

**THE EFFECT OF SELECTED MACRO-ECONOMIC VARIABLES
ON BOND MARKET DEVELOPMENT IN KENYA**

BY

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DECLARATION

This research project is my original work and has never been presented for an award of diploma or a degree in this or any other university.

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DEDICATION

I dedicate this work to my late parents (Mr. & Mrs. Githinji) for their love for education which was beyond reach and for inspiring me to be who I am today.

ABSTRACT

This study sought to investigate the effect of selected macro economic variables on bond market development in Kenya. Studies done have focused on the corporate bond market and given that the bond market in Kenya is still modest and under developed in breadth and depth as compared to the banking sector and even more mature bond markets such as the US. There was need to carry out this study. A causal research design was used to find out the effect of macroeconomic variables on bond market development. Secondary data for the period 2008-2012 was used to model the macroeconomic factors influencing development of the bond market. The entire bond market which comprised fifty six treasury bonds, twenty corporate bonds and five infrastructure bonds was covered. Data was analyzed using descriptive and regression analysis. Bond market development being the dependent variable was analyzed against seven macroeconomic variables (independent variable) which were economic size, exports, banking system size, interest rate spread, exchange rate variability, fiscal policy, and gross domestic product per capita. Coefficient of determination was used to measure the strength of each variable versus bond market development. ANOVA was used to interpret the significance of the relationship. The study found out three macroeconomic (bank size, exports and fiscal policy) had no effect on bond market development. Three macroeconomic variables (exchange rate, interest rate and gross domestic product per capita had a positive effect on bond market development. However, economic size measured as gross domestic product at purchasing power parity had a negative effect on bond market development. It can therefore be concluded that exchange rate, interest rate, gross domestic product per capita and gross domestic product at purchasing power parity do affect bond market development. The study, therefore recommends that more focus should be given, on the four main variables identified by the policy makers in order to spur more growth in the bond market. A further investigation would be necessary in order to establish the effect of other macroeconomic and institutional variables not covered by this study.

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LIST OF ABBREVIATIONS

CBK	Central Bank of Kenya
CMA	Capital Markets Authority
EADB	East Africa Development Bank
EMH	Efficient Market Hypothesis
GDP	Gross Domestic Product
IMF	International Monetary Fund
KES	Kenyan Shilling
KNBS	Kenya National Bureau of Statistics
NSE	Nairobi Securities exchange
PECC	Pacific Economic Cooperation Council
PPP	Purchasing Power Parity
SSA	Sub-Saharan Africa

CHAPTER ONE: INTRODUCTION

1.1 Background

Financial markets are markets in which funds are transferred from people who have an excess of available funds to people who have a shortage. Financial markets such as bond and stock markets are crucial to promoting greater economic efficiency by channeling funds from people who do not have a productive use for them to those who do. A well functioning financial market is a key factor in producing high economic growth and vice versa (Mishkin, 2010). A bond market is an important component of a developed financial market. Due to its positive influence on the development of an economic and financial system, and numerous advantages that a bond market provides, the development of a bond market remains critical to a country's financial system and economy (Sprcic and Wilson, 2007).

A bond is a financial debt instrument requiring the issuer (borrower) to repay to the lender the amount borrowed plus interest over a specified period of time. The issuer of the bond will repay to the lender/investor the amount borrowed (principal) plus interest over a specified period of time (Fabozzi and Jacob, 1999). A bond market is the environment in which the issuance and trading of debt securities occurs. The bond market typically constitutes global and domestic bonds. Domestic bonds primarily includes government bonds, municipal bonds and corporate bonds, and facilitates the transfer of capital from savers to the issuers or organizations requiring capital for government projects, business expansions and ongoing operations (Welch, 2009). Macroeconomics is concerned with the economy as a whole. It's concerned with

aggregate demand and supply. Aggregate demand is the total amount of spending in the economy, whether by consumers by overseas customers for our export, by the government, or by firms when they buy capital equipment or stock up on raw materials. Aggregate supply is the total national output of goods and services (Mishkin, 2010).

Factors that typically influence the rate of development of a bond market are described as bond market determinants. They vary and include a range of macro-level, industry level, market level and firm level factors (Sprcic and Wilson, 2007). The literature has provided several: Regulatory enforcement; absence of public sector funding needs; banking concentration; corporate governance and transparency; law and order; size of an economy; the stage of economic development; the openness of an economy; among others.

The bond market in Kenya 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 government and corporate bond segments both of which have primary and secondary bond markets. As at 2012, in terms of absolute value, 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). Bond products in the Government bond market include – fixed coupon rate bonds; zero coupon rate bonds; floating rate bonds; restructuring bonds; amortized and savings development

bond; among others. In the corporate market, the bonds are either secured or unsecured. Bonds in both markets range from one to thirty years.

1.1.1 Bond Market Development

Kenya's financial sector is heavily bank-dominated. Banks, however, are not well suited to finance long-term investments on a large scale, as the marriage of short-term liabilities and long-term assets results in maturity mismatches in their balance sheets. The existence of a robust bond market mitigates this potential maturity mismatch of a bank-dominated financial sector, reduces financial sector fragility, and provides long-term capital for business investment more cheaply (Yoshitomi and Shirai, 2001). 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).

Bond markets in general and corporate bond markets in particular have been found to develop rapidly in countries where the macroeconomic environments have been more stable and predictable. Meanwhile, in countries where the macroeconomic environment has been relatively volatile, the corporate bond market has had to rely heavily on government support in one form or another (Fabella and Madhur, 2003). Experience from industrial countries has suggested that a healthy government bond market creates a conducive environment for the development of a robust corporate bond market (IMF, 2002).

An efficient, well regulated and market driven banking sector also fuels bond market development. This proposal may sound somewhat ironic given that the literature has variously regarded the banks as major competitors to bonds. However, it is important to recognize that a banking system that is free from political interference and operating on market principles can be an important source of demand for the bond market. It is generally observed that where rules are clear, banks are more market-oriented, and where the macroeconomic environment is stable, corporate bond markets have developed rapidly for example Australia; Hong Kong, China; and Taipei, China after financial deregulation in the 1980s). Today, banks in these countries are major buyers of corporate bonds. Hence, a robust banking sector operating along market principles will reinforce rather than weaken the bond market (Yoshitomi and Shirai, 2001; Brouwer, 2002).

1.1.2 Macroeconomic Variables

Pardy (1992) noted that there are two variables which are necessary for faster development of capital market: macroeconomic and fiscal environment and market infrastructure. The macroeconomic factors included inflation, interest rate, foreign exchange rates and government expenditure.

A range of macro-level, industry level, market level and firm level factors influence the rate at which bond markets develop (Sprcic and Wilson, 2007). Regulatory enforcement; absence of public sector funding needs; banking concentration; corporate governance and transparency; law and order; riskiness of investment environment; geographical/disease endowment environment; interest rate variability were observed to have a huge impact

on bond market development (Eichengreen and Luengnaruemitchai, 2004). The size of an economy; the stage of economic development; the openness of an economy; the exchange rate variability, the size of the banking system; and interest rate variability also had contribution towards bond market development (Bhattacharyay, 2013).

1.1.3 Effect of macroeconomic variables on bond market development

Beck, Demirguc-Kunt and Levine (1999) proved a positive relationship between the level of GDP per capita and a size of a bond market. The economic size measured as GDP at purchasing power parity (ppp) measures country size. Small size is determinant of the inability of developing countries to have a deep and liquid bond market and they are characterized by price volatility as buyers and sellers exist. Banking system size measured as domestic credit provided by the banking sector to GDP is also important for development of bond market. Banks serves as dealers and market makers but on the other hand banks and bonds compete in providing finance, and well developed banking systems can deprive bonds of market share.

High level of interest rates tend to have a depressing impact on issuance and bond market development since few firms can service debts when interest rates are high. Where interest rates are variable investors will have a little appetite for long-term fixed-rate notes because there is high risk that the purchasing power of long-term fixed rate assets will be eroded. Greater exchange rate flexibility encourages the development of domestic bond market. Pegged exchange rates encourage foreign investors to underestimate the risk of lending to banks and corporations, and the resulting foreign

competition may slow the development of domestic intermediation. Gross Domestic Production (GDP) per capita which is the developmental stage of the economy is expected to have a positive relationship with bond market development. Underdeveloped countries have a volatile investment environment, domination of government in commercial activities, weak creditors' rights, lack of transparency and poor corporate governance (Adelegan and Radzewicz, 2009).

1.1.4 Bond Market in Kenya

A bond market is an important component of a developed financial market. Due to its positive influence on the development of an economic and financial system, and numerous advantages that a bond market provides, the development of a local bond market is critical to the well being of both the economy and financial system (Fabella and Madhur, 2003). In the 1980s the government of Kenya launched a bid to use treasury bonds as a source of funds to finance government deficit. Corporate bonds were first introduced in the Kenya market in November 1996 and since then several companies have issued corporate bonds (Ngugi, Amanja and Maana, 2009).

Government bonds issued in Kenya are known as treasury bonds. Treasury Bonds are medium to long term debt instruments, usually longer than one year issued by the government to raise money in local currency. Maturities of Treasury Bonds that have been issued so far range from 1-30 years. The types of Treasury bond may be defined by the purpose, interest rate structure, maturity structure, and even by issuer. So far, the Government has issued Fixed Coupon/Rate Bonds, Zero Coupon, Floating Rate,

Infrastructure (project specific), Restructuring/Special bonds, and Amortized and savings development bonds. Most commonly issued bonds are fixed coupon bonds which have huge investor demand. Treasury bonds are issued monthly (CBK, 2013).

In contrast to the faster development of government bond markets, corporate bond markets in Kenya are still underdeveloped, in both breadth and depth, compared to the banking system. Slow development is assumed to be a result of the dearth of large corporations with high credit ratings. Corporate bonds are issued periodically only by a few “blue-chip” companies. These bonds are sold mostly to institutional investors. The level of corporate bond market liquidity is still low, especially compared to the levels recorded in the government bond market. In relative contrast, Government bond markets are active: bonds are issued regularly, there are regular auctions of government bonds and treasury bills, and the liquidity of secondary markets is increasing (Kenya Economic Update, 2012).

In terms of absolute value, the size of domestic bond markets in Kenya is \$ 6 billion which was about 16% of the GDP in 2012. The Kenyan bond market size pales in comparison to the benchmark, highly developed US bond market whose value stood at \$ 32.8 trillion. Bond amounts outstanding on the global bond market increased by 2% in 2012 to nearly \$100 trillion. Domestic bonds accounted for 70% of the total and international bonds for the remainder. The US was the largest market with 33% of the total followed by Japan (14%) (World Bank Report, 2012). In absolute value, Kenya’s

bond market has grown enormously in the second half of the 2000s: from \$ 574.8 million in 2006 to \$ 6 billion in 2012 (KNBS, 2013).

In terms of this turnover ratio, the Kenyan bond market did not fare well with a paltry turnover of 0.1% in 2012 (KNBS, 2012; Kenya Economic Update, 2012).

1.2 Research Problem

The primary purpose of a well developed bond market is to provide cheaper, longer term finance to fund capital investments. Due to its positive influence on the development of an economic and financial system, and numerous advantages that a bond market provides, the development of a bond market remains critical to a country's financial system and economy (Sprcic and Wilson, 2007). The benefits range from: a new source of capital available for long-term investments; a lower cost of capital, compared to interest rates on bank loans; a reduced sensitivity of the economy to any crises in the banking sector; the creation of more competition for banks putting downward pressure on bank interest rates; the opportunity for investors to invest in a wider range of assets with a range of risk profiles; the strengthening of a financial system by encouraging companies to show their financial information in a more transparent way; among others (Beck et al, 1999). To accrue these benefits, it is imperative that in a country where the bond market is underdeveloped, measures be put in place to catalyze bond market development.

The bond market in Kenya is still very modest and underdeveloped, in both breadth and depth, compared to the banking system and the more mature bond markets such as the US

bond market. This has resulted in sub-optimal economic productive capacity and financial system allocation inefficiency (World Bank Report, 2012; CBK, 2013, CMA, 2013, KNBS, 2012).

Bhattacharyay (2013) carried out a study on determinants of bond market development in Asia and found out that one of the major reasons behind the Asian financial crisis in 1997 was the excessive dependence of the Asian economies on commercial banks for domestic financing. The region failed to diversify its sources of corporate financing as it relied mainly on banks since its other types of financing, namely bond markets, were still underdeveloped and their sizes were quite small. The 2008 global financial crisis and European debt crisis led to constraints in acquiring local currency and foreign currency liquidity in the corporate sector in Asia as foreign banks withdrew investments from Asia. Major determinants for bond market development in Asia include the size of an economy, the stage of economic development, the openness of an economy, the exchange rate variability, the size of the banking system, and interest rate variability.

Ringui (2012) examined the factors determining corporate bonds market development in Kenya. The study showed that a confluence of factors matters for the development of corporate bonds market in Kenya; these included political environment of the country, investor base, and regulatory framework, size of the banking sector, the cumbersome nature of issuance process, and various macroeconomic factors. Were (2010) sought to investigate the factors influencing the development of corporate bonds market. They found out that companies listed in NSE face the corporate bond market development

challenge through inadequate disclosure of information on public debt issuance and statistics measures. The companies have insufficiently dealt with establishing repurchase (repo) market as well as setting up issuance calendars to improve transparency. Njihia (2005) carried out a study on determinants of determinants of the corporate bond market. The study found out that exchange rate, interest rate and bank credit variables negatively affect the development of the corporate bond market which calls for implementation of sound policies. Inflation, equity and Treasury bond variables showed no significance. Mbugua (2003) studied factors influencing development of the corporate bond market in Kenya where he identified lack of a ready market for the bonds as the major factor hindering the development of bond markets. Okoola (2008) did an investigation into the actual investment performance of bonds listed at the NSE while Luketero (2008), looked at long-run portfolio returns on bonds and stocks in the Kenyan market. Gakuru (2006) looked at the relationship between stock returns and bond returns in the Nairobi Stock Exchange.

There is a dearth of studies that have covered the bond market in totality that is both the treasury and corporate bond markets. Given the heavy reliance on the banking sector which is an expensive source of finance to many large and small and medium enterprises there is need to carry out this study in order to enhance the development of a vibrant bond market in Kenya. Therefore the study sought to fill the knowledge gap by finding out the effect of selected macroeconomic variables on bond market development in Kenya for the period 2008-2012. The study sought to answer the following research questions;

What macro-economic variables affect bond market development?

What is the effect of various selected macroeconomic variables on bond market development in Kenya?

1.3 Research Objectives

- i. To establish the effect of selected macroeconomic variables on bond market development in Kenya.
- ii. To establish the selected macroeconomic variables and determine to what extent they influence development of the bond market.

1.4 Value of the Study

The study will add to the scant local literature on bond market development; additionally, it will add value to the conceptual understanding of the phenomena of bond market development. It will also indicate what region-specific factors drive the development of bond markets in the East African region.

The study will be of importance to policy makers and government regulators as it will provide an opportunity of understanding the issues and constraints that affect the development of the bond market in Kenya. It will also assist by determining on which determinants should be given more focus in terms of developing the bond market and new policies can be formulated as a result of the findings.

The study will inform stakeholders on the areas where more resources and energies should be directed in order to develop the local bond market faster. It shall also assist players in projecting the performance of bond instruments in the market.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter focused on a review of bond market development literature. A Theoretical review of bond market development was first discussed. Determinants of bond market development were then discussed. An empirical review then given. Finally a summary of the literature was discussed.

2.2 Theoretical Review

Various theoretical frameworks have attempted to explain the phenomena of bond market development in the literature. Three have stood out: The efficient market hypothesis theory; financial intermediation theory and modern portfolio theory (Fama, 1970; Carmichael and Pomerleano, 2002; Markowitz (1952, 1959; Jensen and Meckling, 1976).

2.2.1 Efficient Market Hypothesis Theory

Capital market development being an important component of financial sector development and supplements the role of the banking systems in economic development. Capital market which comprise of the stock and bond market assist in price discovery ,liquidity provision, reduction in transaction costs and risk transfer. They reduce information cost through generation and dissemination of information on firms leading to efficient markets in which prices incorporate all available information Yartey and Adjasi, 2007; Garcia and Liu, 1999). Efficient markets not only avail resources to investors but also facilitate the inflow of foreign financial resources into the domestic economy. The credit market has increased it's activities in financing investments with deposits forming

a significant proportion of their financial asset basket this is because the bond and equity markets have not been thriving as they should be (Ngugi et al 2009).

Fama (1970) proposed the efficient market hypothesis (EMH) theory which describes the behavior of a perfect market whereby securities are typically in equilibrium, security (stocks and bonds) prices fully reflect all public information available and react swiftly as soon as information has been announced. This is because securities are fully and fairly priced, investors need not waste time looking for mispriced securities. He highlighted the role of capital markets to be the allocation of ownership of the economy's capital stock. In general terms the ideal is a market in which prices provide accurate signals for resource allocation. This means a market in which firms can make production-investment decisions and can choose among the securities that represent ownership of firm's activities under the assumption that security prices at any time fully reflect all available information. A market in which prices always fully reflect available information is called efficient.

2.2.2 Financial Intermediation Theory

Financial intermediation is a process which involves surplus units depositing funds with financial institutions who then lend to deficit units. Bisignano (1998) and Leland and Pyle (1977) identified that financial intermediaries can be distinguished by four criteria: first their main categories of liabilities (deposits) are specified for a fixed sum which is not related to the performance of a portfolio. Second the deposits are typically short-term and of a much shorter term than their assets. Third a high proportion of their liabilities are

can be withdrawn on demand. And fourth their liabilities and assets are largely not transferable. The most important contribution of intermediaries is a steady flow of funds from surplus to deficit units.

Scholtens and Wensveen (2003) stated that the role of the financial intermediary is essentially seen as that of creating specialized financial commodities. These are created whenever an intermediary finds that it can sell them for prices which are expected to cover all costs of their production, both direct costs and opportunity costs. Financial intermediaries exist due to market imperfections. As such, in a 'perfect' market situation, with no transaction or information costs, financial intermediaries would not exist. Numerous markets are characterized by informational differences between buyers and sellers. In financial markets, information asymmetries are particularly pronounced. Borrowers typically know their collateral, industriousness, and moral integrity better than do lenders. On the other hand, entrepreneurs possess inside information about their own projects for which they seek financing (Leland and Pyle, 1977). Moral hazard hampers the transfer of information between market participants, which is an important factor for projects of good quality to be financed.

A financial intermediary goes between the users and suppliers of financial resources a relationship that can be modeled as a principal agent relationship. The financial intermediary (the agent) acts on behalf of its client (mostly dispersed, uninformed investors - the principal) without risking its own assets. Its superior knowledge allows it to act more efficiently and to save costs (for example, transaction and information

costs through specialized technical knowledge and economies of scale). Principal and agent enter a contractual relation in which the intermediary provides certain services such as transaction and fiduciary services but also advisory and management services to its client. These services are more or less concretely specified. In return, the client pays the intermediary a fee which might follow a fixed rate or depend on the intermediary's performance. The model assumes that the principal has an information deficit compared to the agent. Their interests might differ substantially (Carmichael and Pomerleano, 2002).

The agent is usually modeled as a self-interested individual who is trying to maximize profit (Jensen and Meckling, 1976). There are three types of problems according to the model: hidden action, hidden knowledge, and hidden information. The first implies that the principal is not able to fully observe the agent's actions and cannot be perfectly monitored (at least not without costs). This might give way to moral hazard on the agent's side. It is not possible to completely specify the contract between principal and agent as not all states of nature are to be fully known ex ante. This problem is aggravated by the fact that there might be information about the contractual environment which is known to the agent but not to the principal (hidden information). The last problem is that of hidden knowledge: some features (e.g., the other clients, compensation scheme of the employees etc.) or more generally the incentive structure of the agent are not fully known to the principal and the agent perse has no incentive to disclose them (Palazzo and Rethel, 2008).

2.2.3 Modern Portfolio Theory

Although the benefits of diversification in reducing risk have been appreciated since the inception of financial markets, the first mathematical model for portfolio selection was formulated by Markowitz (1952, 1959). In 1951, Harry Markowitz ushered in the modern era of portfolio theory by applying simple mathematical ideas to the problem of formulating optimal investment portfolios. In the Markowitz portfolio selection model, the "return" on a portfolio is measured by the expected value of the random portfolio return, and the associated "risk" is quantified by the variance of the portfolio return.

Markowitz showed that, given either an upper bound on the risk that the investor is willing to take. He argued that single-minded pursuit of high returns constitutes a poor strategy, and suggested that rational investors must, instead, balance their desires for high returns and for low risk, as measured by variability of returns or take a lower bound on the return the investor is willing to accept, the optimal portfolio can be obtained by solving a convex quadratic programming problem. This mean-variance model has had a profound impact on the economic modeling of financial markets and the pricing of assets - the Capital Asset Pricing Model (CAPM) developed primarily by (Litner, 1965; Mossin, 1966; Sharpe, 1964) was an immediate logical consequence of the Markowitz theory. In 1990, Sharpe and Markowitz shared the Nobel Memorial Prize in Economic Sciences for their work on portfolio allocation and asset pricing. In the financial theory tradition, portfolios are used to achieve an optimal mix of risk and return (Markowitz, 1952). The typical portfolio matrix attempts diversification across

certain variables in order to minimize the earnings variability at a given earnings level.

Modern Portfolio Theory (MPT) also called portfolio theory or portfolio management theory is sophisticated investment approach/strategy and is the philosophical opposite of traditional stock picking (Shefrin, 2001). It is the creation of economists who try to understand the market as a whole, rather than business analysts who look for what makes each investment opportunity unique. Investments are described statistically in terms of their expected long-term return rate and their expected short-term volatility. The volatility is equated with risk, measuring how much worse than average an investment's bad years are likely to be. The goal is to identify the acceptable level of risk tolerance and then to find a portfolio with the maximum expected return for that level of risk.

The key tenet of Modern portfolio theory therefore is that if one wishes to increase the performance and reduce the risk in an overall investment portfolio, he or she should combine investments that are non-correlated with one another (Thaler and Shefrin, 1981). Simply put a diversified portfolio of non-correlated investments can provide the highest returns with the least amount of volatility given that the risk of loss in futures trading can be substantial and an investor could potentially lose more than the initial investment.

2.3 Determinants of Bond Market Development

2.3.1 Macroeconomic Variables

The literature has identified the following factors to be key determinants of bond market development: Economic size, measure by GDP at purchasing power parity (PPP) with the expected relations being weakly positive with larger size; Natural openness, measured by Ratio of exports to GDP with the expected relationship being weakly positive with greater openness; Developmental stage of the economy, measured by GDP per capita (Growth pattern of the economy) with the expected relationship being positive with higher development stage; Size of the banking system, measured by the extent of a well developed and competitive banking systems with the expected relationship being positive with size and development of banking system; Exchange rate variability, measured by variation of monthly exchange rates over one year period with the expected relationship being negative with greater variability of exchange rates; Geographical/disease endowments environment, measured by settler mortality or distance from the equator with the expected results being positive with favorable geographical/disease environment (Bhattacharyay, 2013; Eichengreen and Luengnaruemitchai, 2004).

Eichengreen, Panizza and Borensztein (2008) identified bank lending spread as a key determinant of bond market development. The lending spread is important to bond market development because interest rates, being the cost of debt, are integrally linked to the willingness to borrow through debt issuance.

2.3.2 Institutional Variables

Law and order measured by International Country Risk Guide (ICRG) measure of law and order. The law and order indexes are assessed separately on a scale of zero to three for each subcomponent. The law sub-component is an assessment of the strength and impartiality of the legal system, order assesses popular observance of the law. Bureaucratic quality which measures the institutional strength and quality of the bureaucracy. High points are given to countries where their bureaucracy has the strength and expertise to govern without drastic changes in policy or interruption in government services. Regulatory enforcement measures how clear and consistent regulations are implemented proxied by bureaucratic quality. It is expected that it has a positive relationship with bond market development. Political stability provides a conducive environment for development of bond market .It is measured by political risk index (Adelegan and Radzewicz-Bak, 2009).

2.4 Empirical Review

Bhattacharyay (2013) sought to identify the determinants of bond market development in Asian economies through examining the relationship of bond issuance with selected key financial and economic factors. The study was conducted with a view to enhance corporate bond financing by examine factors that affected the effective development of bond markets in Asia. It also intended to provide policy recommendations for the further development of the Asian bond market. Major determinants for bond market development in Asia were found to include the size of an economy, the stage of economic

development, the openness of an economy, the exchange rate variability, the size of the banking system, and interest rate variability.

Ringui (2012) examined the factors determining corporate bonds market development in Kenya. The study results suggest that political, macroeconomic and regulatory factors account fully in determining corporate bond market development in Kenya. Overall, the results show that a confluence of factors matters for the development of corporate bonds market in Kenya; these include political environment of the country, investor base, and regulatory framework, size of the banking sector, the cumbersome nature of issuance process, and various macroeconomic factors.

Were (2010) sought to investigate the factors influencing the development of corporate bonds market. The main aim of this study was to investigate the corporate bond market development in companies listed in the NSE. They found out that companies listed in NSE face the corporate bond market development challenge through inadequate disclosure of information on public debt issuance and statistics measures. The companies have insufficiently dealt with establishing repurchase (repo) market as well as setting up issuance calendars to improve transparency.

Adelegan and Radzewicz-Bak (2009) carried out a research on bond market development in Sub-Saharan Africa with the objective of finding out the determinants of bond market development. They observed that savings constraint is a key impediment to domestic bond markets development and financial market deepening, noting that it resulted to low

level of financial intermediation by banks. A numbers factors were found to matter in the development of domestic bonds market in SSA they included; Structure of the economy; Investment profile; law and order; Size of the banking sector; and the level of economic development.

Sprcic and Wilson (2007) sought to investigate the factors influencing the speed of development of corporate bond markets in Croatia and, within that, to investigate the factors that chief financial officers in large Croatian companies consider important in using corporate bonds as a financing method and the barriers they perceive as inhibiting issuing of corporate bonds. A survey was carried out of a sample of chief financial officers from the largest companies in Croatia. The study found that a range of macro-level, industry level, market level and firm level factors influence the rate at which corporate bond markets develop and that, in Croatia, progress can be expected to be inexorable, but slow.

Dunne (2007) sought to outline transparency proposals for European sovereign bond markets. This was in the background of debate over the possible extension of transparency regulation in Europe to include sovereign bonds having opened up a number of other issues in need of serious consideration. One such issue was the appropriateness of the entire infrastructure supporting the trading of European sovereign bonds. In recent years, sovereign issuers had supported the development of an electronic inter-dealer market but had remained unconcerned with the opacity of dealer-to-customer trading. The degree of segmentation in the market was high relative to what existed in nearly all

other financial markets. Dunne explored why European sovereign bond markets had developed in such a segmented way and considered how this structure could be altered to improve transparency without adversely affecting liquidity, efficiency or the benefits enjoyed by primary dealers and issuers. He suggested that the structure of the market could be improved greatly if the largest and most active investors were permitted access to the inter-dealer electronic trading platforms. This would solve a number of market imperfections and increase the proportion of market activity that is conducted in a transparent way.

Burger and Warnock (2006) analyzed the development of 49 local bonds market. They found out that policies and laws matter: countries with stable inflation rates and strong creditors rights have more developed local bond markets and rely less on foreign currency-denominated bonds. This suggested that “Original sin” is a misnomer and emerging economies were not inherently dependent on foreign currency debt. If they improved policy performance and strengthened institutions, they would develop local currency bond markets and reduce currency mismatch.

Njihia (2005) carried out a study on determinants of determinants of the corporate bond market. The main objective of the study was to assess the effects of macroeconomic variables on the corporate bond market which are seen to impede the development of a market that is required to boost economic growth. The study found out that exchange rate, interest rate and bank credit variables negatively affect the development of the corporate bond market which calls for implementation of sound policies. Inflation, equity

and Treasury bond variables showed no significance despite the existence of theories explaining their roles and significance in bond market development.

Mbugua (2003) sought to assess the effects of macroeconomic variables on the corporate bond market which are seen to impede the development of a market that is required to boost economic growth. The study period spanned 1997-2004. The study identified and examined the relationship between macroeconomic variables notably exchange rate. The study adopted a short run time series linear econometric model to estimate effects and contribution of these variables as determinants of domestic bond market development. The study found that exchange rate, interest rate and bank credit variables negatively affected the development of the corporate bond market.

2.5 Summary of the Literature

Various theoretical frameworks have attempted to explain the phenomena of bond market development in the literature. Four have stood out: The efficient market hypothesis theory; financial intermediation theory; bondholders' theory; and modern portfolio theory. A range of macro-level, industry level, market level and firm level factors influence the rate at which bond markets develop. Among others, some of the determinants have included: banking concentration; corporate governance and transparency; law and order; riskiness of investment environment; geographical/disease endowment environment; interest rate variability; size of an economy; the stage of economic development; the openness of an economy; the exchange rate variability, the size of the banking system; and interest rate variability.

A handful of studies have been conducted in the lesser developed bond market countries and particularly in Asia on various aspects of bond market development. There is, however, a gap of bond market development studies in Sub Saharan Africa, a region whose bond markets are largely under-developed. In Kenya a few studies have been done on bond markets but rarely has the markets been looked at holistically.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

The focus of this chapter was the methodology used to conduct the research. The chapter tackled: research design; study population; data collection and data analysis respectively.

3.2 Research Design

The study adopted a causal research design, since the study aimed at establishing the cause and effect relationships between bond market size and seven determinants of bond market development. Mugenda (2003) explained that causal explore relationships between variables and this was consistent with this study which sought to establish the extent to which respective determinant contributed (Cause) to bond market development.

3.3 Population

The population in this study constituted the entire bond market in Kenya (20 corporate bonds, 56 treasury bonds (government) and 5 Infrastructure bonds that have been issued and are being traded at the NSE). A census was conducted.

3.4 Data Collection

The study collected secondary data for the purpose of investigating the extent to which bond market determinants have contributed to the development of the bond market in Kenya. Secondary data was obtained from time series annual reports of the Central Bank,

Capital Markets Authority (CMA), Nairobi Stock Exchange (NSE) and Kenya National Bureau of Statistics (KNBS) The data spanned the years 2008 through to 2012.

3.5 Data Analysis

This study used the quantitative method of data analysis. Data was analyzed using Statistical Package for Social Sciences (SPSS) program and presented using tables and figures that give a clear picture of the research findings at a glance. Multiple regression analysis was used to determine extent to which selected macroeconomic variables have contributed towards the development of bond market development.

3.5.1 Analytical Model

The study used regression model to establish the relationship between the variables. The model used is similar to one used by Eichengreen and Luengaruemitchai, 2004. The model is as stated below;

$$F_t = B_0 + B_1X_{1t} + B_2X_{2t} + B_3X_{3t} + B_4X_{4t} + B_5X_{5t} + B_6X_{6t} + B_7X_{7t} + U$$

Where,

t = years, 2008-2012;

F_t = Total bond market size in proportion to GDP in year t;

X_{1t} = Economic size measured as GDP at purchasing power parity;

X_{2t} = Exports as proportion of GDP year t;

X_{3t} = Banking system size as a proportion GDP year t;

X_{4t} = Interest rate spread in year t;

X_{5t} = Exchange rate variability in year t;

X_{6t} = Fiscal policy in year t;

X_{7t} = Developmental stage of the economy in year t;

B_0 is the constant or the intercept terms for bond (total) models;

B_t are the coefficients of the independent variables; and

U_t , are the independent normal distribution error terms with mean zero.

3.5.2 Measurement of Variables

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

Bond market development was the dependent variable represented by F_t . It was measured by the total bond market size (bonds issued at a given year) in proportion to the GDP at given year. Economic size was measured by the GDP at purchasing power parity. Size of the economy = GDP. Openness of the economy was an independent variable which will be measured by the exports at a given year as a proportion to the GDP. Openness of the economy = $\frac{\text{Exports}}{\text{GDP}}$.

Banking System size was measured as domestic credit provided by the banking sector to the private sector in proportion to GDP. Interest rate spread was an independent variable measured.

Interest spread = average yearly income interest – average yearly expense interest.

Exchange rate variability was an independent variable which was measured as follows:

Exchange rate variability (V_t) = $\frac{E_t - E_{t-1}}{E_{t-1}}$. Where E_t is the highest spot exchange rate in a given year for the dollar and E_{t-1} the lowest. Fiscal policy was measured as a three-year

moving average of past budget balances. A budget deficit is the excess of government expenditure over tax revenues for a particular period of time. Developmental stage of the economy was measured by the Gross Domestic Product per capita. This shows the growth pattern of the economy.

The research applied the Hypothesis below to test the relationship between bond market determinants and bond market development at 5% level of significance:

H_0 : there is no significant relationship between bond market development with the economic size, exports, banking system size, interest rate spread and exchange rate variability.

H_1 : there is a significant relationship between bond market development with the economic size, exports, banking system size, interest rate spread and exchange rate variability.

CHAPTER FOUR:

DATA ANALYSIS AND INTERPRETATION OF RESULTS

4.1 Introduction

This chapter discussed the data analysis, findings, interpretations and presentation. The objective of this study was to study effect of selected macroeconomic variables on bond market development in Kenya. The chapter starts with data analyzed using descriptive statistics, then regression analysis.

4.2 Descriptive Statistics

Table 4.1 below gives a summary of the descriptive statistics of regression data.

Table 4.1: Descriptive statistics of model variables

	Ft	X1t	X2t	X3t	X4t	X5t	X6t	X7t
Mean	0.052	568.014	0.149	0.299	10.430	0.141	0.050	1453.522
Standard Error	0.007	5.026	0.004	0.027	0.447	0.047	0.003	12.891
Median	0.040	564.667	0.151	0.313	10.193	0.080	0.050	1445.020
Mode	0.040	#N/A	#N/A	#N/A	#N/A	#N/A	0.050	#N/A
Standard Dev.	0.016	11.238	0.008	0.061	1.000	0.105	0.007	28.824
Sample Variance	0.000	126.287	0.000	0.004	1.000	0.011	0.000	830.839
Kurtosis	-3.33	-1.231	1.763	1.503	0.257	-3.09	2.000	-1.239
Skewness	0.609	0.745	-1.03	-1.28	0.966	0.534	0.000	0.741
Range	0.030	25.844	0.022	0.154	2.498	0.222	0.020	66.140
Minimum	0.040	558.193	0.137	0.200	9.458	0.042	0.040	1428.450
Maximum	0.070	584.038	0.158	0.354	11.956	0.263	0.060	1494.590

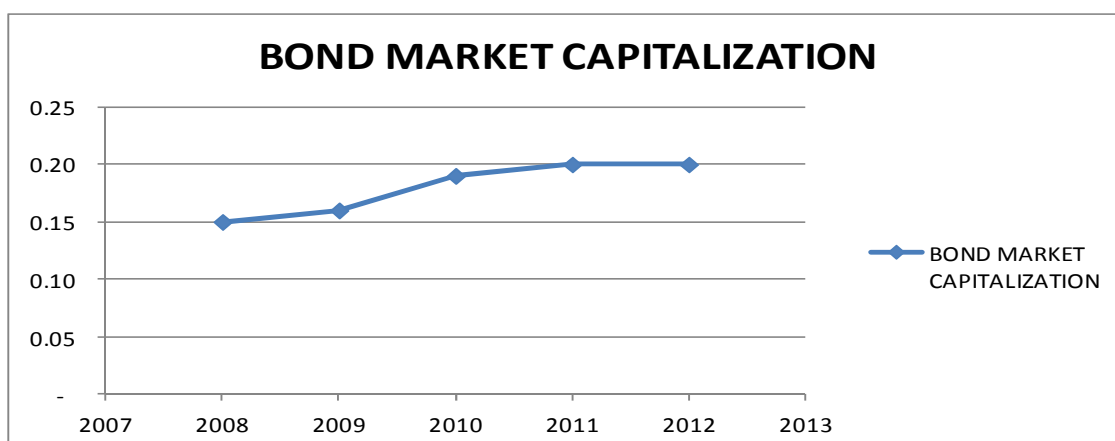
Sum	0.260	2840.071	0.747	1.493	52.149	0.704	0.250	7267.610
Count	5.000	5.000	5.000	5.000	5.000	5.000	5.000	5.000
Largest(1)	0.070	584.038	0.158	0.354	11.956	0.263	0.060	1494.590
Smallest(1)	0.040	558.193	0.137	0.200	9.458	0.042	0.040	1428.450
Conf. L.(95.0%)	0.020	13.953	0.010	0.076	1.242	0.130	0.009	35.790

Source: Computation from raw data obtained from CMA, CBK, KNBS and NSE

4.2.1 Total bond market size in proportion to GDP

The dependable variable of interest is bond market development. It is measured by the total bond market size that is all issued government, infrastructure and corporate bonds in proportion to the Gross Domestic Product (GDP). The assumption behind this measure is that the overall market size is positively correlated with the ability to mobilize capital and diversify risk on an economy wide basis. The primary role of bond market is to provide a market where treasury and corporate bonds can be traded in a regulated environment without constraints. The data findings are presented in figure 4.2 below

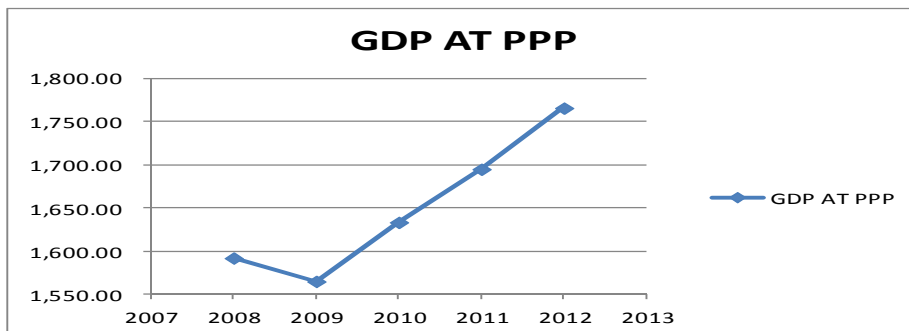
Figure 4.1 Bond Market Capitalization



4.2.2 Economic size measured as GDP at purchasing power parity

The study sought to establish the trend in variability of the Economic size over the study period. The economic size was measured by the GDP at purchasing power parity. The data findings are presented as below.

Figure 4.2: GDP at Purchasing Power Parity



From the findings presented above, the study established that economic size as at the year 2009 declined. The economic size continuously grew from 2009 upwards to the year 2012.

4.2.3 Exports as proportion of GDP

The study sought to establish the trend in movement in exports over the study period. The exports were expressed as a percentage of GDP. The findings are presented in the table below.

Figure 4.3 : Exports

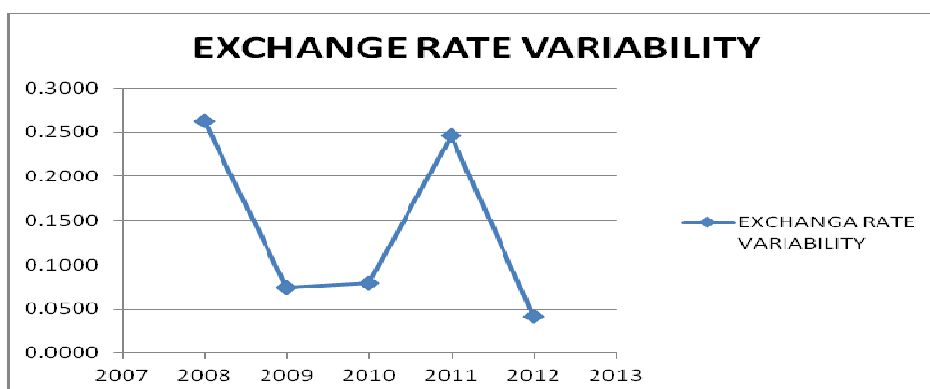


From the data findings the study established that there has been a decline in the amount of exports over the study period. The total export in the year 2008, expressed as proportion of GDP, was .1531. This proportion however decreased gradually to .1367 in the year 2009 upwards.

4.2.4 Exchange rate variability

The study sought to determine the trend in the exchange rates variability in Kenya variability with reference to the United States Dollar. The findings were as shown in the figure 4.4 below

Figure 4.4: Exchange Rate Variability

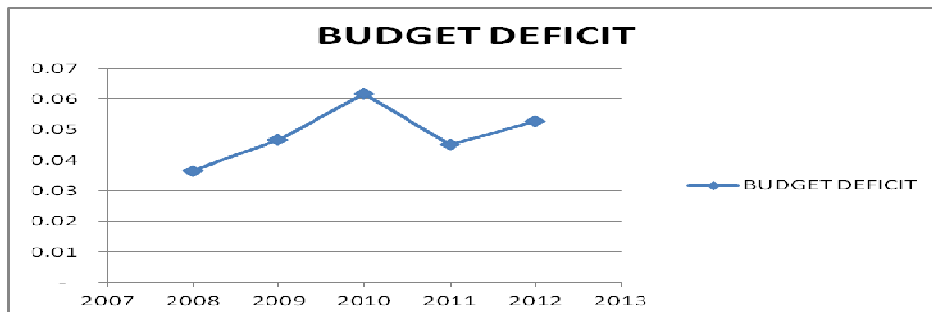


From the data findings the exchange rate variability at the inception year was 0.2630. This exchange rates variability decreased to 0.0739 in the year 2009 before a slight increase to 0.0795 in the year 2010. Over the year 2011, the exchange rate variability increased sharply to 0.2461 before decreasing to 0.0415 in over the 2012 financial year. These findings implied that there had been high exchange rates variability since 2008 despite a decline in 2012.

4.2.5 Fiscal Policy

The study sought to determine the movement in fiscal policy whereby the fiscal policy was measured as a three-year moving average of past budget balances. The study findings were as below.

Figure 4.5: Budget deficit in proportion to GDP

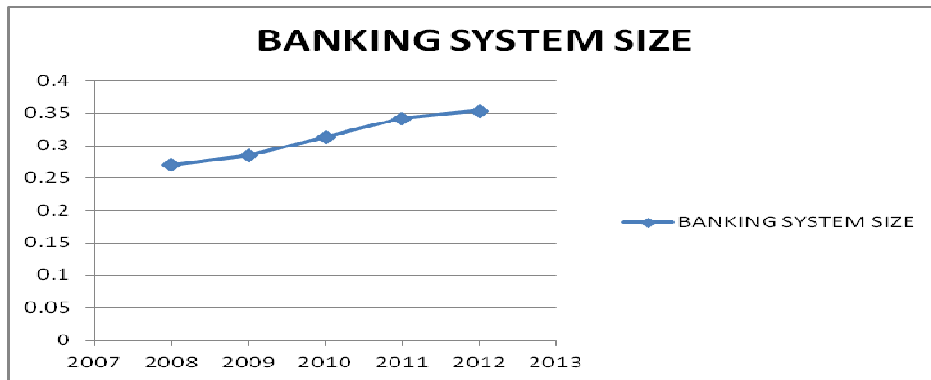


4.2.6 Banking system size as a proportion to GDP

This is also a determinant of bond market development and is 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 needed for the development of a liquid and functioning bond market. They do compete in providing finance and well developed

banking systems can deprive bonds of market share. The banking sector grew over the years 2008-2012 by 8%. This is a good indicator towards future stable financial market.

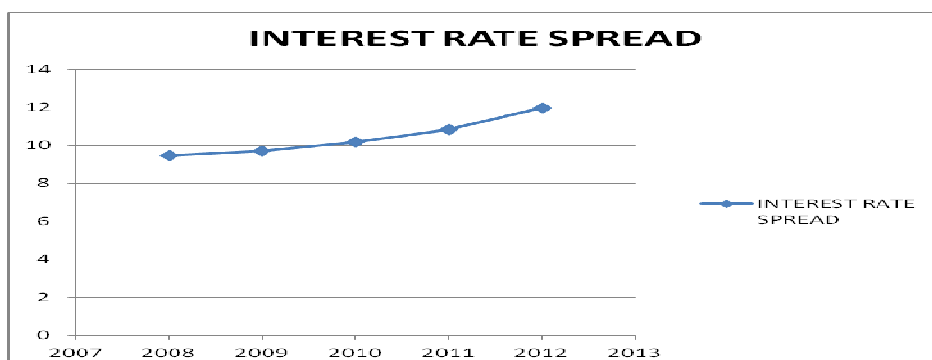
Figure 4.6: Banking System Size



4.2.7 Interest Rate

The interest rate was measured as interest rate spread that is the difference between average yearly income interest and average yearly interest expense. It was expected to have a negative relationship with the bond market development.

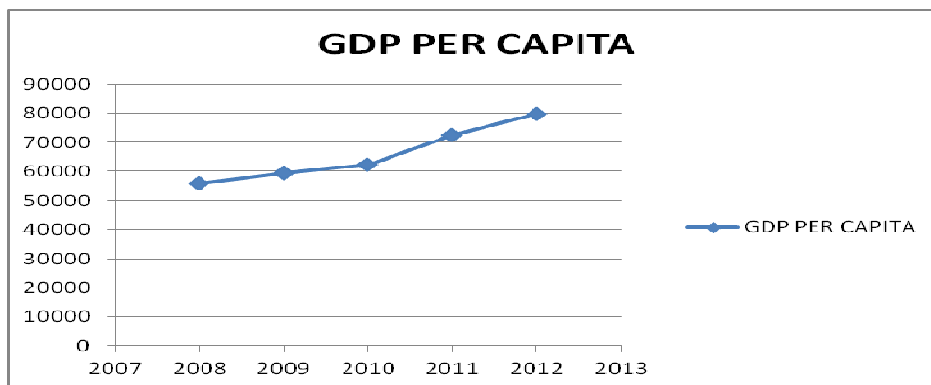
Figure 4.7: Interest Rate Spread



4.2.8 Developmental stage of the economy

This is measured by GDP per capita. Economic development is expected to have a positive relationship with bond market development. The expansion of an economy will create new demand for financial services; such increase in demand will exert pressure to establish larger and more sophisticated financial institutions to satisfy the new demand for their services.

Figure 4.8: GDP Per Capita



4.3 Regression analysis

A regression analysis was conducted on total bond market size against bond market development, which was surrogated by seven variables namely; economy size; exports; bank size; interest rate spread; exchange rate variability; fiscal policy; and developmental stage of the economy. The regression equation was as follows:

$$F_t = B_0 + B_1X_{1t} + B_2X_{2t} + B_3X_{3t} + B_4X_{4t} + B_5X_{5t} + B_6X_{6t} + B_7X_{7t} + U$$

Data for the above variables was generated for a period that spanned the years 2008 to 2012. The data was subjected to a regression analysis, with the findings discussed below:

Table 4.2: Model summary of bond market size on bond market development determinants

Regression Statistics	
Multiple R	1
R Square	1
Adjusted R Square	65535
Standard Error	0
Observations	5

Source: Computation from raw data obtained from CMA, CBK, KNBS and NSE

Table 4.2 indicates that the bond market development determinants accounted for almost all of the variations in the size of the bond market as was explained by the predictor variables (X_{1t} ; X_{2t} ; X_{3t} ; X_{4t} ; X_{5t} ; X_{6t} ; X_{7t}) as indicated by the R square statistic 1. The model thus explained almost all of the development in the bond market size. This meant that the model was useful in explaining bond market development of the bond market size.

Table 4.3: Anova for bond market size on bond market development determinants

ANOVA					
	df	SS	MS	F	Significance F
Regression	7	0.00108	0.000154	.000	.000
Residual	0	0	65535		
Total	7	0.00108			

Source: Computation from raw data obtained from CMA, CBK, KNBS and NSE

Table 4.3 clearly indicates that the regression accounted for almost all of the variations in bond market size; 0.00108 out of 0.00108; with none of the variations being accounted for by other factors external to the model (Residual) as indicated by the sum of the squares (SS). Residual (or error) represents unexplained (or residual) variation after fitting a regression model. It is the difference (or left over) between the observed value of the variable and the value suggested by the regression model.

Table 4.4: Coefficients of the model

	Coefficients	Standard Error	t Stat	P-value
Intercept	2.3074712	0	65535	.000
X1t	-0.0167899	0	65535	.000
X2t	0	0	65535	.000
X3t	0	0	65535	.000
X4t	0.06390573	0	65535	.000
X5t	0.26514471	0	65535	.000
X6t	0	0	65535	.000
X7t	0.00452527	0	65535	.000

Source: Computation from raw data obtained from CMA, CBK, KNBS and NSE

Table 4.4 depicts the numerical relationship between the independent variable and the predictor variables in the following resultant equation:

$$F_t = 2.3074712 - 0.01678899X_{1t} + 0.06390573X_{4t} + 0.26514471X_{5t} \\ + 0.00452527X_{7t}$$

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 Introduction

This chapter summarized the analysis in chapter four and highlighted the key findings. It also drew conclusions and implications from the finding and also gave recommendations. Limitations of the study were also discussed. Suggestions for further studies were finally given.

5.2 Summary of Findings

This study was conducted with the aim of establishing the effect of selected macro economic variables on bond market development in Kenya. To achieve the above objective, a regression analysis was conducted whereby bond market size was regressed against seven predictor variables; economy size; exports; bank size; interest rate spread; exchange rate variability; fiscal policy; and developmental stage of the economy for the period spanning 2008-2012. Data for both the dependent and predictor variables were obtained from the NSE, CMA, KNBS and CBK. The two sets of data were then subjected to a regression analysis.

5.2.1 Effect of selected macroeconomic variables on bond market development

As per table 4.4 the P- value of 0.00 showed that the independent variables (economic size, exports, banking system size, interest rate, exchange rate, fiscal policy and developmental stage of the economy) reliably predicted the dependent variable (bond market development). If the P-value was greater than 0.05 then the group of independent variables would not show a statistically significant relationship with dependent variable. A P-value of less than 0.05 shows that there is a statistically significant relationship between the two variables which is the case in this study. Three study variables had no effect on bond market development that is exports, bank size and fiscal policy given the coefficient of zero. This was evidenced by coefficients of zero. However, exchange rate, interest rate and GDP per capita had a positive effect with coefficients of more than zero. Economic size had a negative effect.

5.2.2 Selected macroeconomic variables and their influence on bond market development

As per table 4.4 seven macroeconomic variables that is economic size, exports, banking system size, interest rate, exchange rate, fiscal policy and developmental stage of the economy were analyzed. The magnitude of the influence is given by the coefficients which were zero for three variables that is exports, bank size and fiscal policy. The economic size which had a coefficient of -0.0167899 shows it has negligent negative influence on the bond market development. It shows that one unit of change in economic size results in -0.0167899 change in bond market development which could have a

minimal effect. A unit of change in interest rate spread resulted in 0.06390573 change in bond market development. An increase in interest rate led to an appreciable increase in bond market development. The exchange rate had the most significance influence on the market development with a coefficient of 0.26514471. A unit of change in the exchange rate resulted to change of 0.2654471 in the bond market development. The stronger the Kenyan currency is against dollar the more vibrant the bond market is. The GDP per capita gives the developmental stage of the economy. GDP per capita had a positive influence on the bond market at 0.00452527. A unit change of GDP per capita led to an increase of 0.00452527 to bond market development which has little significance.

5.3 Conclusion

Seven macroeconomic variables were analyzed with an aim of finding out their effect on bond market development. From the findings the independent variables showed a statistically significant relationship with the dependent variable, or that the independent variable reliably predicted the dependent variable. This was given by the P-value of each independent variable being zero. From the results it can be concluded that bank size, exports and fiscal policy had no positive or negative effect on bond market development. Exchange rate, interest rate and GDP per capita. GDP at purchasing power parity had a negative influence on the development of bond market these were concluded from the coefficients of the model.

5.4 Limitations of the Study

This study used seven determinants for bond market development whereas other possible bond market development determinants that the study may not have used may be there. In addition, this study is based on 2008-2012 bond market size, economic size, exports, bank size, interest rate spread, exchange rate variability, fiscal policy and development stage of the economy variables data for the Kenyan economy and thus interpretations deviating from the findings of this research may occur if period is outside the study period or if regression variables are not study variables.

5.5 Recommendations

From the study findings there is need to create awareness of the role of bond market in the economy and there is need to establish sound macroeconomic policy by the policy makers with a keen interest on exchange rate, interest rate, GDP per capita and GDP at PPP. The level and volatility of interest rate, the volatility of changes in the exchange rate and capital control are very important in domestic bond market development. This will spur the development of the bond market.

5.6 Suggestions for Further Studies

Further investigation may be done to establish the effect of other bond market development determinants outside this study on bond market size. Additionally, further investigation may be done into why the bond market development determinants exhibited the specified relationships and coefficient magnitude against bond market size.

A study should also be done to include other emerging economies in the region such as the East African countries. It would enable these countries formulate sound policies in developing their bond markets.

REFERENCES

- Adelegan, J. O., & Radzewicz-Bak, B. (2009). What determines bond market development in sub-Saharan Africa? *IMF working paper*, WP/09/213.
- African Development Bank. (2000). Debt Management in African Countries. Draft. April.
- Alchian, A.A., & Demstet, H. (1972). Production, information costs, and economic organization. *American Economic Review*, 62(5), 777-795.
- Anderson, C. W., & Makhija, A. K. (1999). Deregulation, disintermediation and agency cost of debt: evidence from Japan. *Journal of Financial Economics*, 51 (2), 309-340.
- Asia-Pacific Economic Cooperation. (1999). Compendium of sound practices: *Guidelines to facilitate the development of domestic Bond Markets in APEC member countries*. Available: http://www.apecsec.org.sg/loadall.htm?http://www.apecsec.org.sg/fora/activity_group/fin_minister_process/finance_process.html.
- Bagehot, W. J. (1971). The Only Game in Town. *Financial Analysts Journal*, 27, 12-17.

- Beck, T., Demirguc-Kunt, A., & Levine, R. (1999). A new database on financial development and structure. *Development Research Group, The World Bank mimeo.*
- Bhattacharyay, B. N. (2013). Determinants of bond market development in Asia. *Journal of Asian Economics*, 24, 124-137.
- Black, B. S. (2000). The Legal and Institutional Preconditions for Strong Stock Markets. Stanford Law School, *Social Science Research Network Electronic Library, Working Paper 179.*
- Black, F., & Scholes, M. (1973). The pricing of Options and Corporate Liabilities, *Journal of Political Economy*, 81, 637–654.
- Brouwer, G. de. (2002, May). *Financial Markets, Institutions, and Integration in East Asia*. Paper presented at the Asian Economic Forum Meeting, Keio University, Japan.
- Burger, J. D., & Warnock, F. E. (2006). Local Currency Bond Markets, *Palgrave Macmillan Journals*, 53,133-146.
- Carmichael, J., & Pomerleano, M. (2002). The development and regulation of Non-bank financial institutions (The World Bank, Washington, DC).

Central Bank of Kenya, 2013.

Christensen, J. (2004). Domestic Debt Markets in Sub-Saharan Africa. *IMF Working Paper*, WP/04/46.

Christensen, J. (2005). Domestic Debt Markets in Sub-Saharan Africa. *IMF Staff Papers*, 52 (3), 518-538.

Cooper, D.R., & Schindler, P.S. (2006). *Business Research Methods* (9th ed). New York: Mc-Graw Hill.

Datta, S., Iskandar-Datta, M., & Patel, A. (2000). Some evidence on the uniqueness of initial public debt offerings. *Journal of Finance*, 55 (3), 715-743.

Demirguc-Kunt, A., & Levine, R. (1999). Bank-based and market-based financial system: cross-country comparisons. *Development Research Group, The World Bank mimeo*.

Detragiache, E. (1994). Public versus private borrowing: a theory with implications for bankruptcy reform. *Journal of Financial Intermediation*, 3, 327-54.

Diamond, D. (1984). Financial Intermediation and delegated monitoring. *Review of Economic Studies*, 51, 393-414.

- Diamond, D. (1991a). Monitoring and reputation: the choice between bank loans and directly placed debt. *Journal of Political Economy*, 99 (4), 689-721.
- Duffie, J. D., & Singleton, K. J. (1999). Modeling term structure of defaultable bonds, *Review of Financial Studies*, 12, 687-720.
- Dunne, P. G. (2007). Transparency proposals for the European Sovereign foreign bond markets. *Journal of Financial Regulation and Compliance*, 15 (2), 186-198.
- Eichengreen, B., & Hausmann, R. (1999). Exchange Rate and Financial Fragility. *National Beureau of Economic Research*, 7418.
- Eichengreen, B., & Luengnaruemitchai, P. (2004). Why doesn't Asia have bigger bond market? *National Beureau of Economic Research*, 1076.
- Eichengreen, B., Panizza, U., & Borenstein, E. (2008). Prospects for Latin America bond markets: *A cross country view*. Cambridge: MIT Press.
- Fabella, R., & Madhur, S. (2003). Bond market development in East Asia: issues and challenges Economic and Research Department, *ADB*, 35.
- Fabozzi, F.J., & Jacob, D.P. (1999). *The handbook of commercial mortgage-backed securities*. (2nd ed.) USA, New Hope.

Fama, E. (1970). Efficient capital markets: A review of theory and empirical work.

The Journal of Finance, 25 (2), 383-417.

Fama, E. (1985). What's different about Banks. *Journal of Monetary Economics*, 15(1), 29-37.

Gakuru, F. (2006). The empirical relationship between trading volume and returns volatility at the NSE; *Unpublished MBA project*, University of Nairobi.

Garcia, F.V., & Liu, L. (1999). Macroeconomic determinants of stock market development. *Journal of Applied Economics*. 2 (1), 29-59.

Glen, J., & Pinto, B. (1994). Debt or equity? *How firms in developing countries choose*, International Finance Corporation Discussion Paper No. 22, available at: www2.ifc.org/publications/ifc_catalog/Untitled_Stacked_Page/untitled_stacked_page_16.html.

Grossman, S., & Stiglitz, J. (1980). On the Impossibility of Informationally Efficient Markets. *American Economic Review*, 70, 393-408.

Hakansson, N. (1999). The role of a corporate bond market in an economy and in avoiding Crises. working paper RPF-287, Institute of Business and Economic

Research (IBER), University of California at Berkeley, Berkeley, CA, available at: <http://repositories.cdlib.org/iber/finance/RPF-287>

Harwood, A. (2000). *Building local bond markets: some issues and actions. Building Local Bond Markets: An Asian Perspective*, IFC, Washington, DC, available at: www2.ifc.org/publications/pubs/bond/toc.pdf

Herring, R., & Chatusripitak, N. (2000). *The case of the missing market: the bond market and why it matters for financial development*. Paper presented at the Asian Development Bank Institute/Wharton Seminar, available at: <http://ideas.repec.org/p/wop/pennin/01-08.html>

Herring, R. J., & Chatusripitak, N. (2000), *The Case of the Missing Market: The Bond Market and Why it Matters for Financial Development*, *ADB Institute Working Paper 11*, ADB, Tokyo.

IMF (2000). *International Capital Markets: Developments, Prospects, and Key Policy Issues*, *World Economic and Financial Surveys*, September (Washington D.C.).

IMF & The World Bank (2001), *Developing Government Bond Market, A Handbook*, Special Spring Meetings edition, IMF and The World Bank, Geneva and Washington, DC.

- James, C. (1987). Some evidence on the uniqueness of bank loans. *Journal of Financial Economics*, 19(2), 217-235.
- Jensen, M.C., & Meckling, W. H. (1976). Theory of the firms: managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3, 881-880.
- Johnson, S. (1997). An empirical analysis of the determinants of corporate debt ownership Structure. *Journal of Financial and Quantitative Analysis*, 32 (1), 47-69.
- Jones, A. (2002). *Developing African Bond Markets: What Should be Done*. Paper presented at the 7th Annual Conference of African Stock Exchange Association, Dar es Salaam.
- Kothari, C. R. (2004). *Research methodology: Methods and techniques* (2nd ed.) New Delhi: New Age International.
- Leland, H. E., & Pyle, D. H (1977). Information asymmetries, financial structure and financial intermediation. *Journal of Finance*, 32(2), 371-387.
- Lintner, J. (1965). Valuation of risky assets and the selection of risky investments in stock portfolios and capital budgets. *Revised Economics Statistics*, 47, 13-37.

- Luketero, S.W. (2008). Long run portfolio returns on bonds and stock in the Kenyan market. *Unpublished MBA project*, University of Nairobi, Kenya.
- Markowitz, H. (1952). Portfolio selection. *Journal of Finance*, 7, 77- 91.
- Markowitz, H. (1959). *Portfolio Selection*. Wiley, New York.
- Mbewa, M., Ngugi, R. W., & Kithinji, A. (2007). Development of bonds market: Kenya's experience. *KIPPRA*, 15.
- Mbugua, M. A. (2003). Factors influencing development of the corporate bond market in Kenya. *Unpublished MBA project*, University of Nairobi, Kenya.
- Mossin, J. (1966). Equilibrium in capital asset markets. *Econometrica* , 34(4) 768-783.
- Mugenda, A.G., & Mugenda, O.M. (1999). *Research methods: quantitative and qualitative approaches*. Nairobi: Acts Press.
- Nairobi Securities Exchange, 2013.

Ndung'u, N. (2009). *Developments in the Kenyan domestic bond market*. Paper presented during the launch of the Automated Trading System (ATS) for Treasury bonds at the Nairobi Stock Exchange, Nairobi.

Ngugi, R.W., & Agoti, J. (2007). *Microstructure elements of bonds in Kenya*. Prepared for African Economic Conference Globalization, institutions and Economic development in Africa.

Ngugi, R., Amanja, D., & Maana, I. (2009). Capital market, financial deepening and economic growth in Kenya. *Journal of Finance*. Nairobi, Kenya.

Njihia, M.A. (2005). Determinants of determinants of the corporate bond market in Kenya. *Unpublished MBA project*, University of Nairobi, Kenya.

Okoola, C.A. (2006). An investigation into actual investment performance of bonds listed at the NSE. *Unpublished MBA project*, University of Nairobi, Kenya.

Quarterly Statistical Bulletin. Retrieved July 19,2013, from www.cma.or.ke/index.php?option=com_docman&view=domain&itemid=205

Palazzo, G., & Rethel, L. (2002). Conflicts of interest in financial intermediation. *Journal of Business Ethics*, 81 (1), 193-207.

- Pardy (1992). Institutions reform in emerging securities markets. Policy research Working papers, WPS 907, *The world Bank Washington D.C* ,181-201
- Ringui, J.K. (2012). A survey of factors determining development of corporate bond market in Kenya. *Unpublished MBA project*, University of Nairobi, Kenya.
- Roldos, E. J. (2004a). Emerging Local Bond Markets in Emerging Local Securities and Derivatives Markets. *Palgrave Macmillan Journals*, 51(2).
- Rwegasira, D. G., & Mweha, F. M. (2003). *Public Debt and Macroeconomic Management in Sub-Saharan Africa*, In: UNCTAD, Management of Capital Flows: Comparative Experiences and Implications for Africa, United Nations, New York/Geneva, April.
- Schinasi, G., & Smith, T. (1998). Fixed-income markets in the United States, Europe and Japan: some lessons for emerging markets. *IMF Working Paper 98/173*, International Monetary Fund, Washington, DC.
- Scholten, B., & Wensveen, D. (2003). The theory of financial intermediation: An essay on what it does (not) explain. Posters session presented at the European Money and Finance Forum, Vienna.

- Sharpe, W. (1964). Capital asset prices: A theory of market equilibrium under conditions of risk. *Journal of Finance*, 19 (3) 425-442.
- Shefrin, H. M., (2001). Behavioral Corporate Finance. *Journal of Applied Corporate Finance*, 14, 3.
- Smith, C. W., & Stulz, R. M. (1985). The determinants of firms hedging policies. *Journal of finance and quantitative analysis*, 20(4), 391- 405.
- Sprcic, D. M., & Wilson, I. (2007). The development of the corporate bond market in Croatia. *EuroMed Journal of Business*, 2 (1), 74-86.
- Thillainathan, R. (1996). Malaysia's bond market the further reforms required to escape underdevelopment. *Institute of Southeast Asian studies (ISEAS)* 13(1), 95-113.
- Welch, I. (2009). *Corporate finance: An introduction* (1st ed.). New York: Pearson.
- Were, J.A.M. (2010). An investigation of the factors influencing the development of corporate bonds market: The case of Kenya Financial market. *Unpublished MBA project*, University of Nairobi, Kenya.
- World Bank (2001). *World Development Report 2000/2001: Attacking Poverty*, Oxford University Press, New York.

World Bank & IMF (2001). *Developing Government Bond Markets, A Handbook*, Washington D.C.

World Bank (2002). *Capital Market Integration in the East African Community*. Washington, DC, 14.

Yartey, C.A., & Adjasi, C.K. (2007). *Stock Market Development in sub-Saharan Africa: Critical Issues and challenges. IMF Working Paper, 07/209.*

Yartey, C.A., & Andrianivo, M. (2010). *Understanding the growth of African financial markets. African Development Review, 22(3), 394-418.*

Yoshitomi, M., & Shirai, S. (2001). *Designing a financial market structure in post-crisis Asia. ADB Institute Working Paper, 15, Tokyo, Japan.*

APPENDICES

Appendix 1: Bond markets in Kenya

	Market	Location	Bonds	Maturity
1.	Government Bond	Central Bank of Kenya	Fixed coupon rate	1-30
			Zero coupon rate	1-30
			Floating rate	1-30
			Infrastructural	1-30
			Restructuring/Special	1-30
			Amortized and Savings development	1-30
2.	Corporate Bond	Nairobi Securities Exchange	Unsecured	
			Secured	

Source: CMA, 2013; CBK, 2013.

Appendix 2: 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