AN ANALYSIS OF DETERMINANTS OF RISK SPREAD IN CORPORATE BOND MARKETS: THE CASE OF FIRMS LISTED AT THE NAIROBI STOCK EXCHANGE.

SUBMITTED BY:

IMINYI L, L. **D61/70812/2008**

SUPERVISOR: **MR. MIRIE MWANGI**

A MANAGEMENT RESEARCH PROJECT PROPOSAL SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF BUSINESS ADMINISTRATION, SCHOOL OF BUSINESS

DECLARATION

This project has not been submitted for in whole or part to qualify for any other academic award.

Signed.....Date.....07/11/2011.....

IMINYI, L, L.

This project has been submitted for presentation with my approval as the University supervisor.

Signed.....Date.....7/11/2011

MR. MIRIE MWANGI

DEPARTMENT OF FINANCE AND ACCOUNTING, SCHOOL OF BUSINESS
UNIVERSITY OF NAIROBI

ACKNOWLEDGEMENTS

I would like to appreciate the several individuals that have contributed to this study by way of material, guidance and motivation support.

My appreciation to my supervisor Mr. Mirie Mwangi for his patience and support.

I also appreciate the staff at CMA library that was accommodative and supportive in giving me information on company's annual accounts. Since gratitude to the staff at stock exchange who kept sending me the data I requested for and their willingness to support.

I would like to thank Mr.Waweru of Faida stock brokers for his insightful knowledge on bonds and his assistance with historical data on bond prices.

Last but not least my friends who encouraged and my mom gave her emotional support.

DEDICATION

To all finance students who aspire to be successful in their careers.

ABSTRACT

The study of this project is on how the determinants of the credit spreads on bonds affect the speared on the corporate bond market. Given the attention and growth the bond market has received in the recent years coupled with the interest of firms to issue bonds instead of equity or take commercial loans, the study seeks to find out hoe default risk, inflation, interest rates and other macroeconomic factors influence the behavior of spreads at the bourse.

The study seeks data from the CMA, NSE and central bank to analyze the determinants of spreads and find if there any relationships among the variables. Trading of corporate bonds will be used and compared with yields of the same maturity from the treasury bonds and the difference analyzed.

Data was analyzed using advance excel programs such as regression and ANOVA tables. Data has also been presented in terms of tables, charts, graphs and pie charts.

Findings indicate that the corporate bond market trading at the secondary market is still under developed. Majority of bonds are traded are government on the basis that are default free. Only Kengen has recorded majority of trades at the bourse at the secondary market. More incentives and program are underway by the CMA and NSE to increase bond trading at NSE for corporate issues.

TABLE OF CONTENTS

CHAPTER FOUR: DATA ANALYSIS AND PRESENTATION

CHAPTER FIVE: SUMMARY AND CONCLUSIONS

Tables

Figures

ABBREVIATIONS

ATS----------Automatic Trading System

CBK----------Central Bank of Kenya

CDS----------Credit Default Swap

GDP----------Gross Domestic Product

NSE----------Nairobi Stock Exchange

YTM----------Yield to Maturity

CSDC---------- Central Depository and Settlement Corporation

CHAPTER ONE

INTRODUCTION

1.1 Background Study

A bond is a tradable fixed income security. Bonds can be classified in various ways such as covenants, option features cash flow pattern, maturity, price and rating. In Kenya bonds are recognized in terms of maturity.

A credit spread is defined as the component of corporate bond yields that is above and beyond the yield of comparable default-free Treasury bonds--this equals the "excess" interest rate that would be earned if the corporation does not default and the investor holds the bond to maturity (Federal Reserve Bank of San Francisco, *The Corporate Bond Credit Spread puzzle*, FRBSF Economic Letter 2008-10; March 14, 2008).

Bonds can be issued to build infrastructure, repair Municipal council facilities, can be used to finance corporate companies as well as government projects. In Kenya the government has issued an infrastructure bond to make roads. Kengen took up an infrastructure bond to expand the electricity generation programs; Safaricom issued a bond to expand its market.

According to the Federal Reserve Bank of San Francisco U.S publication(*What determines the credit spread?*Economic Letter 2004-36; December 10, 2004) the paper notes that investors need an incentive to invest in Corporate bonds. Credit investors need a measure to determine how much they are being paid to compensate them for assuming the credit risk embedded within a security.

To calculate the yield spread we use the following relationship:Yield Spread = $yD - yB$, where yD is the yield on bonds while yB is the yield on government bonds. According to Dominic O'Kane & Saurav Sen (2004) the yield spread, also known as the yield-yield spread, is probably the most widely used credit spread measure used by traders of corporate bonds.

Elton et al. (2001) on 'Explaining rate spread on Corporate Bonds' identifies the following factors as related to the credit spread variance. These are a) expected default loss; some corporate bonds will default and investors require a higher promised payment to compensate the investor from expected loss from default b)tax premium; interest on corporate taxes taxed at different rates that government and c)risk premium; return on corporate bonds are higher than government bonds and investor should require a premium for higher risk.

Collin-Dufresne et al. (2001) discuses further determinants such as changes in business climate, volatility and leverage. They presume that increased volatility leads to increased probability of default, likewise the credit spreads are expected to increase with leverage. They argue that since default is triggered when leverage ration reaches unity hence the rise in default rate.

Similarly Duffie and Singleton (1999) studied on modelling of term structures of defaultable bonds and find that both credit risk and liquidity factors are necessary to explain innovations in U.S swap rates. They used reduced-form models of the valuation of contingent claims subject to default risk, focusing on applications to the term structure of interest rates for corporate or sovereign bonds.

Longstaff et al. (2005) examines two major determinants of credit spreads; default risk and illiquidity. in their study they argue that majority of the corporate spread is due to the default

risk while the non default component is time varying and strongly related to measures of bond related illiquidity and as well as the macroeconomic measures of the bond market liquidity.

Longstaff et al. (2004) estimate that default risk accounts for more than 50% of the credit default swap spread though there is a range of estimates on the size of the non-default risk component. it is generally accepted now that there is more to the corporate spread than just credit risk. Elton et al. (2001) find that, depending on the ratings class, taxes can account for anywhere from one-quarter to three-quarters of the difference in the spread between corporate and government bonds.

According to research undertaken by different scholars (Collin-Dufresne, Goldstein, & Martin, 2001), their study found out that changes in leverage, volatility and business climate affect credit sspreads on corporate bonds.

Driessen (2003) went further to decompose spreads in particular by allowing for a liquidity premium. The findings however reveal that there is still about one-third of the credit spread for the average BBB-rated firm that is not explained by Driessen's model. He refers to this missing piece as a large risk premium possibly caused by a tendency for firms to default in waves. This is a risk that is difficult to eliminate by diversification and therefore investors could require a premium to be willing to carry it.

In their large panel study of US industrial firm bonds, Athanassakos and Carayannopoulos (2001) find that, beside all these factors (i.e. default probability, time to maturity, presence of call options, presence of a sinking fund), tax effects, business cycle conditions, and temporary demand and supply of bonds imbalances also affect corporate yield spreads. Kenya is still in the growing stages in the bond market and so features like call options and sinking fund will be out of scope for this study.

Elton, Gruber, Agrawal, and Mann (2001) also did a study on the United States market on factors affecting changes in corporate bond values and found that the more important determinants of corporate spreads are differential taxes which account for 36% of the spread and, second, a risk premium that accounts for up to 39% of the spread while Elton et al. (2001) report that expected losses from default can account for less than 20% of the credit spread.

From the studies undertaken in the developed markets concerning the factors affecting credit spread, most authors seem to agree on the fact that an element of risk; either default or risk premium affect the credit spreads. Other studies have further decomposed the spreads into risk and non risk factors. In non- risk factors they found out that liquidity, taxes, and business climate conditions and interest rates. This study will seek to find out the extent to which these factors affect the bond prices on the Kenyan bond market for firms listed at the Nairobi Stock Exchange.

The Bond market in Kenya is divided into two broad catigories; government bonds and corporate bonds. Government bonds range from 1 to 30 years of maturity .There is a special government bond called infrastructure bond which is tax exempt. This was done to induce investors to buy. A total of 11 corporate bonds are also issued. There are currently three main players in the bond market. The Nairobi Stock Exchange,The Capital Markets Authority and The Central Bank of Kenya. The Nairobi Stock Exchange is licensed and regulated by the Capital Markets Authority. It has the mandate of providing a trading platform for listed securities and overseeing its Member Firms while The Capital Markets Authority is the

government regulator charged with licensing and regulating the capital markets in Kenya. It also approves public offers and listings of securities traded at the Nairobi Stock Exchange.

In Kenya, Bond turnover has been on an upward trend. According to the NSE Annual report for 2008, Bond turnover rose from Kshs. 34Billion in 2004 to Kshs. 95 Billion in 2008.Bond turnover underpinned by the shift from equity to debt securities broke a new record, registering a 12.7 percentage increase from 2007. The Exchange is working on a number of initiatives to increase the vibrancy of the debt securities market. The ultimate objective of these initiatives is to increase liquidity for the investor and the capacity of the market to finance long term private and public investment particular infrastructure.

The Exchange initiatives 2009 are to reduce threshold for investments in Treasury bills in the primary market from the current Kshs.1 million to Kshs.100,000.00.The CDSC(Central Depository and Settlement Corporation) and the CBK plan to immobilize listed bonds in the depository of the CDSC and implementation of hybrid secondary market linking the Automated Trading System with the CBK Depository for the trading of treasury bonds to deepen liquidity. This has now been achieved and bonds are now being traded in the automated system current daily turnover is 2.5 Billion. The major corporate bond issuers are Barclays Bank,Sasini Ltd,Mabati Rollings Ltd,CFC Stanbic,Shelter Afrique, Kengen and Safaricom Ltd.

1.2 Statement of the Problem

The existing local studies on bonds (Luketero,2008; Odep 2008; Okoola,2006), did research on the general performance of bonds and stocks in Kenya. No specific reference was made on the determinants of credit spreads on bond markets in Kenya.

Okoola (2006) looked at the actual investment performance of bonds at the Stock Exchange. Using Yield to Maturity as a measure of performance from 2001 to 2005, they find out that the performance of bonds dropped in 2002 but later increased from 2004 and 2005.He also studies the performance of government bonds over the same period and the same trend was observed. However he did not look at the reasons why the bonds performance dropped.

The general turnover of bonds was 33.21billion, 36.31billion, 48.38billion in 2002,2003 and 2004 compared to turnovers of 2.02billion,7.51billion and 20.35billion in stocks over the same period (Okoola, 2006).This draws attention to the importance of bond markets. Due to increased liquidity, avenues for investments are being channeled to bonds. Government has also increased its participation of bonds as evidenced by increase in Treasury bonds of varying maturities.

Njihia (2005) studied the determinants of the development of corporate bond market in Kenya .In his study he looked at the macroeconomic factors and their contributions to the bond market. The following factors were studied; exchange rate, inflation, interest rates, bank credit, Treasury bond market and equity returns. They find that bank credit is a significant factor in bond market. It negatively affects the performance of the bonds. However effects of inflation and equity returns were found to be insignificant. Interest rates have a significant role to play in determining the demand for bonds.

Mbugua (2003) examined factors influencing the development of the corporate bond market in Kenya. He looked at the general performance of bonds market and the types of bonds that can be traded .He observes that corporate bonds are high yields since the interest payments are taxable .The real value of yield spread is apparent when inflation is considered. They find that price volatility of corporate bonds increase with the length of maturity and decrease as size of the coupon decreases. They observe that changes in credit rating can also affect prices. However this was not based on data that was collected though research done by other studies agrees with these relationships.

Studies conducted in other markets have shown there is empirical evidence on the factors affecting the credit spreads. Among the factors now identified are liquidity, taxes, default risk and risk premium. More factors are time to maturity, presence of call options, business cycle conditions, and changes in leverage, changes in volatility and changes in business climate.

Most corporate bonds trade in relatively thin markets. This means that it is typically more costly to undertake transactions in these instruments than in equities and Treasuries. Investors must be compensated for this. More generally, there can be uncertainty about the liquidity (or illiquidity) of a given bond at a given time, and investors might also require a premium to bear this risk. Recent studies have argued that liquidity premium may be the next most important component of spreads after taxes.

The existing studies on this topic area are scanty in Kenya. This identifies the need to undertake the research and contribute to the general knowledge in this area to support the determinants identified above or come up with additional factors likely to influence spreads in developing countries since most of the studies have been carried out in the developed nations. Due to different trade and financial environments this study seeks to see whether their

arguments hold for the African Bond market.

Due to the above gap in information, this project seeks to study the relative importance of these factors in the Kenyan bond market and how investors are likely to shape the future of the bond market in Kenya.

As a result of the current growth in the Kenyan market for bonds, there is need to establish framework that will guide investors, stock brokers, government analysts and economist on expected changes in bond markets and how the factors discussed above can affect the performance of bonds. Kenya's bond market volumes are significantly higher now compared to 5 years ago and therefore need to explore bond markets. The current market valuation of bonds stands at .This is a significant value and therefore the need to study its performance at the stock exchange. It will also form as a basis for further studies. The bond market in Kenya, as in a number of countries is receiving a little bit more interest now as the cost of borrowing from banks is becoming very expensive.

1.3 Objective of the Study

The objective of the study is to examine determinants of credit spreads in the Kenyan bond market.

1.4 Importance of the Study

This research constitutes an attempt at a study of a phenomenon that may impact the decisions of various firm stakeholders:

Management: the findings can be used by managers of firms to acquire an in-depth understanding of the Bonds market performance in Kenya. This is useful in making financing decisions; whether to utilize debt and/or equity finance depending on their firm. Firms can use this information in setting bond prices when issuing bonds.

To scholars: the study contributes to the existing literature by using firm level data. The study will add to the basis for further research by adding to the body of theoretical knowledge and literature.

Owners and potential investors: they will be better placed to monitor information affecting the performance of bond process. This will provide additional information valuable in making investment decisions that maximize their value.

Government and other policy makers: can gain understanding on the effects of the variables affecting performance of bonds and take proactive steps to make the environment favorable for bond investors. Monitor economic indicators likely to affect bonds and interest rates in the market.

Financiers/ loan providers: can aid in understanding of the relationships of variables that affect performance of Bonds in the Market. Provide information to Bond Issuers on likely factors to consider before issuing bonds in the market.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

A number of articles have studied the determinants of corporate yield spreads. Choudhry (2001) observes that a change in credit quality is one of the main factors influencing the yield spread. Credit quality is determined by the rating classes that are used to asses the riskyness of the firms. This in some cases might affect an entire industry. A collapse of on bank might cause other banks to be downgraded. The reverse is true of an upgrade. The author also mentions liquidity as a pointer of credit spread. Liquidity here is measured on wether bonds have ready markets. Higher spread will indicate bonds are illiquid. Yield spread is also affected by volatility of interest rates. Yield spread will narrow if interest rates are expected to increase. He observes that depressed markets in general leads to demand for loans and hence widening of the spread.

This section is divided into two parts; the theoretical framework and the empirical evidence.

2.2 THEORETICAL FRAMEWORK

2.2.1. Theoretical Determinants of Credit Spreads

The motivation of these studies stems from the existing theoretical frameworks for modelling default risk, mainly the structural and reduced-form approaches. The structural approach, pioneered by Merton (1974), models default time as the first time the market value of the issuer's assets crosses a default boundary. The lower the credit quality of the firm, the closer it is to this boundary, and hence the firm will face a higher probability of default over short maturities. For longer maturities, if no default occurs, the firm has a higher probability of

credit improvement, and therefore the term structure of credit spreads is more likely to be humped or downward sloping. For high-quality firms, the reverse argument holds, and consequently, the term structure of credit spreads is more likely to be upward sloping. The conclusions of the structural approach regarding the shape of the term structure of credit spreads are confirmed by the empirical work of Sarig and Warga (1989).

Empirical work on the curve of credit default swap premiums (Lando and Mortensen 2005; Truck, Laub, and Rachev 2004) also confirms upward-sloping shapes for high-quality issuers and downward-sloping or humped curves for low-quality issuers. According to the reduced-form approach, introduced by Jarrow and Turnbull (1995) and Lando (1998), a hazard rate typically drives the default event with no lower boundary condition on the assets or leverage of the firm. These models are flexible and easier to calibrate to observe credit spreads. Therefore, they are usually designed to agree with the empirical findings on the shape of the term structure of credit spreads according to the credit quality of the debt.

Collin-Dufresne et al. (2001) looks at more theoretical determinant such as the interest rates, changes in volatility, changes in the slope of the yield curve, changes in leverage and changes in business climate. On interest a higher drift in interest reduces the probability of default and in turn reduces the credit spreads. On the slope of the yield, an increase in the slope of the curve leads to reduced credit spreads while a decrease in the slope may imply a weakening economy. Theory predicts that an increase in the Treasury yield curve slope will create a decrease in credit spreads. Changes in leverage are directly related to default and therefore the higher the default rate, the higher the spread. Changes in business climate will be affected when there are changes in the recovery rate as this affects the credit spread changes.

UNIVERSITY OF NAIROBI
LOWER KABETE
LIBRARY

Given the large idiosyncratic variation across firms in different business sectors and of different credit quality, analysis of credit spreads focuses primarily on the systematic components common to all firms in the economy. In principle, this looks like a straightforward exercise. Observe the yield on a large number of corporate bonds and deduct the corresponding default-free interest rate component. The resulting credit spreads are supposed to reflect the financial health of the firms that issued the corporate bonds.

In a world without distortion from factors such as transactions costs and taxes, the only rationale for credit spreads to exist would be to compensate for the probability of default and the size of the ensuing loss (Fama, & French, 1993). Thus, the systematic components in corporate bond credit spreads should all be factors that reflect the financial conditions of firms in general.

Duffie, Saita, and Wang (2007) present and estimate a dynamic model for the default probability of 2,770 U.S. industrial firms. They find that, in addition to a set of firm-specific factors, two market-based factors–the 3-month Treasury bill rate and the 12-month trailing return on the S&P 500 index–have significant explanatory power in predicting the default probability of the firms in their sample

2.3 EMPIRICAL EVIDENCE

2.3.1 Factors contributing to the credit spread on bond markets

An important research area of the corporate yield spread literature seeks to measure the proportion of the spread that can be explained by factors such as the possibility of default, liquidity, tax differentials and market risk.

a) Default Risk.

Longstaff et.al (2004) finds that the default component accounts for the majority of the corporate spread across all credit ratings. In particular, calculating spreads relative to The Treasury curve, the default component represents 51% of the spread for AAA/AA-rated bonds, 56% for A-rated bonds, 71% for BBB-rated bonds, and Corporate Yield Spread 83% for BB-rated bonds. The percentages are even higher when the other curves are used to calculate spreads. These results contrast with those in Jones et al. (1984), Elton et al. (2001), Delianedis and Geske (2001) and others who report that default risk accounts for only a small percentage of the spread for investment-grade bonds. However, Elton et al.(2001) find that spreads include an important risk premium in addition to compensation for the expected default loss. Since the credit default swap premium measures the risk-neutral default component (expected default loss plus credit risk premium), our results may in fact be consistent with those of Elton et al. Elton et al (2001) found out that ratings on corporate bonds wether provided by Moody's or Standard and Poor's provide material information about spot rates. However, only a small part of the spread between corporate and treasuries bond and the difference in spreads between bonds with different ratings are expected by the corporate default loss.

Amato and Remolona (2003) also argues as follows: Spreads on corporate bonds tend to be many times wider than what would be implied by expected default losses alone. These spreads are the difference between yields on corporate debt subject to default risk and government bonds free of such risk. While credit spreads are often generally understood as the compensation for credit risk, it has been difficult to explain the precise relationship

between spreads and such risk. In 1997–2003, for example, the average spread on BBB-rated corporate bonds with three to five years to maturity was about 170 basis points at annual rates. Yet, during the same period, the average yearly loss from default amounted to only 20 basis points. In this case, the spread was more than eight times the expected loss from default. The wide gap between spreads and expected default losses is what we call the credit spread puzzle.

Collin-Dufresne et al. (2001) study the credit spread changes for 688 different corporate bonds. They control for variables that affect the likelihood of a firm defaulting such as leverage ratio and asset volatility in addition to controlling for the effects of changes in short- and long-term Treasury bond yields and the return on the S&P 500 index. However, they are able to explain only about 25% of the variation in the credit spread changes across the 688 different bonds.

Elton et al. (2001) studies on differences in spot rates between corporate and government bonds (the corporate spot spreads) differ across rating classes and should be positive for each rating class for the following four reasons:

1. Expected default loss -- some corporate bonds will default and investors require a higher promised payment to compensate for the expected loss from defaults.
2. Tax premium – interest payments on corporate bonds are taxed at the state level while interest payments on government bonds are not.
3. Liquidity effect corporate bonds have higher and more volatile bid ask spreads and there may be a delay in finding a counter-party for a transaction. Investors need to be compensated for these risks.

4. Risk premium – The return on corporate bonds are riskier than the returns on government bonds, and investors may require a premium for the higher risk. The only controversial part of the above analysis is the fourth point. Some authors in their analysis assume that the risk premium is zero in the corporate bond market.

They find that the risk premium is a large part of the spread. They show that corporate bonds require a risk premium because spreads and returns vary systematically with the same factors as common stock returns. If investors in common stocks require compensation for this risk so should investors in corporate bonds. The source of the risk premium in corporate bond prices has long been a puzzle to researchers and this study is the first explanation for its size and existence. They use credit spread components separately rather than pricing corporate bonds off a spot yield curve since want to know the forces driving prices and not simply what prices. They use differentiation measures and regression methods to make estimates on bond valuation and measure sensitivity of spreads to price changes. Secondly, they argue that for an investor thinking about purchasing corporate bonds, the size of each component embodied in market prices will affect the decision on whether to purchase the bonds.

b) Tax Premiums

Elton et al. (2001) argues that taxes play a role in determining the yield spreads. Another difference between government bonds and corporate bonds is that the interest payments on corporate bonds are subject to tax while the government bonds do not. Because state tax is deductible from income for the purpose of federal tax, the burden of the state tax is reduced. Taxes are looked at in two ways: the coupon is taxable while if the firm defaults, there are capital losses and taxes recovered. Though there is a range of estimates on the size of the non-default risk component, it is generally accepted now that there is more to the corporate spread

than just credit risk. This observation has led researchers to search for other determinants of the spread. Another difference between corporate bond yields and government bond yields is their tax treatment; interest income paid on corporate bonds, but not government bonds, is taxable at the state level. The top marginal state tax rates generally range from 5%-10%. Elton et al. (2001) find that, depending on the ratings class, taxes can account for anywhere from one-quarter to three-quarters of the difference in the spread between corporate and government bonds.

c) Risk Premium

Elton et al. (2001) continues to decompose the spread components into further determinant. The above two factors; taxes and default loss do not account for all the spread. Their results indicate that the risk premium accounts for a large component of the spread. In their study they argue that if corporate bonds move systematically with other assts in the market where as the government bonds do not, then corporate bond return in the market world require a risk premium to compensate for the no diversification corporate bond risk. They contend that the returns on corporate bonds is riskier that the return on government bonds and investors or should require a higher premium for the higher risk. They argue that a large part of the corporate bond is systematic rather than diversifiable.

d) Liquidity

Bedendo, Cathcart & El-Jahel (2007) report the results for the investment-grade bonds issued by financial and industrial sectors, respectively. Low equity market returns *252 The Journal of Financial Research* lead to a steepening of the credit spread term structure. When markets are depressed, investors shift to the shorter end of the curve, pushing up the yield on long-maturity corporate bonds.

One way to get an estimate of the size of this liquidity effect is to estimate a relationship between the yields on corporate bonds and variables meant to proxy for current and future economic health of firms. Lacking a good variable with which to identify the aggregate risk or liquidity premium for the bond market, the deviation of the actual spread from the model-predicted spread can be interpreted as an upper bound for this component of the spread (Blanco, Brennan, & Marsh, 2004).They assert that liquidity premia exist in both the cash bond and CDS markets. They use multiple regressions on variables as changes in liquidity change in firm-specific, volatility change in market volatility firm-specific equity returns equity market returns. They also find that macro variables (interest rates, term structure, equity market returns and equity market implied volatilities) have a larger immediate impact on credit spreads than on CDS(Credit Default Swap) prices, both in terms of absolute magnitude and level of significance. Conversely, firm-specific variables (equity returns and implied volatilities) have a greater effect on CDS prices than on spreads. Movements in liquidity premia may explain a large proportion of the total variation in credit spreads.

The bond market in Kenya is still relatively small despite its rapid recent growth and so demand/supply imbalances can often cause short-term price movements unrelated to default expectations.

Credit spread contains some compensation for the general illiquidity of the bond market. Investors typically incur larger round-trip trading costs in the corporate bond market than in the U.S. equity market. But market liquidity is not constant over time. As the economy weakened and default rates spiked, investors allegedly reduced their demand for high-yield

securities and sought safe-haven investments. As the general economic weakness became apparent, however, monetary policy became very accommodative. The extended period of low interest rates and the recovery presumably increased liquidity to the high-yield sector, and spreads converged (Chen, Lesmond & Wei, 2007). They find that liquidity is priced in corporate yield spreads. Using a battery of liquidity measures covering over 4,000 corporate bonds and spanning both investment grade and speculative categories, the results show that more illiquid bonds earn higher yield spreads, and an improvement in liquidity causes a significant reduction in yield spreads.

The factor loadings on market return and volatility have stronger economic significance for the slope the higher the credit rating. For example, for the financial sector slope regression, the equity market volatility coefficient decreases from 1.01 for the AA rating to 0.70 for the A rating. A higher liquidity slope premium reflects more liquidity shortage at the long end (10-year maturity) relative to the short end (3-year maturity). In most cases, we do not find liquidity slope to be a significant determinant of the slope of credit spreads. An increase in liquidity would result in a general widening of the spreads between all corporate bonds and Treasury bonds(Chen, Lesmond, & Wei, 2007).

Duffee and Singleton (1999) find that both credit risk and liquidity factors are necessary to explain the recent innovations in the credit swap industry. They used reduced from methods to in their study on defaultable bonds. In their study they look at different measures that affect the modelling of term structure of defaultable bonds. They look at valuation of bonds both fro callable and noncallable bonds, pricing of derivatives on defaultable bonds and forward rates. They found out that increase in volatility spreads leads to an increase in price. Bonds both

treasury and defaultable were valued based on the 5 yr semi annual coupon bonds.

While corporate bonds are traded, the volume of transactions is far less than for Treasury securities. Moreover, the information content of bond prices (prices move inversely with yields) tends to be lower for less actively traded securities. Since the high liquidity is an attractive dimension of a security, investors demand additional compensation for holding securities that are less liquid and therefore more costly to sell. For corporate bonds, that compensation for liquidity risk shows up in higher interest rate spreads over otherwise comparable Treasury bonds.

Mentink, A and Vorst, T (2005) analyze the effect of liquidity risk on corporate bond credit spreads based on a sample of 999 investment-grade corporate bonds. In their estimations they control for two common factors, the excess return from the stock market and the excess return of long-term corporate bonds over long-term Treasury bonds, in addition to the rating and maturity of each bond. They find that liquidity risk is priced into credit spreads and explains a significant portion of observed credit spreads. The size of the liquidity premium is determined by the size of the bond issuance, the yield volatility, and the age of the bond. They also find that the liquidity risk premium is time-varying

e) Changes in Business Climate

Dbouk, W. and Kryzanowski, L. (2007) investigates the explanatory power of credit spread changes and their determinants for portfolios. Using ordinary least squares (OLS) regressions and monthly data from 1990 to 1997, this paper tests several new potential determinants (e.g. portfolio diversification) and expectations (and realizations) for some previously identified determinants (e.g. gross domestic product (GDP)) of credit spread changes for portfolios of

financials as derived from spot curves._Strong empirical support is reported that default risk and undiversified risk are priced in credit spreads. The paper finds that forecasts for GDP and inflation are better determinants of credit spread changes than the realized values previously used in the literature, which is consistent with the notion that term structures convey expectations about future interest rates.This study will also review the monetary policy since developments in the corporate bond market may provide a timely and forward-looking measure of the general business climate.

2.3.2 Summary of Empirical Evidence

In conclusion the studies reviewed show that more than half of the variation in corporate bond credit spreads is not related to the financial health of the issuing firm, but rather reflects effects such as compensation for liquidity risk, which can vary over time and to some extent the tax treatment of corporate bonds. Thus, using corporate bond spreads to derive conclusions about the general business climate requires a very demanding decomposition of credit spreads into their separate components.

Moreover, while the research reviewed here has been able to contribute much to our understanding of the composition of credit spreads on corporate bonds, there are still some significant pieces missing before the credit spread puzzle can be declared solved. Most authors however seem to agree on the fact that risk premium, default premium, interest rates and liquidity affect the credit spreads. In this study we focus on whether these factors will hold for the Kenyan bond market.

CHAPTER THREE

METHODOLOGY

This chapter outlines the general methodology to be used to conduct the study. It specifies the research design, target population, sampling design, data collection method and instruments, data analysis and interpretation.

3.1 Research Design

Quantitative research refers to the systematic empirical investigation of social phenomena via statistical, mathematical or computational techniques. The objective of quantitative research is to develop and employ mathematical models, theories and/or hypothesis pertaining to the phenomena and therefore the study will be descriptive in nature. The process of measurement is central to quantitative research because it provides the fundamental connection between empirical observation and mathematical expression of quantitative relationships. The study was based on data collected from regulatory bodies and financial institutions.Data was also be collected from journals and annual publications.

3.2 Population size and unit analysis

To study the factors affecting the determinant of credit spreads, we will use data for all firms listed in NSE using theoretically conventional variables. All firms that have issued bonds at the stock exchange are 12.

3.3 Sample

Since the entire population is sufficiently small, this will be a census study because data will be gathered on every member of the population.

3.4 Data Collection

Secondary data will mainly be collected from The Central Bank, Capital Markets Authority, The Nairobi Stock Exchange and the Central bank. Data on interest rates, inflation, Gross Domestic Product, treasury bonds prices and volumes was collected from the Central bank of Kenya. Data on the bond prices for both corporate and government bonds was collected from the Nairobi Stock Exchange. This information has been used in studying trends at the Bond Market and risk premiums. The study has utilized data from the firms that were listed at the Nairobi Stock Exchange in the 2009 to 2011.

Information relating to the structure of firms, their valuation and general characteristics of the firms listed on the stock will be obtained from the Capital Markets Authority. Trends on prices, general performance of the stock exchange and market capitalization will be obtained from this source. This will enable the researcher to analyse the firms and their profitability and default risk and how this can contribute to credit spreads. Information on corporate tax rates will be obtained from the Kenya Revenue Authority.

3.5 Data Analysis

To achieve the objective of the study, statistical methods of data analysis will be used to analyse the data. Regression and correlation analysis will be used. Multiple regressions will provide an equation that predicts one variable from two or more independent variables. The study will be guided by the empirical literature on bond prices to test for the significance effect / magnitude of the determinants on credit spreads. Bond prices, inflation, interest rates to be presented in tables. Trends will be analyzed using line graphs to compare prices over the

5 year period. Pie charts will be used to present the firm's share of the overall bond market. A multiple regression will seek to find the best values for the intercept value and the coefficients of the independent variables .It allows simultaneous test of multiple independent variables. Statistical Package for Social Sciences and ANOVA tables will be used to analyses measures such as the coefficient of determination; coefficient of relation to determine the strengths of the determinants of credit spreads. Linear regression will be used first to study the relationships between the spreads and the individual independent variables.

The regression model

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \varepsilon$

Where;

Y : Credit spread

Where the spread is excess of corporate bond yields over treasury bond yields

X_i represent the explanatory variables as independent variables (regressors)

β_i: are the regression coefficients of Xi representing the marginal effective change in X_i holding other factors constant.

β_0: is a constant. It represents the value the dependent variable Y will be when all the independent variables are zero.

ε is the standard error term

The independent variables determining the spread Y are

The default risk(X_1),

Liquidity (X_2),

Risk premium (X_3),

Inflation(X_4),

Macroeconomic factors (X_5),

The effective corporate tax rate (X_6),

The default risk is a measure of probability of loss or company financial performance and profitability. A measure of company's profitability will be used. Liquidity will be measured in terms of the bond's maturity as it is believed that the longer the period of maturity the higher the spread and more illiquid the bond becomes.

Liquidity will also be measured based on the ease with which bonds are traded at the bond market. This will be difference between the bid and offer price. A higher difference shows that the bonds are illiquid. Risk premium would be based on returns on the stock market. It is believed that investors require a higher premium to compensate for the risky bonds. Interest rates and GDP will form the macroeconomic factors to be studied.

CHAPTER FOUR

DATA ANALYSIS AND FINDINGS

4.1 Overview of the Bond Market in Kenya

The bond market in Kenya is largely dominated by Government securities and a few corporate bond issues. The Government and the private sector have been able to raise over Kshs 100billion infrastructure funds since the launch of the first infrastructure bond in 2009. There were successful corporate issues in 2009 which increased the bond turnover for both treasury and corporate bonds. After the 2008 crisis and a depressive performance of the stock market ,investors shifted their focus from equity to debt. The turnover for bonds has overtaken the market for equity to stand at Kshs.110 billion as of the year 2009 while equity turnover stood at 38 percent. Table 4.2 gives the comparatives figures while the Figure 4.1 shows the trend over the period.

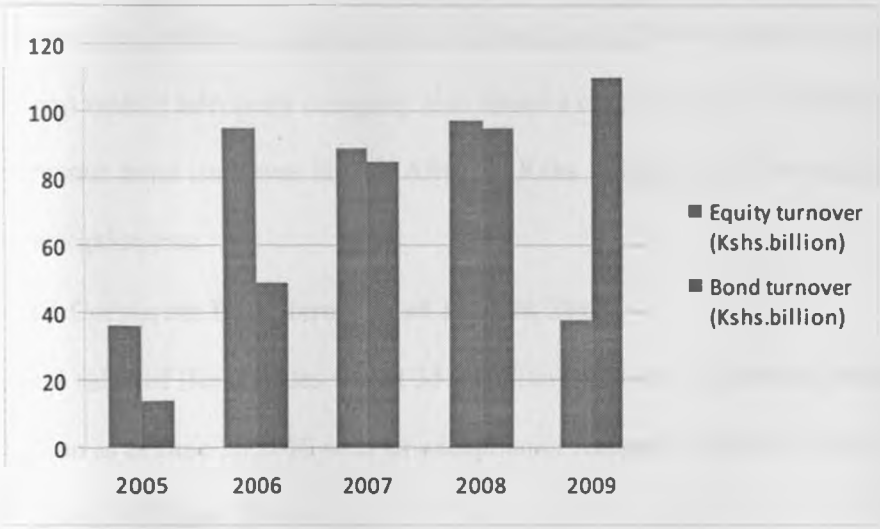
Table 4.1 Government Bonds (Value Issued in Kshs Billions)

Year	2006	2007	2008	2009	2010
1	0	8.08	3	10	0
2	18.96	11.68	16	6	0
3	12.8	6.87	0	0	0
4	9.55	3.38	0	0	0
5	7.91	5.39	24.09	15	46
6	14	11.7	0	0	0
7	3.18	2.26	8	0	0
8	3.2	2.62	0	0	14.5
9	2.95	0	0	0	0
10	5.09	0	14.27	36	24
11	0	3.91	0	0	0
12	0	8.82	0	18.5	18.5
15	0	11.07	14.4	0	28.85
20	0	0	7.5	13	10
25	0	0	0	0	7.5
	77.64	**75.78**	**87.26**	**98.5**	**149.35**

Table 4.2 5-Year Summary Of Market Perfomance

5-YEAR SUMMARY OF MARKET PERFOMANCE	NSE ANNUAL REPORT 2009					
	2005	2006	2007	2008	2009	
Equity turnover (Kshs.billion)	36	95	89	97	38	
Bond turnover (Kshs.billion)	14	49	85	95	110	

Figure 4.1 5-Year Summary Of Market Perfomance



4.1.1 Tapping Debt Markets to raise Capital for Infrastructure

The Government has granted a number of fiscal incentives to issuers who raise capital for infrastructure projects. With regard to fiscal incentives, withholding tax on bonds with maturity of ten years and above was reduced from15 percent to10.Since 2006, interest income generated from the cash flows passed to the investors of listed collateralized bonds issued to finance infrastructure development, is exempt from both withholding and income tax. The interest income from all listed bonds with a tenor of at least three years, issued to finance infrastructure and social services, is exempt from withholding and income tax. In February

and December 2009, the Government of Kenya raised Kshs. 38.62 billion after issuing its first and second infrastructure bonds. Both bonds have a tenor of 12years; and their coupons are 12.50 percent and 12.00 percent respectively. The Government also issued an additional amount of Kshs. 44.237 billion in bonds with tenors ranging from two to fifteen years and coupons from 8.75 percent to 12.00 percent.

4.2 Corporate Bonds

Activity in the primary bond market was bullish during the period ending 30th June 2010 with three Corporate Bonds amounting to Kshs 38 billion being issued. Kenya Electricity Generating Company Limited KenGen raised Kshs 25 billion,Safaricom Limited; Kenya's largest mobile telephony company also issued a corporate bond. The other successful corporate bond issue was Shelter Afrique's Kshs 1 billion offer that registered a 108 subscription rate.

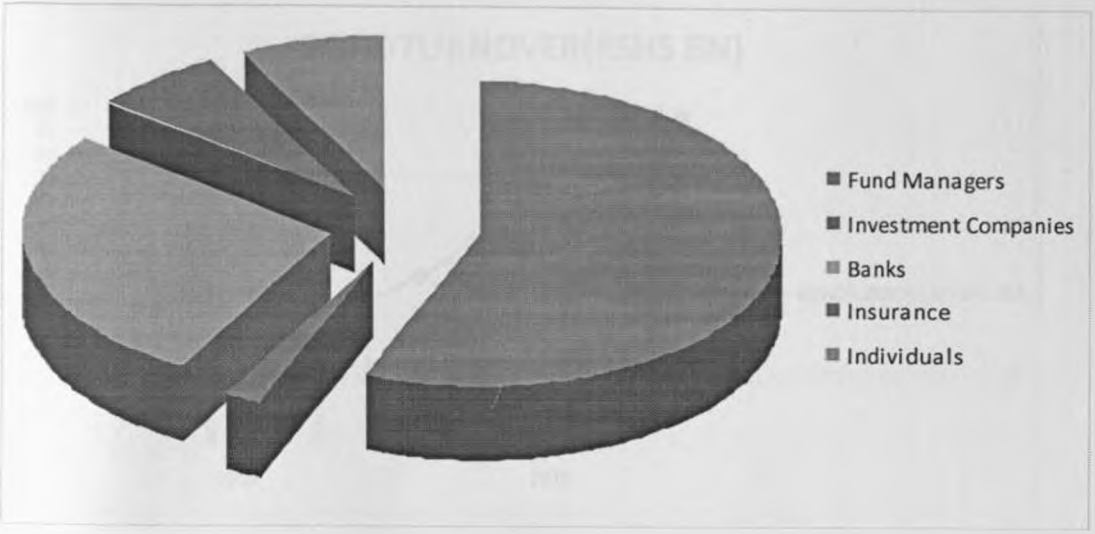
4.2.1 Corporate Bond Issues as at June 30, 2010

Total value of Bond Issues was at 35.9 Billion while the outstanding amount was Kes 18.3 Billion as at June 30 2010 with an exception of Kengen which has issued Kshs.25 Billion as at end of 30th June 2010.

4.2.2 Holding of corporate bonds by class of investors as at June 30, 2010

Figure 4.2 shows the ownership of corporate bonds. Owners of these bonds have been classified as follows: banks, insurance companies, investment companies, fund managers and individuals. The table also shows all corporate bond issuers as at 30th June 2010.Fund managers and commercial bank dominate investments in corporate debt accounting for 83.59 percent of the total portfolio.

Fig.4.2. Holding of corporate bonds by class of investors as at June 30, 2010



4.3 Secondary Market

Gross Secondary Market Statistics 2006 to 2010

Bond market turnover for the secondary market has been on an upward momentum from Ksh 48.4Billion in 2004 to stand at 370Billion as at 30th June 2010.The turnover increased from Kshs.78Billion to kshs 150.2 Billion due to the government issues of infrastructure bonds and automation. Figure 4.3 shows monthly bond turnover rose from Kshs.16.65 billion to Kshs.95.2 billion for the year ended 30th June 2010. Figure 4.4 shows the gross secondary market statistics for the last five years.

Fig.4.3 **Gross Secondary Market Statistics –July 2009 to June 2010**

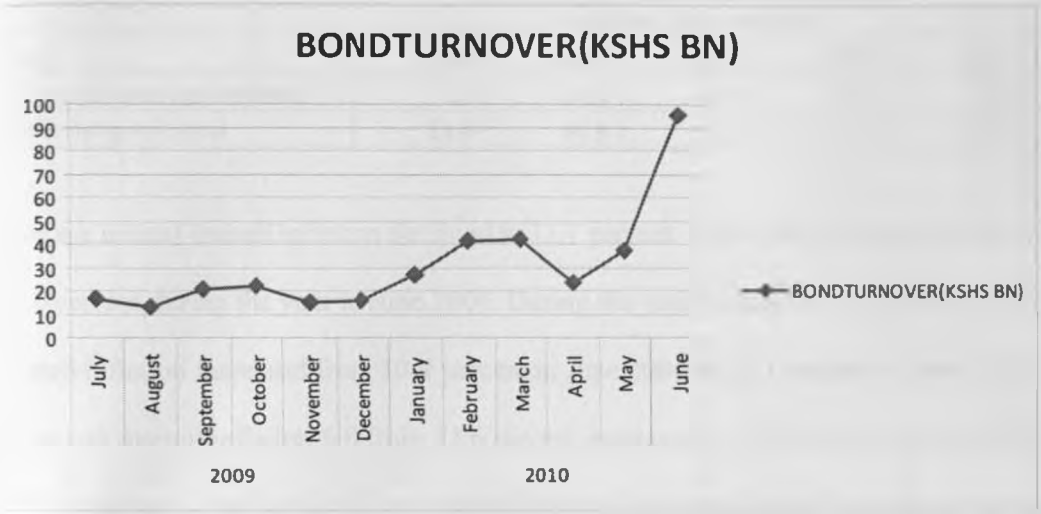
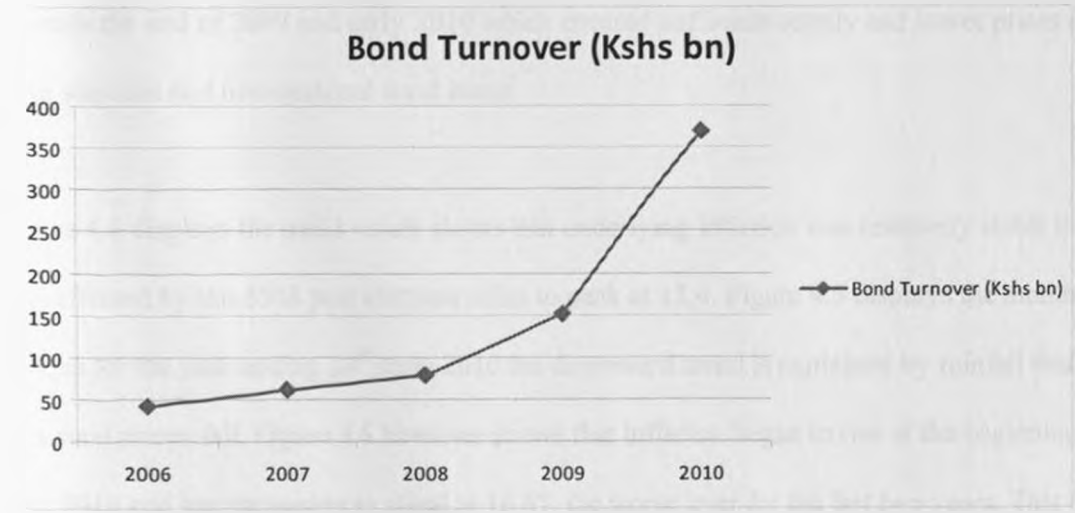


Figure 4.4 Gross Secondary Market Statistics –2006 to 2010



4.4 Macro-Economic Environment

Table 4.4.1 Inflation 2005 to 2010

		Inflation 2005 to 2010				
Year	2005	2006	2007	2008	2009	2010
12 month average inflation	15	11.1	10.4	29.3	8.6	3.5
Underlying inflation	11.9	10.9	11.1	7.6	15.1	5.4

Average annual overall inflation declined to 11.1 percent in the year ending June 2006, from 15.0 percent during the year to June 2005. During the year to June 2007, month-on-month overall inflation increased from 10.9 percent in June 2006 to 11.1 percent in June 2007. The 12-month overall inflation fell from 13.6 percent increased to 29.3 percent in June 2008. The 12-month overall inflation maintained a general downward trend throughout the year, declining from 8.6 percent in June 2009 to 3.5 percent in June 2010.The decline was attributed largely to declining food prices following the rainfall experienced in the country towards the end of 2009 and early 2010 which ensured sufficient supply and lower prices of both seasonal and non-seasonal food items.

Figure 4.6 displays the trend which shows that underlying inflation was relatively stable but was affected by the 2008 post election crisis to peak at 15.4. Figure 4.5 displays the monthly figures for the year ending 30th June 2010.the downward trend is explained by rainfall that saw food prices fall. Figure 4.6 however shows that inflation began to rise at the beginning of July 2010 and has increasing to stand at 16.67, the worse ever for the last two years. This is attributed to the rising oil prices and weakening Kenya shilling against the dollar.

Figure.4.5 **Monthly Inflation 2009 To 2010**

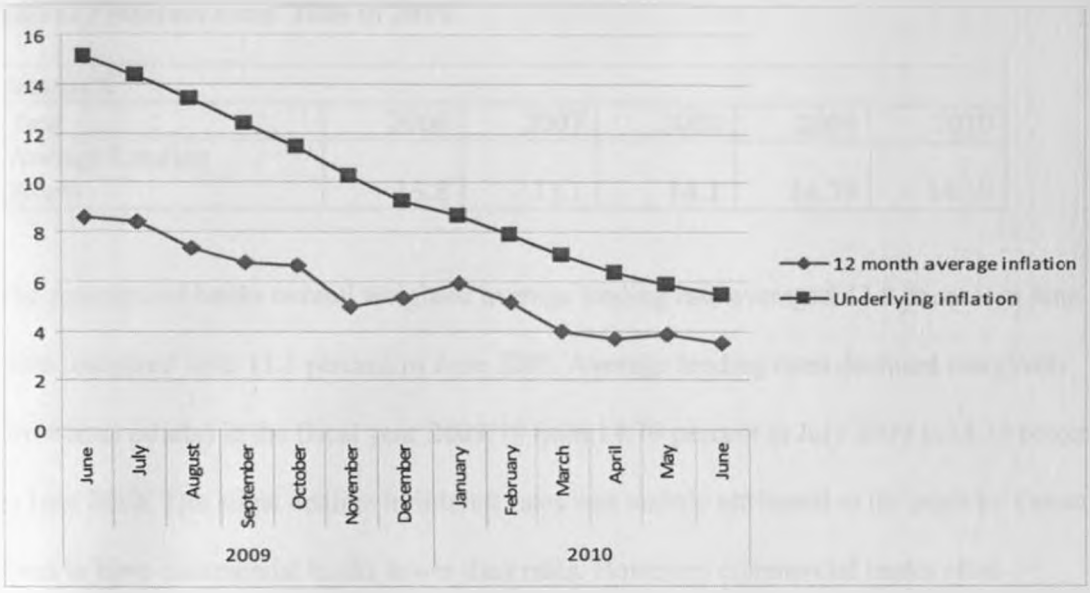
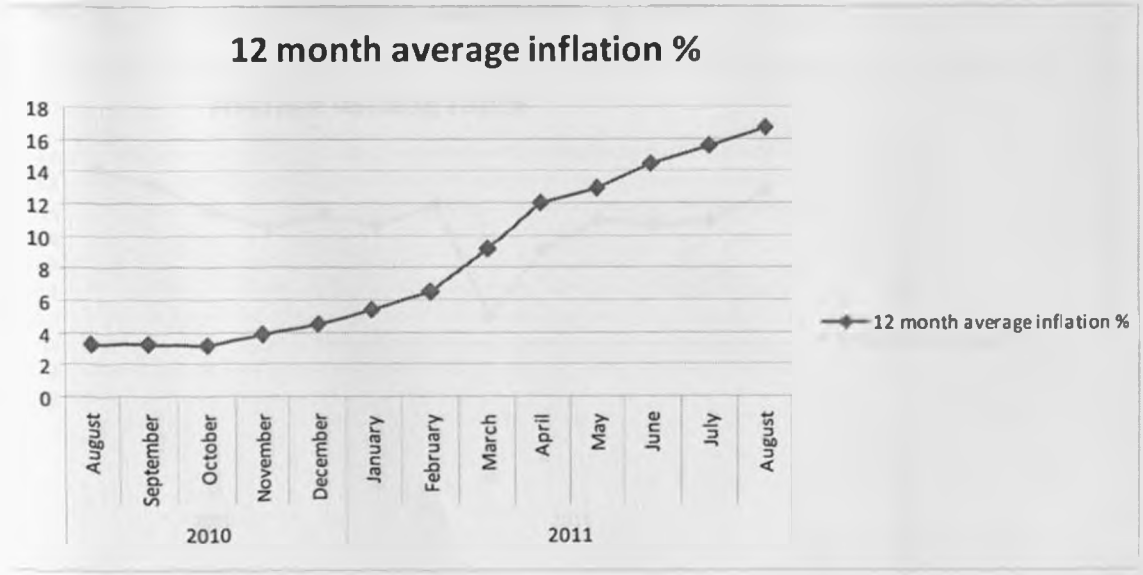


Fig 4.6 12 month average inflation July 2010 to August 2011



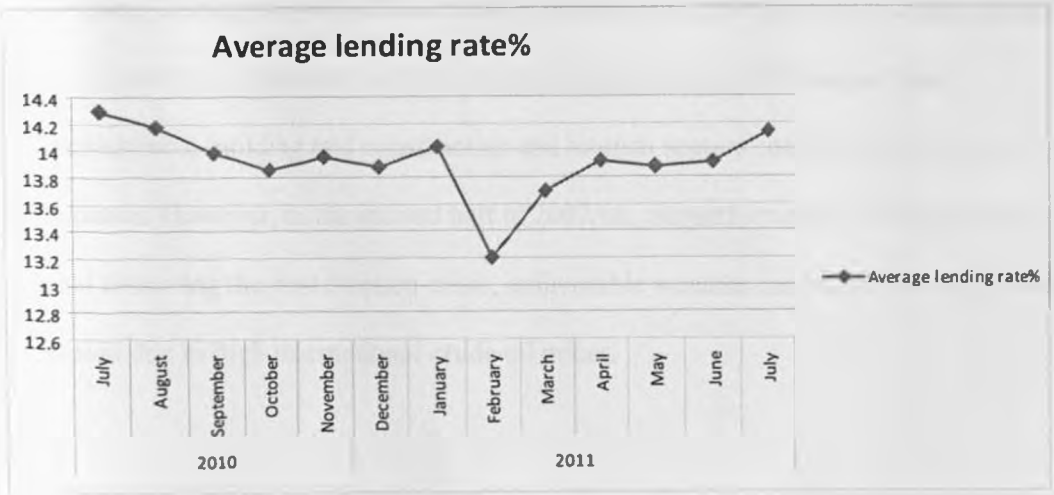
4.4.2 Interest rates

Table 4.4.2 **Interest rates 2006 to 2010**

Interest %					
Year	2006	2007	2008	2009	2010
Average Lending Rate%	13.8	13.1	14.1	14.79	14.39

The commercial banks overall weighted average lending rate averaged 13.8 percent in June 2006 compared with 13.1 percent in June 2005. Average lending rates declined marginally (by 4 basis points) in the fiscal year 2009/10 from 14.79 percent in July 2009 to14.39 percent in June 2010. The slight decline in interest rates was mainly attributed to the push by Central Bank to have commercial banks lower their rates. However, commercial banks cited perceived risk and high cost of funds as reasons why they were not ready to significantly reduce their lending rates.

Figure 4.7 Average lending rate June 2010 to July 2011



Lending rates have been relatively stable at 14 to 15 percent for the year 2006 to 2010 as shown on chart 9.However the month on month lending rates show the interest rates have

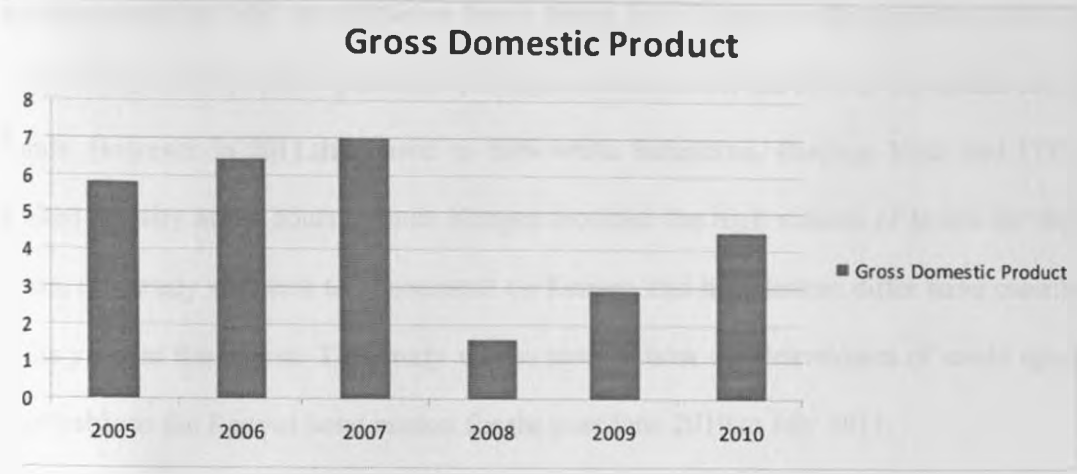
began to rise as shown chart 10.This is informed by the rise in inflation figures and the general macroeconomic indicators. Figure 4.9 on appendix shows the year to year interest rate from 2006 to the year 2010.

4.4.3 Gross Domestic Product

The economy increased annually from 5.8 percent to 7 percent in the year 2005 to 2007.However this plummeted to 1.6 percent before recovery to 2.9 and further 4.5 in the year 2008 and 2009 as shown on Figure 4.8. The good performance was due to improved production in various sectors, particularly tourism, telecommunications, manufacturing and agriculture in the face of significant improvements in the macroeconomic conditions and various policy reforms undertaken by the Government.

During the first half of the fiscal year 2007/08, all key sectors of the economy improved their performance. During this period the economy which grew by 6.4 percent in 2006, improved further to grow by 7.0 percent in 2007. Improved production in the transport and communications, building and construction and tourism sectors contributed to the good performance. However, in the second half of 2007/08, the performance of the economy declined following the post election crisis, unfavorable weather conditions and high costs of production due to high international crude oil prices.

Fig.4.8 **Gross Domestic Product 2005 To 2010**



4.5 Regression Model –Determinants of the Credit Spread

4.5.1 Introduction

SUMMARY OUTPUT					
Regression Statistics					
Multiple R	0.56621626				
R Square	0.320600853				
Adjusted R Square	0.065826173				
Standard Error	1.03943535				
Observations	12				
ANOVA					
	df	*SS*	*MS*	*F*	*Significance F*
Regression	3	4.60069437	1.53356479	1.258370151	0.351837322
Residual	8	9.749530631	1.21869133		
Total	11	14.350225			
	Coefficients	*Standard Error*	*t Stat*	*P-value*	
Intercept	-2.493313762	18.091047	-0.1378203	0.893788174	
X Variable 1	0.353579542	1.29832767	0.2723348	0.792261592	
X Variable 2	0.00289169	0.08374166	0.03453108	0.973299699	
X Variable 3	-0.37995863	0.07367741	-1.8729737	0.097958197	

The trading of corporate bonds at the Kenyan bond market is not active at the secondary market. NSE has only data available from January 2010.Corporate bonds are not traded on a

daily basis. It is a quite counter save for Kengen bonds which are traded at least weekly. Data obtained from the NSE on corporate bonds shows that Kengen is the corporate bond issuer with weekly activity. In the year 2010, Kengen accounted for the 83% of the traded corporate bonds. However in 2011.this eased to 65% while Safaricom, Barclays bank and CFC had limited activity at the bourse. Since Kengen recorded the high volume of bonds for the two years, this study will seek to concentrate on Kengen and how factors differ have contributed to its yield at the bourse. This study was to analyze how the determinant of credit spread is applicable to the Kenyan bond market for the year June 2010 to July 2011.

4.5.2 Default risk.

This is risk that bond issuers will default and therefore seeks a compensation which is the premium above the Treasury bond. According to the studies done by others (Elton et.al 2001), default rate accounts for the major component of the credit spread. Rating agencies are used to rate firms and their probability of default using the reduced from model. However in Kenya currently there is no rating agency and therefore a measure of default risk is not apparent.

However the investors analysis a firms stability and profitability use financial ratios to analyze a firms performance using ratios such as the interest coverage ratio, debt/equity ratios and the stability of its earnings per share. In this study we have analyses the several bond issuers in terms of the ebit/interest, debit/equity and earnings per share. Analysis of the above ratios indicates that Kengen is profitable with stable earnings for the last five years .Therefore this factor is well measured when there is a comparison among several firms. But since only one bond is active at the bourse, this cannot be concluded in this study.

UNIVERSITY OF NAIROBI

4.5.3 Inflation.

Inflation wears the value of money and therefore causes investors to require more incentive to invest. Data obtained from the central bank annual report 2010 shows that inflation from 2009 declined from 8.6% in June 2009 to a low of 3.49 % in June 2010.Thhis began to pick up and stood at 16.67 in August.

4.5.4 Interest rates.

The investor will benefit from declining interest rates and from a narrowing of the credit spread, which contributes to a lessening yield to maturity of newly issued bonds. This in turn drives up the price of the bondholder's corporate bond. On the other hand, rising interest rates and a widening of the credit spread work against the bondholder by causing a higher yield to maturity and a lower bond price. Data obtained from the central bank annual report (2009 to 2010) indicate the average lending rate which is the rate used by commercial banks to lend loans has been relatively stable at 14.32.Oscillating at 13 to 14.30%.

4.5.5 Liquidity.

Corporate bonds will have higher spread since they are illiquid investors will demand more. However the study reveals that the turnover of Kengen bonds at the bourse was higher than that of the treasury bonds of the same maturity. The measure of liquidity in terms of volumes alone does not support illiquidity since it also depends on the age of a bond and the face value of the bond and total number of bonds issued at the market. Because secondary corporate bond transactions take place in the over-the-counter (OTC) market, meaningful quote data is difficult to obtain, making it impossible to directly calculate reliable measures of liquidity,

such as the bid-ask spread.

Collin-Dufresne, Goldstein and Martin (2001) quantify liquidity effects by using the spread between on- and off-the-run Treasuries, swap spreads and the frequency of quotes versus matrix prices in the Warga database. However the database in Kenya bond market is not well developed and this information is not easily available. Liquidity was calculated by dividing the bond turnover for Kengen over treasury bond. Since the turnover for bonds is higher than the treasury bond, liquidity is not directly related to the spread.

4.5.6 Risk premium.

Factors that affect the investors' ability to invest at the market also affect the ones at the bond market. Higher interest rates signal risk and therefore make investors risk adverse demanding higher returns. Since interest rates have been stable at the bourse for the last 2 years. This study assumes no significant relationship over the period

Regression Model $Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \varepsilon$

Using regression analysis, only three variables were used; interest, inflation and liquidity, the rest of the variables could not be analysed due to non availability of sufficient data.

$$Y = -2.49 + 0.35 X_{1+} 0.003 X_2 - 0.138 X_{3+} 1.103$$

Where Y is the spread.

X_1 is interest,X2 represents inflation while X3 represents liquidity and 1.103 is the standard error term.

Multiple R is 0.56 while the R Square is 0.32.This is to indicate that the regression analysis can only explain 32% of the variation. This indicates that the variables discussed above are

not a strong indicator for the spreads .However since this study was limited in period. This is a good indicator and since the Kenyan bond market is still in its infancy stages. This is unlike the developed countries where most of the studies have been undertaken.

CHAPTER FIVE

SUMMARY AND CONCLUSIONS

5.1 Summary of Findings

There is a recorded growth of trading of bond at the NSE. The turnover of bonds stands at Kes billion as at June 2009 according to the NSE Annual report 2009.However the CMA annual reports shoes that bond turnover stood at KES 370bilion.This is high compared to the equity stock turnover recorded Kes 63.21 as at 30th June 2010.This figures actually shows the market for equity is not vibrant unlike the bonds. Attraction has been made to invest in bonds especially the treasury bonds due to the guaranteed return. The Corporate bond market is less active with Kengen leading. However as the market gets more informed of bonds, this is a sector set to grow .Further more firms are finding it an easier way to raise funds using bonds to obtaining loans at commercial banks which are costly.

Interest rates were stable for the period under review, inflation rose from 3.49 to pick at 16.67 in August 2011 while bond turnover for Kengen bonds was higher than the Treasury bond. Interest and the spread are correlated at 0.35 since interest rates during the period were stable. There is no strong correlation between Inflation and the spread since high inflation rates also caused the Treasury yield to rise as well. The regression coefficient is 0.003.Liquidity is negatively correlated since the turnover for corporate bonds was higher that the Treasury bond. The regression coefficient was – 0.138.

5.2 Innovations in Debt Securities Secondary Markets

On November 25, 2009, Government of Kenya treasury bonds commenced trading via the automated trading system. The Central Bank of Kenya continues to perform the functions of the Registrar of National Debt. The settlement cycle for both corporate and Government of Kenya treasury bonds is T+3 and on the premise of Delivery versus Payment (DVP).Debt securities are numbered using International Securities Identification Number (ISIN) Codes. Automation has increased liquidity and reduced operational risk. After automation, weekly corporate bond turnover increased 1,836.36 percent to Kshs. 75.76 million from Kshs. 3.91 million. Government of Kenya bond turnover increased 29.51 percent from Kshs. 2.02 billion to Kshs. 2.62 billion. These figures indicate the success of the automation of bond trading. Besides increasing liquidity and reducing operational risk, the Exchange sees automation providing value through the more efficient dissemination of bond pricing and yield information from a centralized, credible source – the Exchange ATS.

The Kenya Electricity Generating Company (KENGEN) Public Infrastructure Bond Offer (PIBO) which was issued on November 2 2009 marks a milestone in our market. The Kshs. 25.0 billion that was raised is the largest public debt issue to date; the ten year tenor makes it the longest tenor corporate bond to date. The issue became the first bond to be immobilized by the Central Depository and Settlement Corporation (CDSC), with over 91percent of the bondholders opting for immobilization over certification. (NSE Annual report 2009).

Overall in 2009, the issued face value of bonds and bond market capitalisation increased 16.76 percent and 15.27 percent to Kshs. 443.73 billion and Kshs. 439.66 billion respectively. While there were no public capital raising transactions involving equity, debt securities

capital raising transactions realized gross amount of Kshs. 118.87 billion. In 2008, total capital raised was Kshs. 122.31 billion - Kshs. 62.2 billion from the sale of corporate equity, Kshs. 56.11 billion from the listing of new government paper and Kshs. 4.0 billion from corporate debt.

This shows that bond trades are on the increase and that the future of bond trading is bright. Yield spread can well be analyzed in depth when there is a comparison among various corporate bonds. Without analysis of this, default risk cannot be adequately measured and compared. Inflation remains a risk to the bond and equity market. Given the recent reduced turnover of equity versus bonds, comparison of the equity market with bond market cannot be adequately proved due to less date and volumes. All corporate bond issuers are taxed at the corporate rate. Distinguishing taxes among same class of bond issuers is therefore not possible in the Kenyan market.

5.3 Bond Market Reforms

The bond market in Kenya is underdeveloped and largely dominated by Government securities and a few corporate bond issues. In 2009, the Authority established a Bond Market Steering Committee to spearhead reforms in the bond market. The committee which is chaired by CMA includes representatives from the Ministry of Finance, Central Bank of Kenya, Nairobi Stock Exchange, Central Depository and Settlement Corporation, Kenya Association of Stockbrokers and Investment banks, and market players. With regard to fiscal incentives, withholding tax on bonds with maturity 10 years and above was reduced from15 percent to10 percent. These reforms are beginning to transform our bond market with bond market turnover exceeding equity turnover in 2009/2010 for the first time in the history of NSE. The Government and the private sector have been able to raise over Kshs 100billion infrastructure

funds since the launch of the first infrastructure bond last year (2009).

5.4 Recommendations

The corporate bond market is recording increased growth in the third year after automation and has seen bond users like Safaricom, CFC, Barclays bank begin to trade. Studying yield spreads t the bond market will give verifiable results once we have five or more bonds trading at the bourse on a daily basis>there needs to be more awareness from the media, bond issues, the CMA and CSDC as the regulating bodies to improve the trading of corporate bonds at the bourse. NSE prepares a weekly analysis of the yield curve for the equity market and not bonds since they are considered risky. Measures to be put in place by CMA to make data on bond issuers' performance easily available to the public to increase awareness among potential investors. There is need for the NSE and CMA to have an electronic data base on all information regarding issuers of he bonds and all their performance separate from equity markets NSE charges a fee for its electronic data.

5.5 Limitations of the study

Data was not easily valuable on bond trading .Electronic data on bonds was available from January 2010 to date. Since Kengen is the most traded bond at the bourse, other bond issuer's activity could not be studied as this will not give an accurate analysis, therefore only Kengen was studied. Due to this limitation of data studying the effect of inflation and interest rates could not be adequately analyzed and trends and differences analyzed. Therefore year of analysis was restricted to the period July 2010 to august 2011.NSE charges a fee for their data and this was a limitation as to how much data that can be obtained and the student may not be able to buy data to analyze it if they are not working or have extra resources. However data on

gross Domestic product, interest and inflation were easily available from the central bank website that has the Annul reports on PDF format.

5.6 Further suggestions of the study.

Data for other corporate bond issuers traded at NSE to be studied and compare the spreads among different spread for different bond issuers. I suggest also that data to be collected for a longer period so that a good analysis can be done. There is need to study different yield the treasury bonds attract and see hoe this can be of benefit to the public and the finance body in general. Use of multiple regressions can now be used to study the determinants of corporate bond spreads

REFERENCES

Amato, J., Remolona, E. (2003), "The credit spread puzzle", *BIS Quarterly Review*, No.December, pp.51-63

Athanassakos, George & Carayannopoulos, Peter, (2001). "An Empirical Analysis of the Relationship of Bond Yield Spreads and Macro-economic Factors"*Applied Financial Economics*, Taylor and Francis Journals, vol. 11(2), pages 197-207, April.

Bedendo M., Cathcart, El-Jahel (2007), "The Slope of the Term Structure of Credit Spreads: An Empirical Investigation", *Journal of Financial Research.*

Bevan, A., Garzarelli, F. (2000), "Corporate bond spreads and the business cycle", *Journal of Fixed Income*, Vol. 9 pp.8-18.

Blanco, R ; Brennan, S; Marsh, W,(2004) "An empirical analysis of the dynamic relationship between the investment grade bonds and the credit default swaps". *Bank of England Working papers 211*. Bank of England

Chen, L., Lesmond, D.A., Wei, J. (2007), "Corporate yield spreads and bond liquidity", *Journal of Finance*, Vol. 62 pp.119-49.

Choudhry, M. (2001). *The Bond and Money Markets:Strategy,Trading,Analysis* (1st ed.). Butterworth-Heinemann Ltd.

Collin-Dufresne, P., Goldstein, R., Martin, J. (2001), "The determinants of credit spread changes", *Journal of Finance*, Vol. 56 pp.2177-207.

Dbouk, W., Kryzanowski, L. (2007), "A reexamination of credit spread components", John Molson School of Business, Concordia University, Montreal, working paper

Dominic O'Kane & Saurav Sen (2004) "Credit Spreads Explained" *Lehman Brothers* 2004

Driessen (2003) "Credit Spread Puzzle" BIS Quarterly Review, part 5 December 2003

Duffee, G. (1998), "The relationship between treasury yields and corporate bond yield spreads", *Journal of Finance*, Vol. 53 pp.2225-41.

Duffie and KJ Singleton (1999) *Modeling term structures of defaultable bonds* Stanford University, USA. Stanford University and NBER, USA ... (1999) 12 (4): 687-720

Duffie, Saita, and Wang (2007*Multi-Period Corporate Failure Prediction With Stochastic Covariates* Darrell Duffie of Stanford University, Leandro Saita of Stanford University, and

Ke Wang of the University of Tokyo.

Elton, E., Gruber, M., Agrawal, D., Mann, C. (2001), "Explaining the rate spread on corporate bonds", *Journal of Finance*, Vol. 56 pp.247-77.

Fama, Eugene F. & French, Kenneth R. (1993). "Common risk factors in the returns on stocks and bonds Journal of Financial Economics, Elsevier, vol. 33(1), pages 3-56, February

Federal Reserve Bank of San Francisco, *The Corporate Bond Credit Spread puzzle*, FRBSF Economic Letter 2008-10; March 14, 2008

Jones, E. Philip, Scott P. Mason, and Eric Rosenfeld, "*Contingent Claims Analysis of Corporate Capital Structures: an Empirical Investigation*", Journal of Finance, Vol. 39, No. 3, (July 1984), pp. 611-625

Lando, David and Allen Mortensen, (2005) "On the Pricing of Step-Up Bonds in the European Telecom Sector", Journal of Credit Risk, Vol. 1, No. 1

Longstaff, F.A., Schwartz, E.S. (1995), "A simple approach to valuing risky fixed and floating rate debt",*Journal of Finance*, Vol. 50 No.3, pp.789-819.

Longstaff, F.A., Mithal, S., Neis, E. (2005), "Corporate yield spreads: default risk or liquidity? New evidence from the credit-default swap market" Journal *of Finance*, Vol. 60 pp.2213-53.

Luketero S, W, (2008) "Longrun portfolio returns on bonds and stocks in the Kenyan market"MBA Thesis, University of Nairobi.

Merton, R.C. (1974), "On the pricing of corporate debt: the risk structure of interest rates", *Journal of Finance*, Vol. 29 pp.449-70.

Mentink A, Vorst T Comparing Possible Proxies of Corporate Bond Liquidity, *Journal of Banking and Finance*, 29(6), 2005, pp. 1331-1358.

Mbugua,M,M 2003 "Factors Influencing the Development of the Corporate Bond Market In Kenya" MBA Thesis University Of Nairobi.

Njihia, A, M. 2005 "Determinants of Development of the Corporate Bond markets in Kenya" MBA Thesis University Of Nairobi.

Odep, S, O, 2008; "Efficiency of treasury bills market in Kenya" MBA Thesis, University Of Nairobi.

Okoola, C, A, (2006) "An Investigation into the actual investment performance of bonds listed at the Nairobi Stock Exchange" MBA Thesis, University Of Nairobi.

Robert A. Jarrow and Stuart Turnbull, "Pricing Derivatives on Financial Securities Subject to

Credit Risk" *Journal of Finance*, vol. 50, March, 1995

Sarig, O., Warga, A. (1989), "Bond price data and bond market liquidity", *Journal of Financial and Quantitative Analysis*, Vol. 24 No.3, pp.367-78

Truck, S; Laub, M; Rachev (2004) "The Term Structure of Credit Spreads and Credit Default Swaps" – an empirical investigation, working paper (1977)

"What determines the credit spread?" Economic Letter 2004-36; December 10, 2004 *Federal Reserve Bank of San Francisco.*

APPENDICES

Appendix I: Variables for Regression

June 2010- July 2011	interest	inflation	liquidity
y	xl	x2	x3
2.00	14.29	4.33	5.50
2.39	14.18	3.22	0.65
2.67	13.98	3.21	1.74
2.53	13.85	3.18	0.99
2.20	13.95	3.84	5.74
1.25	13.87	4.51	2.06
0.13	14.03	5.42	17.40
2.60	13.20	6.54	1.70
0.72	13.69	9.19	0.98
0.61	13.92	12.05	2.52
2.39	13.88	12.95	0.48
4.30	13.91	14.49	0.03

Appendix II: Regression Statistics

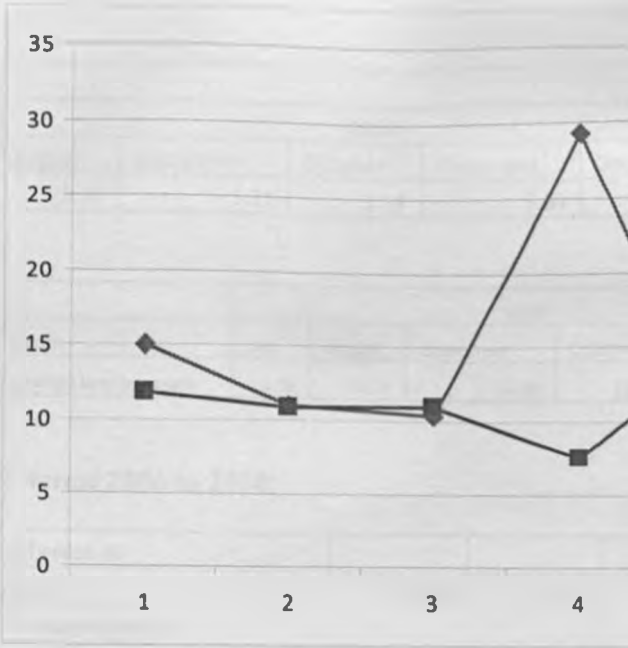
SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.56621626							
R Square	0.320600853							
Adjusted R Square	0.065826173							
Standard Error	1.103943535							
Observations	12							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	3	4.60069437	1.53356479	1.258370151	0.351837322			
Residual	8	9.74953063	1.21869133					
Total	11	14.350225						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 90.0%*	*Upper 90.0%*
Intercept	-2.493313762	18.091047	-0.1378203	0.893788174	-44.21134292	39.2247154	-36.13448463	31.14785711
X Variable 1	0.353579542	1.2983267	0.2723348	0.792261592	-2.64036719	3.347526273	-2.060721316	2.767880399
X Variable 2	0.00289169	0.08374166	0.03453108	0.973299699	-0.190216922	0.196000302	-0.152829948	0.158613328
X Variable 3	-0.137995863	0.07367741	-1.8729737	0.097958197	-0.307896286	0.03190456	-0.275002554	-0.000989171

Appendix III: Corporate Bond Issues as at June 30, 2010

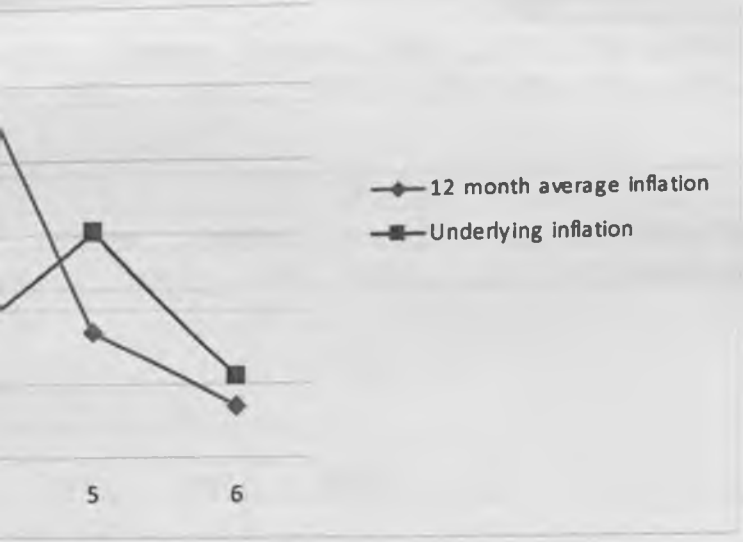
Issuer	ApprovedAmount(Kshs mn)	Date of approval	Maturity date	Outstanding(Kshs mn)	Yield (%)
Barclays Bank of Kenya LtdTranche 1	1000	09-Oct-07	19-Nov-14	1000	8.83%
Barclays Bank of Kenya Ltd Tranche 2	2000	16-Jul-08	16-Jul-13	2000	11.50%
East African Development Bank	1500	30-Jun-04	31-Dec-10	240	10.50%
Sasini Tea	600	22-Nov-07	22-Nov-12	540	11.75%
Athi River Mining	800	27-Oct-05	27-Oct-10	160	6.65%
PTA Bank Ltd 2007	1000	17-Sep-07	17-Sep-14	1000	9.47%
PTA Bank Ltd 2005	1000	17-Sep-07	17-Sep-14	400	8.06%
Mabati Rolling Mills - Fixed	2000	01-Sep-08	01-Sep-16	727	13%
Mabati Rolling Mills - Floating	2000	01-Sep-08	01-Sep-16	1274	9.82%
CFC Stanbic Bank Ltd - Fixed	5000	10-Jun-09	01-Sep-16	2402	12.50%
CFC Stanbic Bank Ltd -Floating	5000	10-Jun-09	01-Sep-16	98	8.99%
Shelter Afrique Limited - Fixed	1000	20-Aug-09	31-Aug-13	905	11.00%
Shelter Afrique Ltd - Floating	1000	20-Aug-09	31-Aug-13	95	8.10%
Safaricom Ltd - Fixed	12000	02-Oct-09	02-Oct-16	7050	12.25%
Safaricom Ltd - Floating	0			463	9.92%
	35,900			**18354**	

Appendix IV: 4.4 Holding of corporate bonds by class of investors as at June 30, 2010

	Holding of corporate bonds by class of investors as at June 30, 2010				
Issuer	Banks	Insurance Co	Fund Managers	Investment Co	Individuals
Barclays Bank of Kenya LtdTranche 1	4.50%	2.50%	87.30%	5%	0.70%
Barclays Bank of Kenya Ltd Tranche 2	3.10%	6.30%	72.50%	6%	12.10%
East African Development Bank	36.30%	17.60%	46.10%	0.00%	0.00%
Sasini Tea	8.30%	0.00	91.70%	0	0.00%
Athi River Mining	19.50%	11%	69.50%	0	0.00%
PTA Bank Ltd 2007	16.80%	4%	79.20%	0	0.00%
PTA Bank Ltd 2005	45.10%	2.40%	51.90%	0.60%	0.00%
Mabati Rolling Mills - Fixed	13.80%	11.00	75%	0	0%
Mabati Rolling Mills - Floating	41.60%	2%	54.50%	1.60%	0.20%
CFC Stanbic Bank Ltd - Fixed	25.10%	7.20%	64.30%	1.90%	1.60%
CFC Stanbic Bank Ltd -Floating	0.00%	31%	68%	0.00%	1.10%
Safaricom Ltd - Fixed	49.80%	4.40%	38.20%	1.40%	6.30%
Shelter Afrique Ltd	22.10%	18%	57.70%	1.60%	0.60%


35
30
25
20
15
10
5
0
1
2
3
4

Appendix V: 4 Inflation 2005 to 2010



Appendix VI: Inflation and Interest rates

Monthly Inflation												
2010					2011							
August	September	October	November	December	January	February	March	April	May	June	July	August
3.22	3.21	3.18	3.84	4.51	5.42	6.54	9.19	12.05	12.95	14.49	15.53	16.67

	2010					2011								
Month	July	August	September	October	November	December	January	February	March	April	May	June	July	August
Average lending rate%	14.29	14.18	13.98	13.85	13.95	13.87	14.03	13.2	13.69	13.92	13.88	13.9	14.13	14.32

Interest 2006 to 2010

Interest %					
Year	2006	2007	2008	2009	2010
AverageLending Rate%	13.8	13.1	14.1	14.79	14.39

Appendix VII: Corporate Bond Issuers Financial leverage ratios

	DEBT/EQUITY					EPS					EBIT/INTEREST				
Bond Issuer	2006	2007	2008	2009	2010	2006	2007	2008	2009	2010	2006	2007	2008	2009	2010
EADB	2.30	2.47	1.98	1.57	N/A	NIL	NIL	NIL	NIL	NIL	0.46	0.24	0.20	1.31	N/A
SAFARICOM	0.39	0.32	N/A	0.22	0.27	0.84	0.61	N/A	0.27	0.38	22.59	29.86	N/A	1.52	9.59
HOUSING	5.65	6.17	2.91	3.48	5.88	0.88	0.64	0.79	1.02	1.65	1.40	1.38	1.41	1.53	1.52
MRM	0.69	0.38	0.76	N/A	N/A	20.76	33.4	43.5	N/A	N/A	2.47	5.49	3.00	N/A	N/A
CFC	6.20	6.19	4.96	5.52	5.28	5.04	4.94	3.35	-0.22	5.86	2.35	2.02	2.54	2.18	6.05
ARM	1.31	0.94	1.12	1.13	1.88	2.76	4.26	5.08	6.52	8.06	14.25	5.30	3.69	13.40	5.92
PTA	1.67	1.68	3.12	3.63	N/A	NIL	NIL	NIL	NIL	NIL	1.53	1.47	1.92	2.39	N/A
SASINI	0.30	0.29	0.44	0.56	0.41	6.23	0.15	3.84	2.30	4.3	99.20	8.45	21.94	11.60	20.22
BBK	6.94	7.99	7.23	5.81	4.48	3.40	3.60	4.10	4.50	7.80	4.34	3.14	2.10	3.28	9.30
SHELTER AFRIQ	N/A	N/A	0.33	0.57	0.79	N/A	N/A	66.2	10.26	42.77	N/A	N/A	2.99	1.22	1.63
Kengen	0.64	0.49	0.45	0.62	1.16	1.71	1.11	2.68	0.94	0.89	5.86	7.64	4.86	7.02	4.26

Appendix VIII: Data on Kengen and Treasury 10yr bonds

		Kengen yield-10yr	Treasury yield.10yr bond	Kengen turnover	Treasury turnover
2010	week26	8.90	6.4000	200,500,000.00	100,500,000.00
	week28	7.91	8.5000	50,400,000.00	200,000.00
	week29	9.89	5.8167	304,300,000.00	200,000.00
	week30	10.15	5.8000	250,300,000.00	300,000,000.00
	week31	8.00	5.8500	4,000,000.00	100,000,000.00
	week32	7.70	7.0372	3,900,000.00	-
	week34	9.25	6.6000	11,300,000.00	90,000,000.00
	week36	9.60	6.6500	9,700,000.00	7,200,000.00
	week37	9.17	6.7500	148,800,000.00	450,000.00
	week38	9.01	6.6875	50,500,000.00	3,000,000.00
	week39	9.30	7.4010	112,550,000.00	104,200,000.00
	week40	9.45	6.1010	536,500,000.00	600,000,000.00
	week41	9.33	6.6000	567,300,000.00	305,250,000.00
	week42	9.04	5.4083	1,202,500,000.00	44,900,000.00
	week43	9.02	8.8000	1,147,400,000.00	158,500,000.00
	week44	9.12	8.5000	13,600,000.00	-
	week45	9.00	7.1500	603,500,000.00	300,000,000.00
	week47	8.99	7.7200	1,000,000.00	-
	week48	8.77	8.5000	603,900,000.00	500,000.00

	week49	9.80	8.7000	1,193,000,000.00	100,000,000.00

Cont'd

	week52	7.03	8.0000	4,100,000.00	3,000,000.00
2011	week1	9.8143	7.5038	168,300,000.00	250,000,000.00
	week4	10.0000	7.2022	554,500,000.00	175,000,000.00
	week7	10.3119	7.4000	700,000.00	450,000.00
	week8	9.2173	9.0300	50,900,000.00	203,000,000.00
	week17	10.4491	9.2500	-	1,582,000,000.00
	week18	10.0000	9.2353	5,650,000.00	
	week19	9.0295	9.2200	17,200,000.00	25,000,000.00
	week20	10.7000	9.5000	27,100,000.00	100,000,000.00
	week21	10.2500	9.4700	196,800,000.00	120,000,000.00
	week22	10.5155	9.2400	168,700,000.00	245,000,000.00
	week23	10.7200	6.4500	516,000,000.00	100,000,000.00
	week24	11.1500	6.9328	499,100,000.00	125,000,000.00
	week25	11.1000	6.9328	20,000,000.00	100,000,000.00
	week26	11.3521	6.9328	129,400,000.00	230,000,000.00
	week26			7,900,000.00	-
	week26			15,300,000.00	200,000,000.00
	week26			7,100,000.00	625,000,000.00