of the squared residuals at the unbiased variables. From this auxiliary regression, the defined sum of squares is retained, divided via  $n$ , and then will become the check statistic for a chi-squared distribution with the degrees of freedom equal to the range of independent variables.

### **3.5.2 Data Analytical Model**

Data was collected and analysed for easy understanding and the making of inferences. It was edited, coded and analysed using statistical package of social sciences (SPSS) version 22. To determine the connection between independent and dependent variable multivariate analysis was developed.

The analysis borrows from Yibin Phelps and Stotsky (2013) who improved the model, which initially was used by Eichengreen and Luengnaruemitchai (2004) to include fixed asset estimation and account for both variables that vary with time as well as those which do not vary with time. In this case, variables were classified as Macroeconomics, structural variables and financial development in nature.

Macro Economics include Interest rates, Exchange rates variability, inflation rates, and Fiscal balance. Economic size is will be considered as the structural while size of the

banking sectors and spread in interest rates are the financial sector variables, GDP per capita will be categorized and development. The model is as follow:

$$\gamma_t = \beta_0 + \beta_1 X_{1t} + \beta_2 X_{2t} + \beta_3 X_{3t} + \beta_4 X_{4t} + \beta_5 X_{5t} + \beta_6 X_{6t} + \beta_7 X_{7t} + \varepsilon_t$$

Where  $t = \text{Years, 2013-2017}$

$\gamma_t = \text{Total Bond market size in proportion to GDP in year } t;$

$\beta_0 = \text{Constant}$

$\beta_0 - \beta_3 = \text{Coefficient of the explanatory variable}$

$X_1 = \text{Interest rates spread (Average annual rates)}$

$X_2 = \text{Exchange rate variability (Annual Average Kenya Shilling Vs Dollar)}$

$X_3 = \text{Inflation rate at a time}$

$X_4 = \text{Fiscal policy (Budget balance spread in relation to GDP)}$

$X_5 = \text{Economic Size (GDP at purchasing power parity)}$

$X_6 = \text{Banking system size (Domestic credit in relation to GDP)}$

$X_7 = \text{Openness of economy (Export against GDP)}$

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7, - \text{Coefficient of independent variables}$

$\varepsilon_t = \text{Independent normal distribution Error term with mean Zero}$

### 3.5.3 Data Analytical Model

The variables in the model were measured as per below criteria.

Bond market development is the independent variable represented by  $\gamma_t$ . It was measured by total bond market size (Issues bond in a year) in proportion to annual GDP. Interest rate spread is an independent variable, which is the distinction between the average borrowing rate and average lending rate. Exchange rate variability is an independent variable measured by:

$$(V_t) = \frac{E_t - E_{t-1}}{E_{t-1}}$$

Where  $E_t$  - is the highest spot rate in a given year of a dollar and  $E_{t-1}$  is the lowest. Inflation is an independent variable, which was measured by consumer price index. Fiscal policy was measured by moving average for 5 years budget balance. Economic size was measured by purchasing power parity; banking system size is measured by Domestic credit in relation to GDP and openness of economy i.e. measured by the amount of export in relation to GDP annually.

### 3.6 Statistical Test of Significance

The research applied Hypothesis below to test the relationship between bond markets Determinants and bond market development at 5% level of significance: H0: No significant relationship between developments of bond market with the economic size, exports, banking system size, spread of interest rates, and variability of exchange rate, size of the economy, Domestic credit rating and economic growth. H1: there is a significant relationship between economic size, exports, banking system size, interest rate spread and exchange rate variability with the development of bond market.





## CHAPTER FOUR

### DATA ANALYSIS AND INTERPRETATION OF RESULTS

#### 4.1 Introduction

This chapter analysed collected data to establish the effects of macro-economic variables on bond market development in Kenya. Using descriptive statistics, regression and correlation analysis were done and the results of the study presented in table forms as shown in the following sections.

#### 4.2 Diagnostic Test

The researcher carried out diagnostic tests on the collected data. Multicollinearity test was done. Tolerance of the variable and the Variance Inflation factor (VIF) value were used. Multicollinearity does not exist where tolerance values are more than 0.2 and where VIF value is less than 10. Multiple regressions are applicable if strong relationship among variables does not exist. The study found out that the variables had VIF value  $<10$  and tolerance values  $>0.2$ . The table below shows multicollinearity does not exist between the dependent and the independent.

*Table 4.1: Multicollinearity Test for Tolerance and VIF*

Collinearity Statistics	Tolerance	VIF
Interest rates Average Quarterly	.282	5.509
Exchange Rate	.299	5.026
Inflation Rate	.374	5.759
Budget Deficit Vs GDP	.280	5.880
GDP @PPP	.243	3.060
Domestic Credit	.209	6.291
Export to GDP	.216	1.244

Shapiro-walk test and Kolmogorov-Smirnov test was used for normality test. According to the null hypothesis, the secondary data was not normal. If the p-value recorded were more than 0.05, the researcher would reject it. The results of the test are as shown below.

*Table 4.2: Test of Normality*

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Sta	n	Significance	Statistic	df	Sig.
Bond Size	.105	33	.200*	.944	33	.087
Interest rates Average Quarterly	.246	33	.000	.883	33	.002
Exchange Rate	.171	33	.016	.903	33	.006
Inflation Rate	.295	33	.000	.615	33	.000
Budget Deficit Vs GDP	.450	33	.000	.305	33	.000
GDP @PPP	.238	33	.000	.858	33	.001
Domestic Credit	.183	33	.006	.915	33	.013
Export to GDP	.225	33	.000	.843	33	.000

Source: Study findings 2018

Shapiro-Wilk tests and Kolmogorov-Smirnova tests showed values greater than 0.05 which means that the data used was normally distributed. Therefore, null hypothesis was rejected. For that reason the data was appropriate for conducting parametric tests like regression analysis, analysis of variance and Pearson's correlation tests.

Autocorrelation checks were run in order to take a look at for correlation of error phrases across time periods. Autocorrelation was examined the usage of the Durbin Watson test. A durbin-watson statistic of 1.829 indicated that the variable residuals have been no longer serially correlated on the grounds the values were within the range between 1.5 and 2.5 which are acceptable.

Table 4.2: Autocorrelation Test

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.435 <sup>a</sup>	.189	.781	1.2106	1.829

a. Independent: (Constant), Export to GDP, Interest rates Average Quarterly, Inflation Rate, Budget Deficit Vs GDP, Domestic Credit, Exchange Rate, GDP @PPP

b. Dependent Variable: Proportion of bond VS GDP

**Source: Research Findings (2018)**

### 4.3 Descriptive analysis

The table below gives a summary of the descriptive analysis and statistics from the regression data, which provides the variability and measure of central tendency of the data

Table 4.3: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
	Statistic	Statistic	Statistic	Statistic	Statistic
Bond Size	33	20	92	53.18	21.888
Interest rates Average Quarterly	33	13	19	15.55	1.905
Exchange Rate	33	67	103	86.67	11.698
Inflation Rate	33	.40	4.00	.9109	.64763
Budget Deficit Vs GDP	33	.4000	38.0000	5.408182	5.9623367
GDP @PPP	33	4.0000	6.7000	5.336364	.9723741
Domestic Credit	33	23	37	29.88	4.114
Export to GDP	33	1.1000	2.3000	1.948485	.3392282
Valid N (listwise)	33				

**Source: Research Findings (2018)**

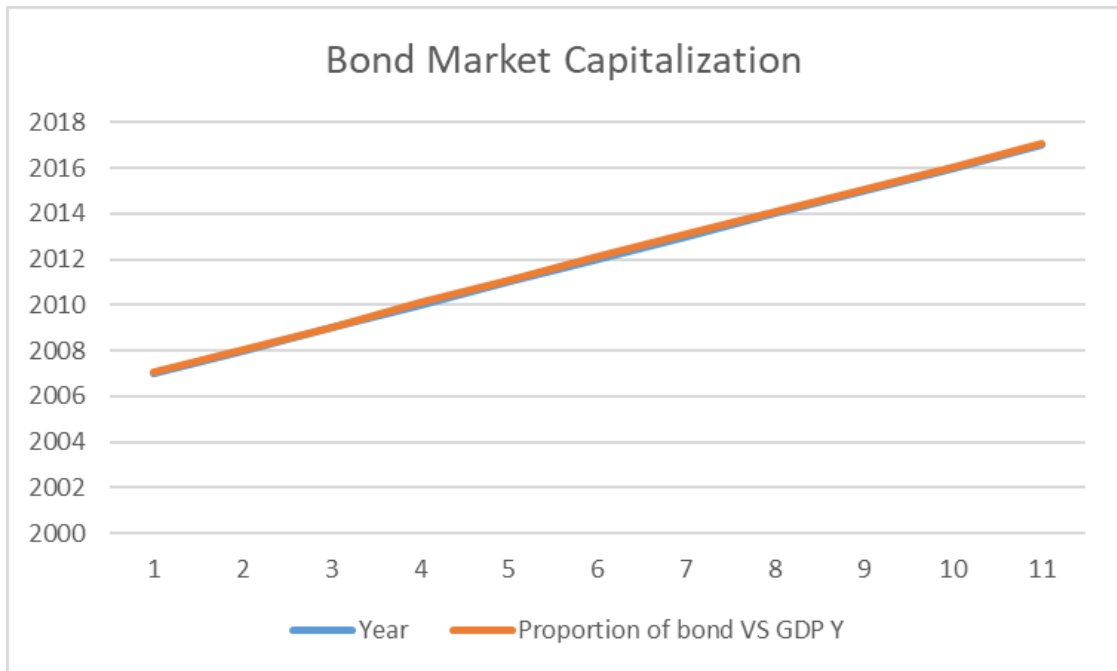
#### 4.4.1 Bond Market size in proportion to GDP

In this study the dependent variable bond market development. This is computed as the Size of the bond market in proportion to the Gross Domestic Product (GDP) for a given period. This include government bond (Treasury Bonds) and corporate bond.

The assumption is that total bond market size is positively correlated with the ability to mobilize funds in an economy. The basic role of a bond market is to provide an environment where Treasury and corporate bond are traded in a regulated manner.

The data finding are as fellow:

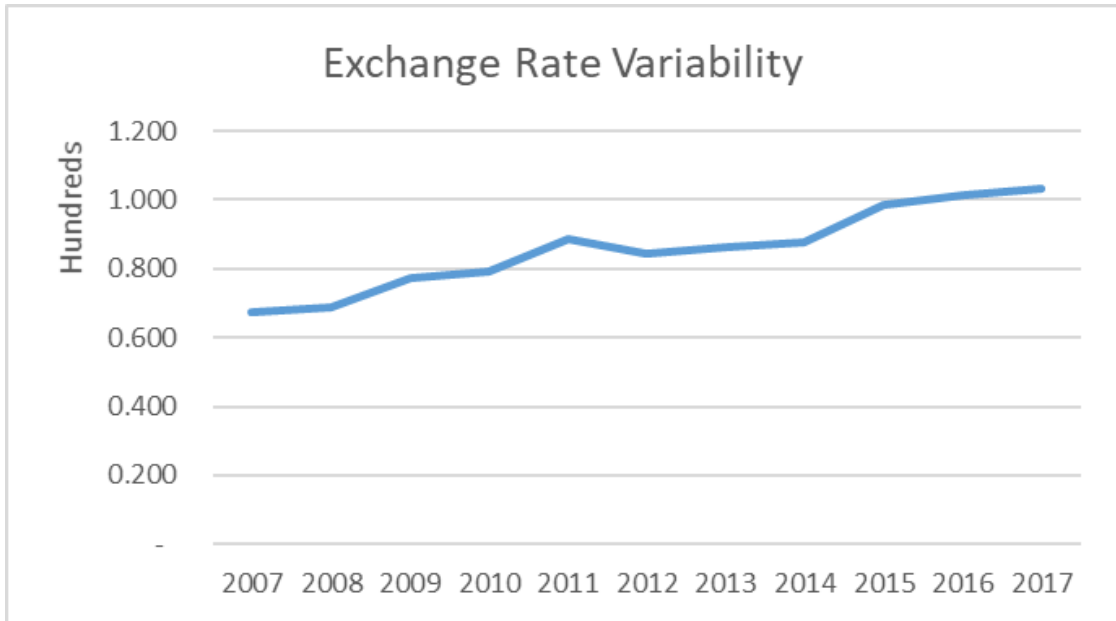
Figure 4.1 Bond market capitalization



### 4.3.2 Exchange rate variability

This checked the trends in Exchange rates of Kenya shillings against United States Dollar. Findings were as follow.

Figure 4.2 Exchange rate variability

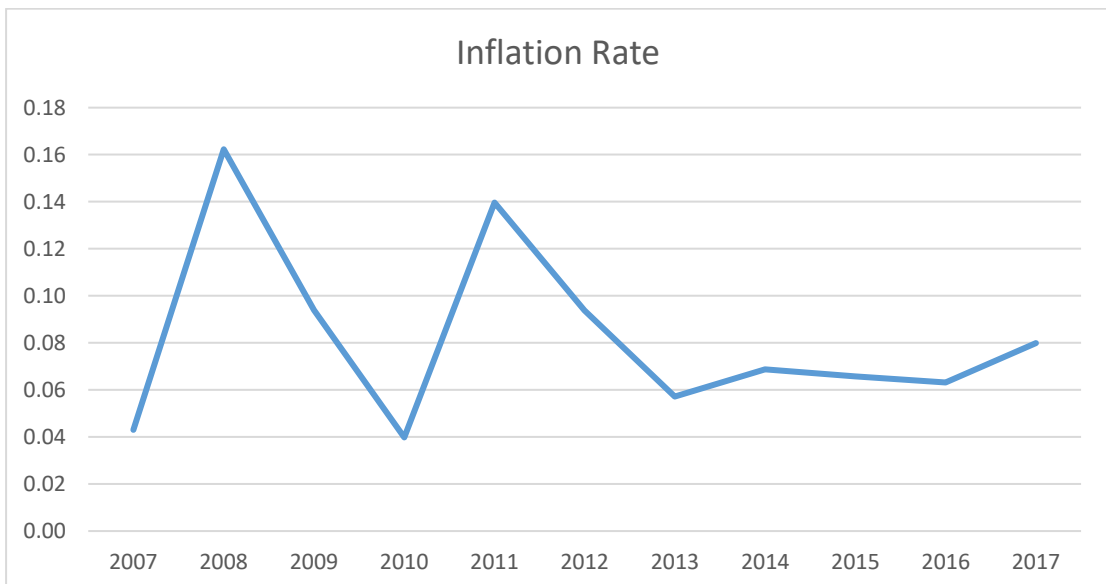


From the data above, there has been exchange rate variability from 2007 to 2017.

#### 4.3.3 Inflation Rate

The inflation rate is assumed to have varied over time. The study evaluated the inflation rate trend over the period of 11 years as shown in the Figure below.

Figure 4.3 Inflation rate

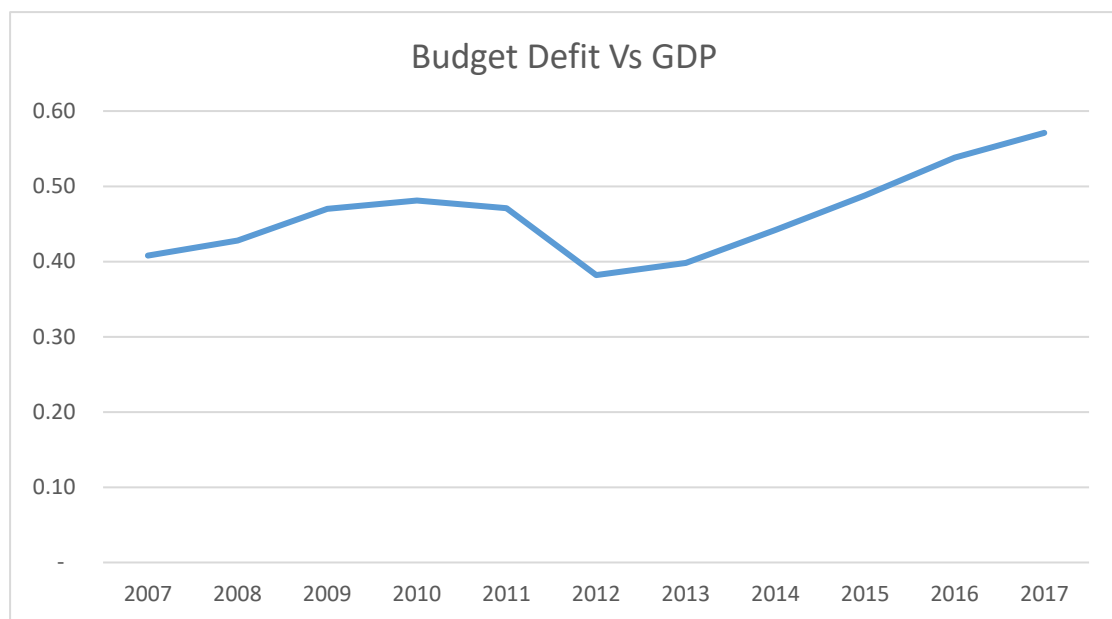


High rate of fluctuation in inflation has been noted in the finding over the period. This has a direct impact on domestic investment and foreign investment, which also affects the GDP.

#### 4.3.4 Budget deficit in proportion to GDP (Fiscal Policy)

The study aimed at checking trend in Fiscal policy which was measured by 11 years moving average for the past budget deficit. The study findings are as follows:

Figure 4.4 Budget deficit in proportion to GDP

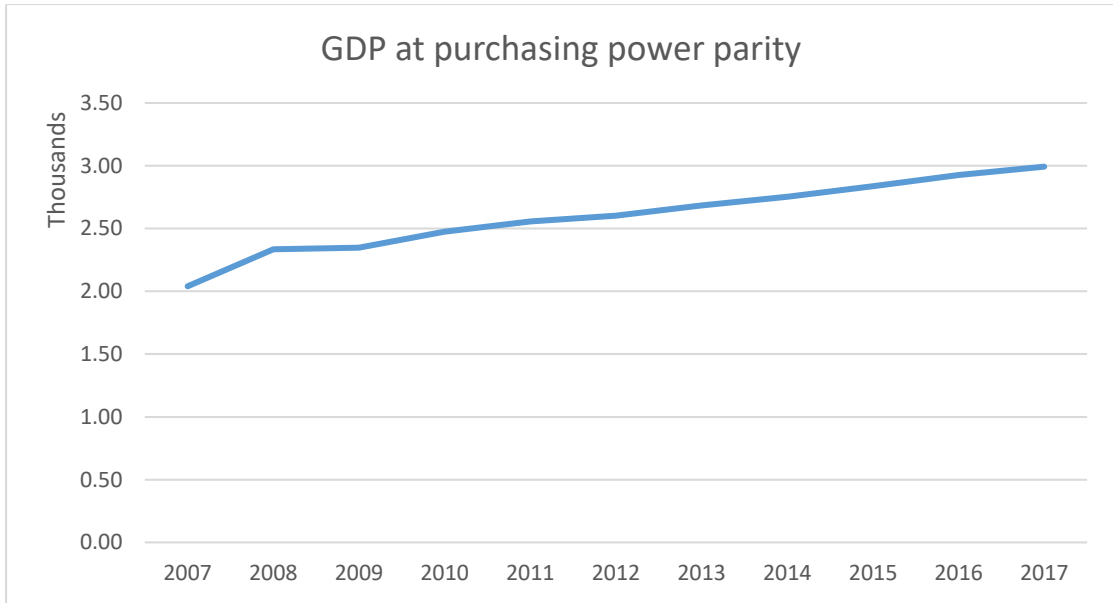


As the GDP increases, the deficit also increases hence the need of government funding to cover the deficit hence the need for need for domestic borrowing.

#### 4.3.5 Size of the economy measured as GDP at purchasing power parity

The Gross Domestic Product (GDP) at purchasing power parity measured the size of the economy. The Data findings were presented as below.

Figure4.5 GDP at Purchasing Power Parity

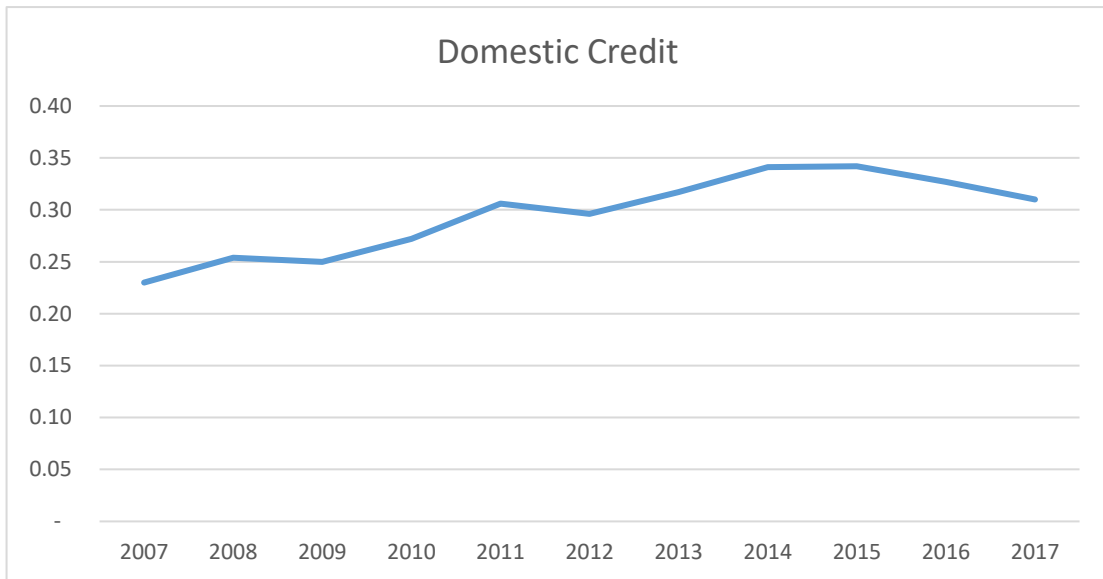


The finding indicated that the size of the economy measured by GDP at Purchasing power parity in an economy has continued to grow from 2007 to 2017 though there is a slow growth in 2008 and 2009.

#### **4.3.6 Banking system size as a proportion to the GDP**

This was measured by domestic credit provided by the banking system to private sector relative to GDP. Banks serves as dealers and market makers and their presence is required for the event of a liquid and functioning bond market. They compete in providing finance and hence they can deprive bond market share.

*Figure 4.6 Domestic Credit in proportion to GDP*



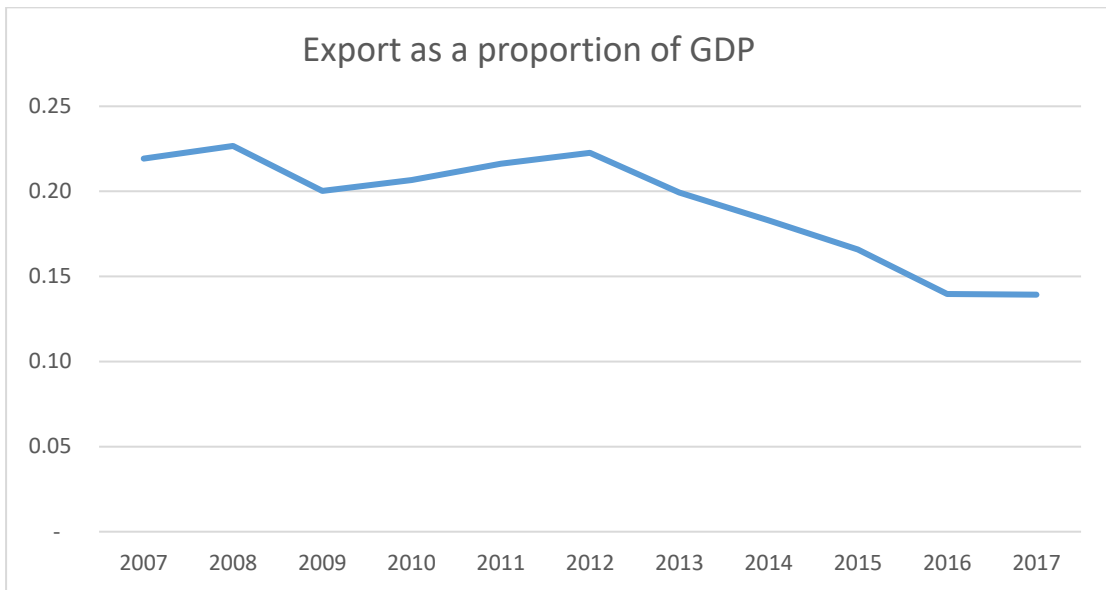
According to the findings, there has been continuous growth in domestic credit despite decline in 2015, 2016 and 2017, which may be attributed to interest rates capping.

#### **4.3.7 Export as proportion to GDP**

This study investigated trend in movements of exports over the period of study. This indicates the openness to the economy. The findings are presented as follows.



Figure 4.7 Exports as a proportion of GDP



As per the findings, there has been a notable decline of exports except in 2012 where there was a slight increase. As the GDP, increase the export decreases.

#### 4.5 Correlation Analysis

The association between any two variables used in the study is established using correlation analysis. This relationship ranges between (-) strong negative correlation and (+) perfect positive correlation. Pearson correlation analysis was used in this study to analyze the level of relationship between the macro-economic factors independent variables and bond market dependent variables.

Table 4.5: Correlations

		<b>Correlations</b>				
		Bond Size	Interest rates Average Quarterly	Exchange Rate	Inflation Rate	GDP @PPP
Bond Size	Pearson Correlation	1	.117	.170	-.121	-.229
	Sig. (2-tailed)		.518	.343	.503	.200
	N	33	33	33	33	33
Interest rates Average Quarterly	Pearson Correlation	.117	1	.359*	-.265	-.552**
	Sig. (2-tailed)	.518		.040	.136	.001
	N	33	33	33	33	33
Exchange Rate	Pearson Correlation	.170	.359*	1	-.393*	-.844**
	Sig. (2-tailed)	.343	.040		.024	.000
	N	33	33	33	33	33
Inflation Rate	Pearson Correlation	-.121	-.265	-.393*	1	.387*
	Sig. (2-tailed)	.503	.136	.024		.026
	N	33	33	33	33	33
GDP @PPP	Pearson Correlation	-.229	-.552**	-.844**	.387*	1
	Sig. (2-tailed)	.200	.001	.000	.026	
	N	33	33	33	33	33

**Source: Research study Findings (2018)**

#### 4.5 Regression Analysis

A regression analysis was carried out on all bonds issued in the market against bond market development measured by the market size, which represented by seven variables namely, interest rate spread, exchange rate fluctuations, inflation rates, size of the economy, fiscal policy, banking size and openness to the economy. The regression equation was as follows:

$$\gamma_t = \beta_0 + \beta_1 X_{1t} + \beta_2 X_{2t} + \beta_3 X_{3t} + \beta_4 X_{4t} + \beta_5 X_{5t} + \beta_6 X_{6t} + \beta_7 X_{7t} + \varepsilon_t$$

The regression analysis was executed at a significance level of 5%. The critical value obtained from the F – table was measured against the one acquired from the regression analysis.

Table 4.6: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.435 <sup>a</sup>	.189	.781	1.2106	1.829

a. Predictors: (Constant), Export to GDP, Interest rates Average Quarterly, Inflation Rate, Budget Deficit Vs GDP, Domestic Credit, Exchange Rate, GDP @PPP

b. Dependent Variable: Proportion of bond VS GDP

**Source: Research Findings (2018)**

R squared, being the coefficient of determination shows the deviations in the response variable that is because of variations and changes in the predictor variables. From the outcome in table above, the value of R square was 0.189, a discovery that 18.9 percent of the deviations development of bond market in Kenya which is caused by interest rates variability, bank size, GDP at purchasing power parity, inflation, exports and domestic borrowing. Other factors not included in the study accounts for approximately 77.1 percent of the determinates of bond market development in Kenya. Also, the results revealed that there exists a strong relationship among the selected independent variables and the bond market development as shown by the correlation coefficient (R) equal to 0.435. A durbin-watson result statistics of 1.829 shows that the residuals variables were not serially correlated. This is because the value was more than 1.5.

Table 4.7: Analysis of Variance

ANOVA <sup>a</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2895.575	7	413.654	.832	.001 <sup>b</sup>
	Residual	12435.334	25	497.413		
	Total	15330.909	32			

a. Dependent Variable: Bond Size

b. Predictors: (Constant), Export to GDP, Budget Deficit Vs GDP, Inflation Rate, Interest rates Average Quarterly, Exchange Rate, Domestic Credit, GDP @PPP

**Source: Study Findings (2018)**

The value 0.001 significance value which is much less than  $p=0.05$ . This implies that the model was statistically significant in predicting how the chosen macro-economic elements would have an effect on the improvement of the bond market.

Coefficients of determination were used as indicators of the direction of the association between the independent variables and the commercial banks' financial performance. The p-value under sig. column was used as an indicator of the significance of the association between the dependent and the independent variables. At 95% confidence level, a p-value of less than 0.05 was interpreted as a measure of statistical significance. As such, a p-value above 0.05 indicates that the dependent variables have a statistically insignificant association with the independent variables.

The results are indicated in table 4.5

*Table 4.8: Coefficients of the model*

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	2.307471	0.243		.841	.001
Interest rates	0.063906	0.520	-.410	-1.041	.308
Average Quartely	0.265145	0.858	-.153	-.335	.741
Exchange Rate	0.004525	0.872	-.037	-.184	.855
1 Inflation Rate	0.00012	0.697	-.245	-1.291	.208
Budget Deficit Vs GDP	0.01679	0.186	-.812	-1.063	.298
GDP @PPP	0.00102	0.2783	.395	.755	.457
Domestic Credit	0.0048	0.3295	.665	1.081	.290
Export to GDP					

**Research study Findings (2018)**

From the above effects, its miles glaring that independent variables produced high quality and statistically vast values for this study (high t-values,  $p < 0.05$ ) apart from budget deficit, domestic credit and export to deficit; they produced positive but statistically insignificant values for this study.

The following regression equation was estimated:

$$Y_t = 2.3074712 + 0.063906X_1 + 0.265145X_2 + 0.004525X_3 + 0.01679X_5$$

#### **4.4 Interpretation of Results**

The coefficients and their signs are of particular importance to this study as they indicate the strength of the determinants in the model. As shown, economy size has a negative and negligible effect on bond market size at (1.68) %. An increase in the size of the economy thus led to a marginal proportionate decrease in bond market size. Exports and bank size are exhibited in the model to have no effect at all in bond market size with 0 % a piece. Interest rates were depicted to have a positive and larger effect on bond market size at 6.4%. An increase in interest rates, therefore, led to an appreciable increase in bond market size. Exchange rates equally showed positive and sizeable influence on bond market size at 26.5%. A favourable increase in exchange rates therefore led to a sizeable increase in the bond market size. Fiscal policy exhibited no influence on bond market size at 0 %. Finally, the development stage of the economy registered a positive 0.4% effect on bond market size. An upgrade from one stage of economic development to the next would thus yield a marginally larger bond market.

## **CHAPTER FIVE**

### **SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS**

#### **5.1 Descriptive Statistics**

The chapter summarizes the analysis in chapter four by highlighting the key findings. From the findings, conclusion was drawn and recommendations were given. Limitation of the study was discussed and further studies suggested.

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

The study was carried out with an aim of investigating the effect of macro-economic variables on development of bond market in Kenya. In order, achieve the above objective, a regression analysis was done. Bond market size was regressed against seven predictor variables namely, economy size; exports; bank size; interest rate spread; exchange rate variability; fiscal policy; and inflation for the period spanning 2007-2017. Data for dependent and independent variables were obtained from the CMA, CBK, KNBS and NSE and regression analysis carried out.

##### **5.2.1 Effect of selected variables on bond market development**

As per table 4.4 seven macroeconomic variables namely interest rates, Exchange rates, Inflation, banking system size, exchange rate, fiscal policy and economy size were analysed. The coefficient in a regression analysis give the magnitude of influence. In this study out of seven predictor variables there had a coefficient of zero. These variables are; Exports as a proportion of GDP, bank size measured by Domestic credit and fiscal policy measured by the fiscal budget balance in proportion to the GDP. The economic size measured by GDP at purchasing power parity had a

coefficient of -0.01679, which shows it has negligent impact on bond market development. This shows that one unit of change in economic size results leads to -0.01679 change in bond market development, which could have a minimal effect. A unit of change in interest rate spread resulted in 6.4% change in bond market development. An increase in interest rate led to an appreciable increase in bond market development. The finding shows that interest rate had the most significance influence on the bond market development with a coefficient of 6.4%.

A unit of change in the exchange rate resulted to change of 2.6% in the bond market development. The stronger the Kenyan currency is against dollar the more vibrant the bond market is. Inflation had a positive influence on the bond market at 0.4%, a unit change of GDP per capita led to an increase of 0.4% to bond market development, which has very little significance.

### **5.3 Conclusion**

In this study, seven macroeconomic factors were analyzed with an intention of establishing their effect towards the development of bond market. From the findings, the predictor variables showed a statistically significant relationship with the dependent variable. This was given by the P-value of each independent variable being zero.

From the results, we can conclude that Rates of interest, inflation and exchange rate variability had a positive influence on the development of bond market while size of the economy measured has a negative influence on bond market development. Bank size, exports and fiscal policy had no influence on bond market development. This was concluded from the Coefficients of the model.

#### **5.4 Limitations of the Study**

The study covered a period a time of eleven years from 2007 to 2017 to investigate the determinants of bond market development in Kenya. Seven macro-economic variables were tested namely interest rates, exchange rate variability, inflation rates, economy size, Exports, bank size and fiscal policy, other determinants for bond market may be there though in this study they were not tested. Different interpretation from these findings of the research study mas occurs as a result of the period covered which may be different from this particular study or if the variables used in the regression analysis are different from the one used in this study.

#### **5.5 Recommendations**

Given the findings of this study, it is important to have, sound macroeconomic policy with keen interests in Exchange rates, interest rates spread and inflation rate. Volatility of interest rates spread of exchange rates and fluctuations in inflation rates are key determinants of the bond market development. There is need to create awareness of the role of bond market in the economic growth.

#### **5.5 Suggestions for Further Studies**

Research can be carried out to identify factors that influence bond market development in Kenya. Additionally, further investigation may be done causes and effect of bond market failure in an economy. A study can be done to include other developing countries region such as the East African countries, which will enable these countries, formulate sound policies in developing their bond markets.



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## APPENDICES

### Appendix I: Data Extraction Form

No.	Year	Performance	Interest rate	Exchange rate	Inflation rate	Budget deficit	GDP	Domestic Credit	Export to GDP
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									

## **Appendix II: Firms with listed Corporate Bonds at NSE**

PTA bank

Mabati Rolling Mills

Barclays Bank

CFC Stanbic Bank Ltd

KenGen

Safaricom

Housing Financing

Consolidated Bank

Centum Investment Co. Ltd