THE RELATIONSHIP BETWEEN THE GOVERNMENT BOND ISSUES AND ECONOMIC GROWTH IN KENYA

BY

## KOKA DIANA NDINDA

D61/79012/2009

A Management Research Project submitted in partial fulfilment of the requirement for the award of Master of Business Administration, School of Business, University of Nairobi.

October 2012

DECLARATION

I hereby declare that this research project is my own original work and has not been presented to any other institution of higher learning for academic purposes.

Signed:......................... Date: ......8/11/2012..

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

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DEDICATION

I dedicate this research project to the One who makes all things beautiful at His time, to my Father in Heaven.

Further dedicated to my family, whom I suspect, are my biggest fans in life and all matters education. May God's blessings continually be in their lives.

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To He who has gifted us with life and made it all possible, my highest gratitude
to God, without whom nothing is possible.

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the pursuit of academic excellence and knowledge. I am forever grateful for the
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To God be the Glory!

ABSTRACT

Interest in the relationship between the real and the financial sector has usually been on the banking sector and the stock markets, thus mostly leaving the Bond Markets out as a third essential source of external finance. The capital markets play important roles in the economy growth of the market. The role of public debt in promoting economic growth in Kenya has been the subject of much debate among economists, development specialists and researchers. In spite of this, there are only few empirical studies that investigate the contributions of public debt and in this case, the issuance of Treasury/ Government bonds to economic growth in Kenya. This gap is filled by providing empirical evidence to establish the relationship between the economy (represented by the Gross Domestic Product) and issuance of Government Bonds in Kenya.

This study explores the relationship between issuance of Treasury/ Government bonds and economic growth in Kenya using data that spans from the year 2003 to the year 2011 and establishing through causal study if changes in one variable cause changes in the other. The time series data is on gross domestic product, market capitalization of bonds, value of bonds traded and total new issues of bonds. Regression analysis is used to analyse the data used in this study. The results show that the issuance of Government bonds has a positive effect on the level of economic growth in Kenya. The findings imply that Kenya could enhance its economic growth by effectively and strategically strengthening the Bonds market and the uptake of Government Bonds.

The conclusion of the study is that the supply-leading hypothesis of economic growth prevailed in Kenya during the period under study from 2003 to 2011. This implies that economic growth was finance-led through funds mobilization. It is recommended therefore that the regulatory authority should initiate policies that would encourage more companies to access the market and also be more proactive in their surveillance role in order to check sharp practices which undermine market integrity and erode investors' confidence.

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LIST OF ABBREVIATIONS

CBK	-	Central Bank of Kenya
CMA	-	Capital Markets Authority
EMH	-	Efficient Markets Hypothesis
GDP	-	Gross Domestic Product
GNP	-	Gross National Product
KNBS	-	Kenya National Bureau of Statistics
NEG	-	New Economic Geography Growth Theory
NSE	-	Nairobi Securities Exchange
T-BILLS	-	Treasury Bills
TFA	-	Total Financial Assets
UK	-	United Kingdom
USA	-	United States of America

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CHAPTER ONE

INTRODUCTION

1.1   Background of the Study

The importance and centrality of the financial system to the growth of any economy is obvious and indisputable. It has been postulated that a well developed financial system performs several critical functions that enhanced the efficiency of their financial intermediation roles with highly reduced costs of information, transaction and monitoring. Also, it promotes investment by identifying and locating viable business opportunities; helps in mobilizing savings; monitors the performance of managers thereby enabling trading, hedging and diversification of risk in order to facilitate the exchange of goods and services. These functions result in efficient allocation of resources and rapid accumulation of physical and human capital with faster technological process which in turn feed economic growth.

1.1.1   Government Bonds

Government Bonds or Treasury Bonds are medium to long term Government Securities while Treasury bills are short-term Government securities, in the case of Kenya both sold by   the   Central   Bank   of   Kenya   on   behalf   of   Treasury (http://www.centralbank.go.ke/securities/default.aspx).   Government Bonds form part of the Capital Markets which together with Money Markets constitute the financial market. The Capital Market consists of institutions and procedures that provide for transactions in long term financial instruments with a maturity of more than one year. The major instruments that are used in raising funds in the Kenya Capital Market include Debts – Government bonds (Central and Local Governments), Debentures, preference stocks, and Equities – ordinary shares.

Instruments classified as Debt securities are generally referred to as bonds because of their fixed income characteristics except for preference stock which is a hybrid instrument. A bond is a certificate of indebtedness issued by a borrower to a lender.

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Therefore investors in bonds are essentially lending money to the issuer. The bond market is the channel through which government and corporations that need to borrow money are matched with investors who have funds to lend.

1.1.2 Economic Growth

Economic growth is measured by the gross domestic product (GDP) which according to the World Bank measures the total output of goods and services for final use occurring within the domestic territory of a given country, regardless of the allocation to domestic and foreign claims. Gross domestic product at purchaser values (market prices) is the sum of gross value added by all resident and nonresident producers in the economy plus any taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources (http://go.worldbank.org/WG51XXDWB0).

The channels of transmission to economic growth are the accumulation of capital and the factor productivity. According to Wachtel (2001), the transmission channel of factor productivity is more important than the transmission channel of capital accumulation. He shows that countries with comparable amounts of capital invested show partly significant differences in economic growth. These differences can to some extent be explained by the abilities of the financial sector to effect rises in factor productivity. Bond markets and share markets are only part of the financial sector. Apart from them, banks are acting as financial intermediaries.

1.1.3 The Government Bond Market in Kenya

Treasury securities are debt financing instruments issued by the Government of Kenya through the Central Bank of Kenya as envisaged in section 4(A) (1) of the CBK Act (Cap 491), which is: "The Bank shall act as advisor to and as fiscal agent of the Government of Kenya" (http://www.centralbank.go.ke/securities/default.aspx).

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The bonds market in Kenya trades in both the treasury and corporate bonds. Mbewa, Ngugi & Kithinji (2007) note that although treasury bonds were introduced into the market in the early 1980s, the market faced various challenges that constrained its development. Until 2001 when the government took a deliberate effort to shift domestic debt to long term instruments, government bonds maturities were short. Bonds market is an alternative vehicle for mobilizing finance for both the government and the private sector in financing long term projects such as housing and infrastructure development, in addition to financing government deficit. There is no model for determining prices of bonds. In the case of treasury bonds primary market, the government determines the interest rates. The interest rate depends on whether the price is competitive, otherwise also known as "off-the-run" (which is normally close to the interest rate of the previous issue) or non-competitive also known as "on-the-run" (current rate of interest) basis as noted by Mbewa, Ngugi & Kithinji (2007).

Although it is expected that there should be a vibrant money market, development of the bonds market was not preceded by development of the money market. A number of policy reforms by the Ministers of Finance have affected treasury bill interest rates in ways that have encouraged growth of bonds market. For example, during the first eight months of the fiscal year 2003/04, interest payments on domestic debt decreased to Ksh 16.4 billion or 10.2 per cent of revenue from Ksh 18.0 billion or 12.7 per cent of revenue in the same period the previous year.

This research study aims to contribute to the bonds market and economics literature by examining the relationship between the Government Bond issues and economic growth in Kenya. In particular, it examines the effect of performance of the Government bond issues on the economic growth in Kenya. The investigation of this study in the Kenyan business environment and economy could extend prior research and give different explanations to those carried out in more developed countries.

1.2   Statement of the Problem

Hawkins (2002) asserts that the bond market can lead to a healthier banking system by improving market discipline, and that bond issuance can help central banks achieve steady economic growth. Existing literature on this research topic mostly argues that there is a positive correlation between the development of the financial sector and economic growth in real terms (Graff, 2000). The three possible hypotheses with respect to the causal ties between the bond and the real sectors are the supply-leading; the demand-leading; and, the no causal relation hypotheses.

There are three differences in opinion that emerge in existing literature. The first being the supply-leading hypothesis (Mc Kinnon, 1973) which maintains that accumulation of financial assets triggers economic growth. Since then, the major consensus is that finance positively influences real economic performance. The second view that is consistent with the Coase (1956) theorem is the demand-leading hypothesis assumes that real growth drives the emergence and establishment of financial centers. This hypothesis regards financial development as endogenously determined by the real economy or its needs. The third is the view that there is no causal link between the financial sector and real economic development as expressed by Lucas (1988). This assertion holds only in a neo-classical world of zero transaction costs (Graff, 2000) and perfect information. Three segments of the financial sector are of particular significance: Banks, the equity market and the bond market. Their relative importance varies by national economy.

In Kenya, studies on the relationship between bond markets and economic growth are scarce. Studies on bonds have been conducted by Mbugua (2003) who examined factors that influenced the development of the corporate bond market in Kenya and his findings indicated that corporate bonds have high yields since interest payments were taxable. A study on economic indicators was done by Nyamute (1998) wherein the research analyzed the movement and / or changes in four of the major economic indicators, that is, interest rate, money supply, inflation rate and exchange rates. However, the study did not

compute real returns on bonds as an economic indicator. The findings of Luketero (2008) who studied the long-run performance of bonds and stocks in the Kenyan market concluded that the returns on bonds were higher than the returns on stocks in the short-run; however, the reverse was true for a longer period of time. This study will thus aim to address the gap in existing studies with the research question, "do Government bond issues affect economic growth in Kenya?"

1.3 Objective of the Study

The main objective of this study is to examine the relationship between Government bond issues and economic growth in Kenya.

1.4 Significance of the Study

The study contributes to the empirical literature on bond markets and economic growth. First, it belongs to the limited number of studies which analyses the relationship between Government bond issues and economic growth in Kenya.

Second, the results of this study will also be of interest to academicians, investors and financial analysts as it will illustrate the relationship between Government bond issues and economic growth in Kenya.

Third, findings of this research shall be useful to economists and financial analysts and can be applied and cross examined against other emerging economies in Africa similar to Kenya and any other countries.

Finally, the findings of this study shall be useful to the government and policy makers interested in knowing the impact of Government bond issues on the growth of the economy.

CHAPTER TWO
LITERATURE REVIEW

2.1.   Introduction

This chapter reviews literature on the bonds markets and economic growth in general and further narrows done to the various theories and empirical studies carried out concerning the relationship between bond marker performance and economic growth. This chapter is structured as follows; theoretical review, review of empirical studies and chapter summary.

2.2.   Theoretical Review
2.2.1. Economic Growth

There are four main theories of economic growth, that is, Neoclassical Growth Theory, Endogenous Growth Model, Growth Theory of Cumulative Causation and New Economic Geography Growth Theory.

2.2.1.1.   Neoclassical Growth Theory

In the 1960s, the growth theory consisted mainly of the neoclassical model, with the workhorse model attributed to Solow (1956). The basic assumptions of the model are: constant returns to scale, diminishing marginal productivity of capital, exogenously determined technical progress and substitutability between capital and labour. As a result the model highlights the savings or investment ratio as important determinant of short-run economic growth. Technological progress, though important in the long-run, is regarded as exogenous to the economic system and therefore it is not adequately examined by this model. Turning to the issue of convergence/divergence, the model predicts convergence in growth rates on the basis that poor economies will grow faster compared to rich ones. The lower the starting level of real per capita gross domestic product (GDP) the higher is the predicted growth rate. If all economies were intrinsically the same, except for their starting capital intensities, then convergence would apply in an absolute sense; that is,

poor places would tend to grow faster per capita than rich ones. However, if economies differ in various respects including access to technology, and government policies, then the convergence force applies only in a conditional sense. The growth rate tends to be high if the starting per capita GDP is low in relation to its long–run or steady state position; that is, if an economy begins far below its own target position. Another prediction of the neoclassical model even when extended to include human capital is that, in the absence of continuing improvements in technology, per capita growth must eventually cease. It was assumed that technological progress occurred in an unexplained (exogenous) manner. The obvious shortcoming, however, is that the long-run per capita growth rate is determined entirely by an element-the rate of technological progress, that comes from outside of the model. Thus, we end up with a model of growth that explains everything but long-run growth, an obviously unsatisfactory situation.

2.2.1.2.   Endogenous Growth Theory

The theory of endogenous growth was kicked off by Romer (1986) who simply discarded the neo-classical condition of diminishing returns to capital and defended that step by arguing for increasing returns to human capital, thanks to positive spillovers. He uncovered several alternative (and more realistic) ways of linearizing the growth theory to accommodate more of the "stylized facts" of growth. The stylized facts in question are as follows (Romer, 1994): (1) market systems involve many firms; (2) discoveries are public knowledge (non-rival goods); (3) physical activities are replicable, whence the aggregate production function must be homogeneous of degree one in all inputs that can be owned and exchanged (i.e. they are rival goods); (4) technological progress is a consequence of human activity; (5) competition is imperfect.

Ayres (1997) concludes that since both theories are inconsistent with historical and current reality, a new theory, based on more realistic assumptions, is needed. The new theory should explicitly reflect, among other stylized facts, the phenomenon of learning by doing and the existence of productive knowledge that is a private good. It should also

reflect the fact that new technologies create new sectors that grow, develop, and mature at different times and rates according to a characteristic life cycle.

2.2.1.3. Growth Theory of Cumulative Causation

The growth theory of cumulative causation developed by Myrdal (1957) is less influential. Essential to this theory is the argument of 'cumulative causation' in which initial conditions determine economic growth of places in a self-sustained and incremental way. As a result, the emergence of economic inequalities among economies is the most possible outcome. Although there are centrifugal effects (positive spillovers) spreading growth from the more to the less advanced economies, they are incapable of bringing the system into a state of balance if market forces alone are left at work. In other words, economic policy has to come into play to correct those imbalances. In contrast to theories mentioned above, theories of cumulative causation has a medium term view and often described as "soft" development theories due to a lack of applied mathematical rigour.

2.2.1.4. New Economic Geography (NEG) Growth Theory

New Economic Geography (NEG) asserts that economic growth tends to be an unbalance process favouring the initially advantaged economies (Krugman, 1991). However, in contrast to the cumulative causation theory, this theory develops a formalised system of explanations which places explicit emphasis on the compound effects of increasing returns to scale, imperfect competition and non-zero transportation costs. Central to this theory is that economic activity tends to agglomerate in a specific region and choose a location with a large local demand resulting in a self-reinforcing process. The spatial distribution of economic activity can be explained by agglomeration (or centripetal) forces and dispersion (or centrifugal) forces. The former include backward and forward linkages of firms, externalities and scaled economies while the latter include negative externalities, transport costs and intensification of competition. Consequently, NEG is

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mainly concerned with the location of economic activity, agglomeration and specialization rather that economic growth.

2.2.2. Bond Markets

The bond market forms part of the capital markets whose theories are the Efficient Market Hypothesis (EMH) and Theory of Capital and Investment.

2.2.2.1. Efficient Market Hypothesis (EMH)

Efficient Market Hypothesis of financial economics states that the prices reflect all relevant information that is available about the intrinsic value of the asset. According to Reilly and Brown (2006) an efficient capital market is one in which security prices adjust rapidly to the arrival of new information and, therefore the current prices of securities reflect all information about the security. This is referred to as an informationally efficient market meaning that one cannot consistently achieve returns in excess of average market returns on a risk adjusted basis, given the information publicly available at the time the investment is made. In relating the EMH to the economy and economic growth, deviations from efficiency may offer profit opportunities to better-informed traders at the expense of less-informed traders. However, deviations from informational efficiency would also result in a large cost that will be borne by all citizens, namely, inefficient resource allocation. In a capitalist economy, investments in real assets such as plant, equipment, and know-how are guided in large part by the prices of financial assets. In this manner, capital market prices guide allocation of real resources. If markets were inefficient and securities commonly mispriced, then resources would be systematically misallocated. Corporations with overpriced securities will be able to obtain capital too cheaply and corporations with undervalued securities might forgo investment opportunities because the cost of raising capital will be too high. Therefore, inefficient capital markets would diminish one of the most potent benefits of a market economy.

There are three versions of the EMH: the weak, semi-strong, and strong forms of the hypothesis. The weak-form hypothesis asserts that stock prices already reflect all information that can be derived by examining market trading data such as the history of past prices, trading volume, or short interest. The semi-strong form hypothesis states that all publicly available information regarding the prospects of a firm already must be reflected in the stock price. Finally, the strong-form version of the efficient market hypothesis states that stock prices reflect all information relevant to the firm, even including information available only to company insiders.

2.2.2.2. Theory of Capital and Investment

Fisher (1930) in his theory of capital and investment assumed that all capital was circulating capital and that capital is used up in the production process, thus a stock of capital K did not exist. Rather, all capital is, in fact, investment. Fisher saw that subjective economic value is not only a function of the amount of goods and services owned or exchanged, but also of the moment in time when they are purchased. A commodity available now has a different value than the same item available at a later date; value has a time as well as a quantity dimension. The relative price of goods available at a future date, in terms of goods sacrificed now, is measured by the interest rate. Thus, Fisher defined capital as an asset that produces a flow of income over time. The value of this asset can then be calculated in terms of the net income it generates at the present time. Fisher's view of interest can be expressed as the interaction of two forces, the preference for immediate income as opposed to the potential income that could result from investment.

Fisher expounded that a production plan for the firm is chosen so as to maximize utility over time. Under certain well-known conditions this leads to maximization of the net worth of the enterprise as the criterion for optimal capital accumulation. Capital is accumulated to provide capital services, which are inputs to the productive process. This optimal capital accumulation would thus act as a catalyst for economic growth.

2.2.3. Relationship between Bond Market performance and Economic Growth

The relationship between bond markets and economic growth can be explained by the modern branch of the supply-leading hypothesis which begins with the works of Mc Kinnon (1973) that maintain that accumulation of financial assets triggers economic growth. Since then, the major consensus is that finance positively influences real economic performance. According to this view, the financial sector deepening leads to economic growth. The explanation is that, according to Levine (1997), financial development has five financial functions through which it affects economic growth. These functions, shared by Bodie et al (2008), are, producing cheaper information about possible investment and allocating capital; monitoring firms and exerting corporate governance; trading, diversification and management of risk; mobilizing and pulling of savings; and easing exchange of goods and services.

On the other hand, the relationship between bond markets and economic growth can be explained by the demand-leading hypothesis which assumes that real growth drives the emergence and establishment of financial centres. This hypothesis regards financial development as endogenously determined by the real economy or its needs, a view that is consistent with the Coase (1956) theorem and the new institutional economics, which argue that institutions adjust to market imperfections in a way that maximizes individual utilities. However, the supply leading hypothesis has not received unanimity among economists.

The relationship between bond markets and economic growth can also be viewed by looking at the following aspects which seem relevant: As source of financing, bonds compensate the fluctuations in the overall supply of external funds. Even though bond financing is dependent on the economic cycle, it shows less pronounced cyclical patterns than bank loans (Davis, 2001).

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The most frequent line of argumentation to justify a positive relationship between the financial sector and economic growth is that a well-developed financial sector facilitates and fosters (through its institutions) investments which result in economic growth (Mooslechner, 2003). The financial sector itself plays only a subordinate role for the examination of determinants of economic growth. Modigliani & Miller (1958) share this view on a microeconomic level. Under the assumption of perfect capital and credit markets the cost of capital and company value are independent from the mode of financing. Under this view the financial sector is of no relevance for the real economy.

The relation between the degree of market orientation of the financial architecture of a country and economic performance of the real sector can be explained by if the financial sector is well developed, market-based systems outperform bank-based systems and vice versa in countries with poorly developed financial sectors. From a theoretical point of view, much speaks in favour of the complementarity of the two systems. One example is the certification hypothesis by Booth & Smith (1986), according to which banks reduce information asymmetries by issuing securities. Also Hawkins (2002) postulates that banks are of major importance for the emergence and development of bond markets. They are important players in these markets and frequently hold large bond volumes.

If a corporation has to rely on external funds, debt capital is cheaper, since it is less undervalued than shares. This fact is described by the Pecking Order Theory of financing by Myers (1984), according to which internal financing is to be preferred. If external funds become necessary, debt capital is most favourable, followed by hybrid forms of financing, such as convertible bonds. Shares are the last option. Furthermore, theories which deal with the distribution of information among different economic subjects are very important for the explanation of determinants of the choice between different forms of debt capital (Leeland & Pyle, 1977). The cost associated which information asymmetries are usually higher with publicly issued bonds than with banks loans, as banks are believed to be able to perform the monitoring function more efficiently (Leeland & Pyle, 1977).

2.3. Review of Empirical Studies

Fink, Haiss & Hristoforova (2003) examine long-term causal links between the development of bond markets and economic growth in USA, UK, Switzerland, Germany, Austria, the Netherlands and Spain. They draw on a relatively long observation period spanning 1950 to 2000. They describe bond markets using the volume of outstanding bonds, wherein all types of bonds (public sector bonds, corporate bonds, financial institution bonds) are considered. Using the Granger Causality Test (Granger, 1969), the authors find results which point to the "Supply Leading Hypothesis" according to which the financial sector provides services via its institutions which promote real economic growth for Austria, Germany, Switzerland, the United Kingdom and the United States and to a weaker extent in the Netherlands and Spain. Evidence for the "Demand Following Hypothesis", according to which real economic growth creates demand for services of the financial sector and thus contributes to its growth, was not found by the authors. They therefore conclude that real economic growth is fostered by the development of bond markets.

In a further analysis, Fink, Haiss & Hristoforova (2006) extend their bond-based examination by incorporating share market capitalisation and credit volume to the private sector. Generally this study supports the "Supply Leading Hypothesis" wherein a development of the financial sector or of its individual segments has positive effects on economic growth. The authors find feedback relationships in which long-term equilibria between financial variables and economic growth exist, in Japan between the credit volumes to the private sector and economic growth, and in the Netherlands and Japan between stock market capitalisation and economic growth.

Onaolapo & Adebayo (2010) undertook a research study that employed linear regression to evaluate the relationship between bond market and economic growth using data over the period from 1984 to 2008. The Gross Domestic Product was regressed on two important indicators of bond market size and liquidity as these were supposed to affect

economic growth. The study found a considerable link between bond market and economic growth. The regression analysis showed that the indicator of bond market size (government stock market capitalization) and that of liquidity (value of government stock traded) are significant determinants of economic growth in Nigeria. The overall result suggests a strong positive relationship between bond market and economic growth in Nigeria.

Patara & and Yoonbai (2007) investigated the role of the bond market in economic growth. For the years 1989-2003, they employed the bond market data for 38 countries and the procedure that can better handle the econometric problems such as simultaneity, omitted variables or unobserved country-specific effects. They also considered simultaneously the three major financial instruments and markets: bank credits, bonds, and stocks. Their estimation results indicated that the development in the financial sector in general has a positive impact on economic growth. Both banking development and stock market development help promote economic growth. However, in the case of the bond market, only government bonds are strongly positively related to growth while the effects of private bonds are positive but insignificant.

Harvey (1989) shows empirically that yield-curve based measures are able to explain more than 30% of the variation in economic growth in the USA over the 1953-89 period, while stock market measures account to about 5% only. Moreover, yield-curve based forecasts are found to compare favorably with leading econometric models' forecasts, while forecasts from stock market models do not (Harvey, 1989). Harvey (1991) uses the interest rate based forecasting model (IRFM) to forecast the German economic crises during the 1969-1991 period. He utilizes the annual GNP growth in 1980, the money-market rate and the government bond yield from 1969 till 1991. The first component of the IRFM is the yield curve, and the second is a measure of the average propensity to hedge. The intercept is interpreted as the expected level of economic growth when the long-term rate equals the short-term rate, and the coefficient of the term structure is the average level of risk tolerance in the economy. He shows that the IRFM ex post

outperforms the forecasts of economic growth of major research institutes and that it has correctly predicted the economic turning points in the period 1969-1991.

Kimotho (2010) undertook a research project on the relationship between foreign direct investments and economic growth in Kenya covering the period between 2000 and 2009. He concluded that there was a strong and significant positive relationship between foreign direct investments and economic growth in Kenya. This positive relationship indicated that there was a direct proportionate relationship between foreign direct investments and economic growth.

Kanyingi (2011) carried out a research study that investigated the impact of financial deepening on economic growth in Kenya for the period between 1997 and 2010. His findings revealed that all financial deepening measures, that is, total domestic credit, money supply and domestic financial savings rose steadily from 1997 to 2010. The correlation analysis carried out in his study showed a strong relationship between economic growth and proxies of financial deepening. He concluded that financial deepening had a positive effect on economic growth.

Omoke (2010) undertook a study on the relationship between capital market development and economic growth in Kenya for the four years from 2004 to 2007. The findings of his study revealed that market capitalization, trading volume and change in stock market prices affect the GDP. His analysis showed strong positive relationship between GDP and change in stock market prices. His analysis further showed that the relationship between GDP, market capitalization and trading volume was a weak relationship.

In his research study on the relationship between financial development and economic growth in Kenya, Ndigwa (2011) arrived at the conclusion that financial development stimulates economic growth in Kenya by a positive margin. The economic growth required investments from banks and mobilizations of financial assets.

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2.4. Chapter Summary

In comparison with bank loans and trade credits, which are the most important sources of external finance in Kenya, stocks and bonds play a less important role as financing instruments. Notwithstanding this assertion, a closer analysis of the financial markets shows that the aggregate bond market capitalization is as important as stock market capitalization. Bonds as financial contracts combine some features of both bank credit and stocks, but exhibit differences with regard to transaction costs, liquidity, the level of information disclosure and cost, scale, marketability, investor type, borrower type and institutional setup. These product-related issues translate into the respective financing channels and the range of triggers for GDP growth. Hence the question at the core of this research study is "Can capital which is made available via the issue of government bonds cause GDP growth?"

CHAPTER THREE

RESEARCH METHODOLOGY

3.1. Introduction

This chapter presents the methodology that was used to carry out this study. The chapter describes the research design, population and sample, data collection and data analysis of the study.

3.2. Research Design

Dooley (2007) defines a research design as the scheme, outline or plan that is used to generate answers to research problems. The research design adopted a Descriptive Research Design which attempted to specify the nature of functional relationships between the variables. Descriptive research is often used to infer causation or causality, that is, which variables are the causes (independent variables) and which variables are the consequences or effect (dependent variable). This study aimed to measure performance of bonds and economic growth to establish if bond market performance affects the growth of an economy.

3.3. Population and Sample

The target population for this study was all the government bonds issued in Kenya from 2002 to 2011 and the figures on the economic growth of Kenya calculated as the GDP for the same period.

3.4. Data Collection

Secondary data was used in this data. The data on government bonds was obtained from the Nairobi Securities Exchange while the data on GDP was obtained from reports published by KNBS. Data obtained from NSE and KNBS is considered authentic and can therefore be relied upon for deriving conclusions.

Both GDP and Government Bond data were captured for the last 9 years, from 2003 to 2011. Unfortunately, Government Bond data from the year 2002 was unavailable.

3.5.   Data Analysis

Descriptive and regression analyses were used to analyse the data, all in an effort to investigate the relationship between government bonds issue and economic growth in Kenya.

The variables for data collection were total new issues per year of government bonds in Kenya over a nine-year period from 2003 to 2011, value and turnover of bonds traded and GDP market values over the same period.

The guided hypothesis for the purposes of testing the result of the analysis is given below: -

Ho: There is no significant relationship between performance of Kenyan Government Bond issues and economic growth.
H1: There is a significant relationship between performance of Kenyan Government Bond issues and economic growth.

The hypothesis was tested using the Analysis of Variance (ANOVA) at 5% significance level.

Regression analysis was used to evaluate the degree of relationship between the issuance and performance of governance bonds and Economic growth. Linear regression was applied to analyse the relationship between the independent and dependent variable to predict the score of the dependent variable from the independent variable.

The research used the Statistical Package for the Social Sciences (SPSS) version 17 to perform the various analyses.

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The following multivariate regression model was used for the purpose of the analysis:-

$$\Upsilon = \beta_0 + \beta_1 GMCR + \beta_2 VT + \beta_3 TNI + \varepsilon$$

Where;

Υ is the GDP representing economic growth;

GMCR is the market capitalization of government bonds (the aggregate value of the tradable government bonds);

VT is the value traded (the total number of bonds traded multiplied by their respective matching prices;

TNI is the Total New Issues;

β_0 is the constant term;

β_1 to β_3 are the coefficients of each of the independent variables;

ε is the error term

CHAPTER FOUR

DATA ANALYSIS AND INTERPRETATION OF FINDINGS

4.1. Introduction

This chapter covers data analysis, interpretation and discussion of the research findings. The data is analyzed and presented in the form of tables and graphs. This chapter established whether there exists a relationship between performance of bonds issued by the Government of Kenya and economic growth.

4.2. Economic Growth in Kenya

Kenya's economic growth was measured by the Gross Domestic Product (GDP) as shown in the table below:-

Table 4.2.1 Gross Domestic Product (GDP)

Year	GDP at market prices (Kshs. Millions)
2011	3,024,782.20
2010	2,549,825.10
2009	2,366,984.20
2008	2,107,589.40
2007	1,825,960.00
2006	1,622,434.00
2005	1,415,200.00
2004	1,282,500.00
2003	1,136,300.00

Source: Kenya National Bureau of Statistics, Facts and Figures (2006, 2009 & 2012)

The above data shows that the GDP figures of Kenya from 2003 to 2011 were increasing by small percentages. The GDP value has increased on average by about 13% over the 9 years with the highest increase being by 18.63% in 2011 and with a drop being seen in 2010 whereby the growth was by 7.7% . The GDP growth is further outlined in Figure 4.2.2. below.

Figure 4.2.2 Trend of GDP growth in Kenya from 2003 to 2011
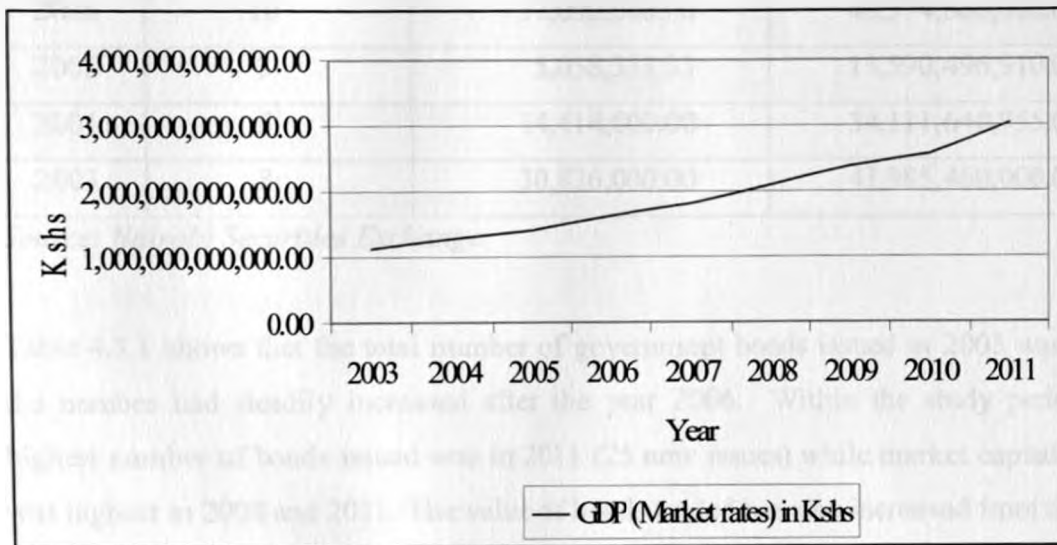
4.3. Issuance of Government Bonds

The Government of Kenya issues Government Bonds or Treasury Bonds periodically and normally once a month through the Central Bank of Kenya.

The total new issues, market capitalization and value traded of government bonds from the years 2003 to 2011 are as shown in table 4.3.1 below:-

Table 4.3.1 Government Bonds Issue

Year	Total New Issues	Market Capitalisation (Kshs)	Value Traded (Kshs)
2011	25	1,307,450,000.00	445,147,400,000.15
2010	13	160,000,000.00	478,845,750,000.00
2009	11	107,000,000.00	110,645,360,000.00
2008	9	913,000,000.00	95,362,630,817.00
2007	10	58,000,000.00	84,881,115,328.00
2006	10	37,000,000.00	48,574,860,000.00
2005	3	5,058,333.33	13,590,496,910.00
2004	5	14,414,000.00	34,111,640,955.00
2003	8	30,826,000.00	41,985,460,000.00

Source: Nairobi Securities Exchange

Table 4.3.1 shows that the total number of government bonds issued in 2003 was 8 and the number had steadily increased after the year 2006. Within the study period, the highest number of bonds issued was in 2011 (25 new issues) while market capitalization was highest in 2008 and 2011. The value of bonds traded has also increased from the year 2006 with the highest turnover having been experienced in the year 2010.

The graphical trend of government bonds issue (market capitalization) from the years 2003 to 2011 is as shown in figure 4.3.2 below.

Figure 4.3.2 Government Bonds Issue (Market Capitalization) from 2003 to 2011

4.4. Hypothesis and Hypothesis Testing

The guided hypothesis for the purposes of testing the result of the analysis is given below: -

Ho: There is no significant relationship between performance of Kenyan Government Bond issues and economic growth.

H1: There is a significant relationship between performance of Kenyan Government Bond issues and economic growth.

The hypothesis was tested using the Analysis of Variance (ANOVA) at 5% significance level. HI is accepted if F Statistics calculated is greater than F Statistics tabulated or the P Value (observed significance of F) is less than the alpha (0.05). The H0 is accepted if the P Value is greater than alpha (0.05) thus indicating that there is no significant relationship between performance of Kenyan Government Bond issues and economic growth.

Variables for bonds issue and performance (New issues, Market Capitalization and Value Traded) and GDP were input into the Statistical Package for the Social Science (SPSS) spreadsheet and the Coefficient of Multiple Determination, R2 was computed. The result is shown in Tables 4.4.1, 4.4.2 and 4.4.3 below.

Table 4.4.1 Descriptive Analysis

	Mean	Std. Deviation	N
GDP at market prices (Kshs. Mn)	1.925730544444E6	6.3489334712298E5	9
Total New Issues	10.44	6.247	9
GMCR (Kshs)	2.925275926E8	4.7642005665E8	9
Value Traded (Kshs)	1.4660515E11	1.72077967E11	9

Source: Statistical Package for the Social Science (SPSS) output

Table 4.4.2 Correlation Coefficient for the variables

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.903a	.815	.705	3.4503510098054E5
a. Predictors: (Constant), Value Traded (Kshs), GMCR (Kshs), Total New Issues				
b. Dependent Variable: GDP at market prices (Kshs. Millions)				

Source: Statistical Package for the Social Science (SPSS) output

The Coefficient of Multiple Determination, R^2 is 0.815, therefore since the value of R^2 is close to 1, it shows that the data will be useful for predicting response when analyzed. The result of 0.815 shows a strong relationship between government bonds issue performance and economic growth in Kenya.

The adjusted Coefficient of Multiple Determination, R^2 is 0.705 and this suggests that 70.5% of GDP is explained by government bond issues.

Table 4.4.3 ANOVA analysis

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.629E12	3	8.765E11	7.362	.028[a]
	Residual	5.952E11	5	1.190E11		
	Total	3.225E12	8			
a. Predictors: (Constant), Value Traded (Kshs), GMCR (Kshs), Total New Issues						
b. Dependent Variable: GDP at market prices (Kshs. Millions)						

Source: Statistical Package for the Social Science (SPSS) output

At 5% significance level, the F statistic (7.362) is greater than the P Value (0.028), therefore we reject the null hypothesis and accept the alternative hypothesis that there is a significant relationship between the government bonds issue performance and economic growth (GDP) in Kenya.

Table 4.4.4 Coefficients for the variables

Model	B	Std. Error	Beta	t	Sig.
(Constant)	1263675.869	289925.228		4.359	.007
Total New Issues	30746.618	42145.816	.303	.730	.498
GMCR (Kshs)	.000	.000	.209	.707	.511
Value Traded (Kshs)	1.725E-6	.000	.488	1.506	.192

Source: Statistical Package for the Social Science (SPSS) output

The regression equation can be derived from the standardized beta values of Table 4.4.4 as shown below:-

$$Y = 1,276,550.251 + 0.209 \text{ GMCR} + 0.488\text{VT} + 0.303\text{TNI}$$

Where;

Y is the GDP representing economic growth;

GMCR is the market capitalization of government bonds (the aggregate value of the tradable government bonds);

VT is the value traded (the total number of bonds traded multiplied by their respective matching prices;

TNI is the Total New Issues;

Thus, an increase in issue of government bonds will cause an increase in economic growth if all factors are held constant.

The Graphical representation of government bond issue performance and economic growth in Kenya also shows a direct proportional relationship and shown in graph 4.4.5.

Graph 4.4.5 Graphical trend analysis for bond issue performance (value traded) and economic growth (GDP)
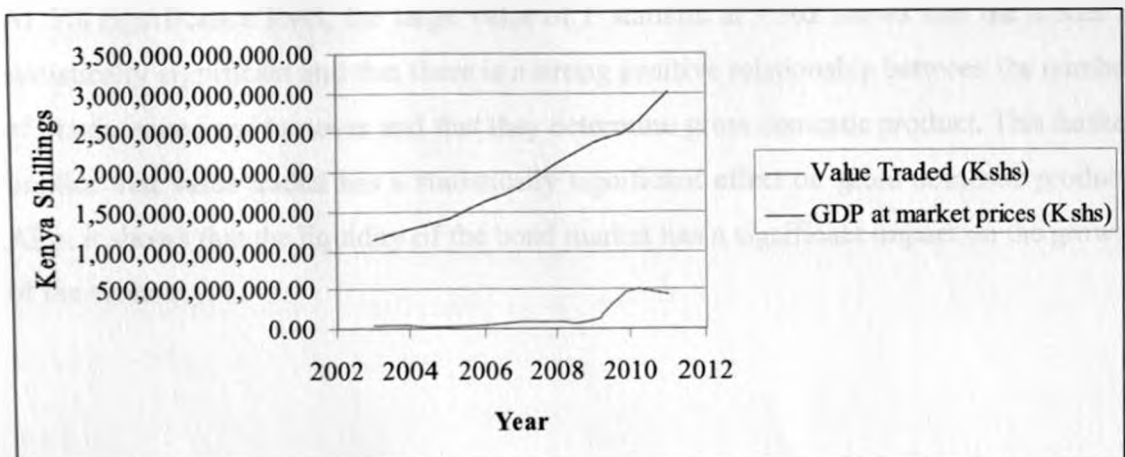
4.5. Summary and interpretation of findings

The main objective of this study was to examine the relationship between government bond issues and economic growth in Kenya. The findings of the study show that the issuance and performance of government bonds has a strong positive impact on the economic growth of Kenya.

From Table 4.4.1, the mean of the total new issues per year of government bonds was 10.44 while new government bond issues in the year 2011 were 25 from only 8 new issues in 2003. This indicates a gradual increase on issuance of the bonds over the years. From table 4.3.1, the market values of GDP have gradually increased from Kshs 1,136,300 million in 2003 to Kshs 3,024,782 million.

From Table 4.4.2, the adjusted Coefficient of Multiple Determination, R^2 is 0.705 and this suggests that 70.5% of variation in GDP is explained by government bond issues.

From Table 4.4.3, the F statistic (7.362) at 5% significance level is greater than the P Value (0.028), therefore we reject the null hypothesis and accept the alternative hypothesis that there is a significant relationship between the government bonds issue performance and economic growth (GDP) in Kenya.

At 5% significance level, the large value of F statistic at 7.362 shows that the model is statistically significant and that there is a strong positive relationship between the number of bonds issued and turnover and that they determine gross domestic product. This further implies that value traded has a statistically significant effect on gross domestic product. Also, it shows that the liquidity of the bond market has a significant impact on the growth of the economy.

The regression co-efficient of total new issues of government bonds in the estimated regression line is 0.303, which implies that a 100 percent point increase in total new issues of bonds during the period under review led to a 30.3 percentage point increase in gross domestic product. The regression co-efficient of market capitalisation of government bonds in the estimated regression line is 0.209, which implies that a 100 percent point increase in market capitalization of bonds during the period under review led to a 20.9 percentage point increase in gross domestic product.

The regression co-efficient of value traded of government bonds in the estimated regression line is 0.488, which implies that a 100 percent point increase in market capitalization of bonds during the period under review led to a 48.8 percentage point increase in gross domestic product.

The full model as indicated by the ANOVA results is statistically significant at the 5% confidence levels. The results of the estimates of the full model show that issuance of government bonds has had a strong positive effect on economic growth as 70.5% of variation in GDP is explained by government bond issues and the remainder by other factors.

From Table 4.4.4, the beta estimates are 0.303, 0.209 and 0.488 for total new issues, market capitalization and value traded respectively. The positive beta values for the three variables represented (total new issues, market capitalization and value traded of government bonds) indicates that there is an interdependency relationship between the variables.

There were three probable results with respect to the relationship and causal ties between the government bond issue performance and economic growth: (a) supply-leading; (b) the demand-leading; and, (c) no causal relation.

The results of the study support the view of the presence of a causal link between government bond issue performance and economic growth and the above findings are in tandem with the supply-leading hypothesis (Mc Kinnon, 1973) which maintains that accumulation of financial assets triggers economic growth. The major consensus being that finance positively influences real economic performance.

The findings of this study are also in line with the findings of Omoke (2010) who undertook a study on the relationship between capital market development and economic growth in Kenya for the four years from 2004 to 2007. The findings of his study revealed that market capitalization, trading volume and change in stock market prices affect the GDP. His analysis showed strong positive relationship between GDP and change in stock market prices.

Government bonds are traded at the Nairobi Securities Exchange (NSE) which is seen to give lenders of capital an immediate access to their funds while simultaneously offering borrowers a long-term supply of capital. In doing this, the NSE facilitates diversification thus allowing the economy to invest in relatively more assets. Again, investors facing liquidity shocks may be forced to withdraw funds invested in long-term investment projects were it not for the existence of a proper functioning securities market. Thus, the liquidity (represented by value traded) of government bonds is seen to spur economic growth in Kenya.

The findings of this study are also in tandem with the findings of Onaolapo & Adebayo (2010) who undertook a research study that employed linear regression to evaluate the relationship between bond market and economic growth using data over the period from 1984 to 2008 in Nigeria. The study found a considerable link between bond market and economic growth. The regression analysis showed that the indicator of bond market size (government stock market capitalization) and that of liquidity (value of government stock traded) are significant determinants of economic growth in Nigeria. The overall result suggested a strong positive relationship between bond market and economic growth in Nigeria.

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CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1. Summary

This study has examined the impact of issuance of government bonds to the economic growth of a country. The study explored the relationship between issuance of Treasury/ Government bonds and economic growth in Kenya using data that spans from the year 2003 to the year 2011. Regression analysis was performed on the time series data on gross domestic product, market capitalization of bonds, value of bonds traded and total new issues of bonds. The results showed that the issuance of Government bonds has a positive effect on the level of economic growth in Kenya. The findings imply that Kenya could enhance its economic growth by effectively and strategically strengthening the Bonds market and the uptake of Government Bonds.

The results of the analysis supported the supply-leading hypothesis that development of the bond markets enhances economic growth. The research constitutes a step towards the integration of the aggregate bond markets in the discussion on the finance-growth connection. The presented results are encouraging in unveiling the existence of causal relations between the fixed-income financial sector (government bonds) and the real sector (economic growth), a path that has been largely neglected in favor of the extensive research on the role of the stock markets in promoting growth.

The findings imply that economic growth was finance-led through funds mobilization from issuance of government bonds. It is recommended therefore that the regulatory authority should initiate policies that would encourage more companies to access the bonds market as well as to make it easier for individual investors to trade in the bond market.

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5.2.   Conclusion

From the findings above, one can conclude that issuance of government bonds has had a strong positive effect on economic growth.

This paper has examined the impact of issuance of government bonds to the economic growth of a country. From the findings above, one would conclude that based on the evidence from a sample period of 2003 to 2011, the supply-leading hypothesis of economic growth prevailed in Kenya. This implies that economic growth was finance-led through funds mobilization.

The results from regression analysis above show the summary of the effects of issuance of government bonds on economic growth. Using the number of new issues of government bonds, market capitalization and value traded as the indicators of government bonds performance and GDP as an indicator of economic growth, the coefficient obtained was positive indicating that positive performance of government bonds had a positive influence on economic growth. This implies government bonds issuance has promoted economic growth in Kenya.

The results indicate that funds mobilized from the public through issuance and purchase of government bonds are used to finance investment by the Government of Kenya, which then helps to boost the economic performance of the country.

Economic growth is dependent on other factors other than public debt and issuance of government bonds. However, the contribution of issuance of government bonds to the economic growth cannot be ignored. The issuance and performance of government bonds has a positive contribution to the economic growth of a country. The empirical results obtained fulfilled the objective of this research and indicated that the issuance of government bonds has a strong positive contribution to the economic growth of a country.

5.3.   Policy recommendations

In general, the evidence from the study suggests that policy makers in Kenya should encourage the issuance of more government bonds to the public and further to enhance the efficiency of the capital markets, both primary and secondary. This will in no doubt lead to mobilization of more funds and have a positive effect on the economic growth rate.

Since the bond market motivates economic growth, it is important that all stakeholders in the public and private sector as well as investors should engage and promote activities that will enhance the development of the bond market. Thus efficient markets through availability of information to the public should be a priority.

The private sector should be encouraged to invest in the capital market through educating and enlightening the public, using knowledgeable people and experts or professionals that are competent in stock market dealings.

The capital market should be made more liquid by improving the illiquidity status to make it more viable for small and individual investors to invest, and such improvements can contribute to economic growth.

The funds raised by government in the form of government securities in the capital market should be put into productive sectors of the economy that will necessitate to growth in all facets of the economy and also encourage investors who may be hesitant to invest without visible results.

The government should issue bonds in lower denominations to encourage the uptake by individual and small investors in volumes suitable to them. This will rally volumes due to large uptake which can contribute to economic growth.

5.4.   Recommendations for further study

The study was limited to issuance of government bonds for a period of 9 years. However, a longer term study of up to 15 years is recommended in order to see the results of the time series data over a longer period of time.

Secondly, a study on issuance of Corporate Bonds and the effect on the economy is recommended for further study as this study covered only government/treasury bonds.

Thirdly, a further study on Treasury Bills and their effect on the economy of the country is also recommended as this study did not cover the short-term debt instruments issued by the Government of Kenya.

Fourthly, a study covering both equity and bond markets is recommended to investigate the relationship that they both have on the economy of Kenya.

5.5.   Limitations of the study

It should be noted that there were various limitations of this study. Firstly, obtaining data from the NSE was a challenge due to the cost involved as a result of the data vending services that were introduced.

Secondly, government bond data for the year 2002 was not available at any of the sources that were providing data and due to this, the period for the study was reduced to 9 years instead of the intended 10 years.

Thirdly, all the data was collected from secondary sources and though all sources are reliable, any error in original data might not have been unavoidable.

Fourthly, the study used time series data which means that all limitations of estimation and analysis of time series data applies to this study.

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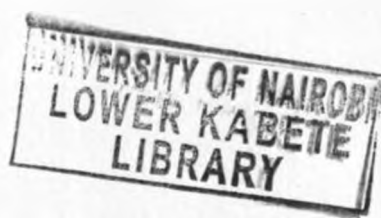
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APPENDICES

Appendix 1

List of Government / Treasury Bonds issued from 2003 to 2012

Issue Reopen date	Issue No	ISIN Number	Maturity date	Coupon Rate (%)	Redemption Yield (%)
12/26/2011	FXD1/2011/1	KE2000002267	12/24/2012	21.41	21.408
12/5/2011	IFB1/2011/12 (Tap 2)	KE2000002242	9/18/2023	12.00	16.64
11/28/2011	FXD4/2011/2 (TAP)	KE2000002259	11/25/2013	22.84	22.844
11/28/2011	FXD4/2011/2	KE2000002259	11/25/2013	22.84	22.844
10/31/2011	FXD3/2011/2(R1)	KE2000002234	9/23/2013	10.50	16.526
10/3/2011	IFB1/2011/12	KE2000002242	9/18/2023	12.00	16.64
9/26/2011	FXD3/2011/2	KE2000002234	9/23/2013	10.50	13.897
8/29/2011	SDB1/2011/30(R2)	KE2000002135	1/21/2041	12.00	16.397
8/29/2011	FXD2/2010/5(R2)	KE2000001228	11/23/2015	6.67	13.887
7/25/2011	FXD2/2011/2(R3)	KE2000002150	4/22/2013	7.44	12.684
7/25/2011	FXD2/2010/10(R2)	KE1000001998	10/19/2020	9.31	13.089
6/27/2011	FXD2/2010/5(R1)	KE2000001228	11/23/2015	6.67	12.529
6/27/2011	FXD2/2011/2(R2)	KE2000002150	4/22/2013	7.44	12.442
6/27/2011	FXD1/2011/20(R1)	KE2000002176	5/5/2031	10.00	14.822
5/30/2011	FXD2/2011/2(R1)	KE2000002150	4/22/2013	7.44	10.387
5/30/2011	FXD1/2010/10 (R1)	KE1000001921	4/13/2020	8.79	12.531
5/30/2011	FXD1/2011/20	KE2000002176	5/5/2031	10.00	13.974
4/25/2011	FXD2/2010/15(R1)	KE2000001558	12/8/2025	9.00	12.388
4/25/2011	FXD2/2011/2	KE2000002150	4/22/2013	7.44	7.439
3/28/2011	FXD1/2011/5(R1)	KE2000001994	1/25/2016	7.64	8.501
3/28/2011	SDB1/2011/30(R1)	KE2000002135	1/21/2041	12.00	13.52
2/28/2011	SDB1/2011/30	KE2000002135	1/21/2041	12.00	12.959
2/28/2011	FXD1/2011/2	KE2000001119	2/25/2013	5.28	5.284
1/31/2011	FXD2/2010/10(R1)	KE1000001998	10/19/2020	9.31	9.683
1/31/2011	FXD1/2011/5	KE2000001994	1/25/2016	7.64	7.636
12/27/2010	FXD4/2010/2	KE2000001442	12/24/2012	4.59	4.586
12/27/2010	FXD2/2010/15	KE2000001558	12/8/2025	9.00	10.923
11/29/2010	FXD2/2010/5	KE2000001228	11/23/2015	6.67	6.671
11/1/2010	FXD2/2010/10	KE1000001998	10/19/2020	9.31	8.646
9/27/2010	FXD3/2010/2	KE1000001964	9/24/2012	3.81	3.698

8/30/2010	IFB 2/2010/9	KE1000001954	8/19/2019	6.00	7.293
7/26/2010	FXD1/2010/25(R1)	KE1000001945	5/28/2035	11.25	9.839
6/28/2010	FXD1/2010/25	KE1000001945	5/28/2035	11.25	10.438
5/24/2010	FXD1/2010/5	KE1000001935	5/18/2015	6.95	6.829
4/26/2010	FXD1/2010/10	KE1000001921	4/13/2020	8.79	8.633
3/29/2010	FXD1/2010/15	KE1000001900	3/10/2025	10.25	9.98
3/1/2010	IFB1/2010/8	KE1000001793	2/19/2018	9.75	9.579
2/1/2010	FXD1/2009/5(R1)	KE1000001721	9/15/2014	9.50	9.592
12/28/2009	FXD1/2008/20(R2)	KE1000001493	6/5/2028	13.75	13.691
12/7/2009	IFB2/2009/12	KE1000001757	11/22/2021	12.00	12.537
10/26/2009	FXD1/2009/15	KE1000001739	10/7/2024	12.50	13.709
9/21/2009	FXD1/2009/5	KE1000001721	9/15/2014	9.50	11.108
8/24/2009	FXD3/2008/5(R1)	KE1000001544	8/19/2013	9.50	10.858
7/27/2009	FXD2/2008/10(R1)	KE1000001527	7/16/2018	10.75	11.821
6/29/2009	FXD1/2008/20(R1)	KE1000001493	6/5/2028	13.75	14.614
5/26/2009	FXD3/2007/15(R1)	KE1000001360	11/7/2022	12.50	13.53
4/27/2009	FXD1/2009/10	KE1000001656	4/15/2019	10.75	11.723
4/27/2009	FXD4/2008/5(R1)	KE1000001578	10/21/2013	9.50	10.849
2/23/2009	IFB1/2009/12	KE1000001637	2/8/2021	12.50	13.505
10/27/2008	FXD4/2008/5	KE1000001578	10/21/2013	9.50	11.549
9/29/2008	FXD3/2008/10	KE1000001555	9/17/2018	10.75	11.758
8/25/2008	FXD3/2008/5	KE1000001544	8/19/2013	9.50	10.86
7/28/2008	FXD2/2008/10	KE1000001527	7/16/2018	10.75	11.42
6/30/2008	FXD1/2008/20	KE1000001493	6/5/2028	13.75	14.741
4/28/2008	FXD2/2008/5	KE1000001436	4/22/2013	9.50	11.249
3/31/2008	FXD1/2008/15	KE1000001428	3/13/2023	12.50	13.31
2/25/2008	FXD1/2008/10	KE1000001313	2/12/2018	10.75	11.266
1/28/2008	FXD1/2008/5	KE1000001394	1/21/2013	9.50	10.792
11/26/2007	FXD3/2007/15	KE1000001360	11/7/2022	12.50	13.313
10/29/2007	FXD1/2007/10	KE1000001303	10/16/2017	10.75	11.316
9/24/2007	FXD3/2007/5	KE1000001006	9/17/2012	9.50	10.043
8/27/2007	FXD2/2007/5	KE1000000990	8/20/2012	9.50	9.767
7/30/2007	FXD1/2007/7	KE1000001170	7/21/2014	9.75	10.421
6/25/2007	FXD2/2007/15	KE1000001352	6/6/2022	13.50	12.968
5/28/2007	FXD1/2007/12	KE1000001337	5/13/2019	13.00	12.548
4/30/2007	FXD1/2007/6	KE1000001105	4/22/2013	11.50	11.288
3/26/2007	FXD1/2007/15	KE1000001345	3/7/2022	14.50	14.896
2/26/2007	FXD1/2007/8	KE1000001220	2/16/2015	12.75	12.955
12/25/2006	FXD2/2006/7	KE1000001162	12/16/2013	12.00	12.533
11/27/2006	FXD2/2006/6	KE1000001097	11/19/2012	11.50	11.804

9/25/2006	FXD1/2006/11	KE1000001311	9/11/2017	13.75	14.308
8/28/2006	FXD1/2006/12	KE1000001329	8/13/2018	14.00	14.355
6/26/2006	FXD1/2006/6	KE1000001089	6/18/2012	11.75	11.807
5/29/2006	FXD2/2006/10	KE1000001295	5/16/2016	14.00	13.778
4/24/2006	FXD1/2006/9	KE1000001253	4/13/2015	13.50	13.599
3/27/2006	FXD1/2006/10	KE1000001287	3/14/2016	14.00	14.595
2/27/2006	FXD1/2006/8	KE1000001212	2/17/2014	13.25	14.012
1/30/2006	FXD1/2006/7	KE1000001154	1/21/2013	13.25	13.661
20-Jun-05	FXD1/2005/5Yr	KE1000000941	14-Jun-10	12.50	10
28-Nov-05	FXD2/2005/5Yr	KE1000000958	22-Nov-10	13.00	10.2
26-Dec-05	FXD1/2005/6Yr	KE1000001071	19-Dec-11	13.00	10.5
26-Jan-04	FXD1/2004/7Yr	KE1000001139	17-Jan-11	6.75	10.2
23-Feb-04	FXD1/2004/6Yr	KE1000001055	15-Feb-10	6.50	9.9
22-Mar-04	FXD1/2004/8Yr	KE1000001204	12-Mar-12	7.50	10.5
26-Jul-04	FXD2/2004/6Yr	KE1000001063	19-Jul-10	6.75	10
23-Aug-04	FXD2/2004/7Yr	KE1000001147	15-Aug-11	7.00	10.4
24-Mar-03	FXD1/2003/7Yr	KE1000001113	15-Mar-10	13.75	9.9
28-Apr-03	FXD1/2003/8Yr	KE1000001188	18-Apr-11	12.50	10.2
5/26/2003	FXD1/2003/9	KE1000001238	5/14/2012	12.75	12.507
6/23/2003	FXD1/2003/10	KE1000001261	6/10/2013	13.25	10.826
7/28/2003	FXD2/2003/9	KE1000001246	7/16/2012	9.50	7.408
8/25/2003	FXD2/2003/10	KE1000001279	8/12/2013	8.50	7.474
29-Sep-03	FXD2/2003/8Yr	KE1000001196	19-Sep-11	7.00	10.4
27-Oct-03	FXD2/2003/7Yr	KE1000001121	18-Oct-10	6.50	10.1

Appendix 2

Turnover of Government Bonds at the NSE from 2003 to 2011

Year	2003	2004	2005	2006	20
Jan	3,799,000,000.00	4,576,350,000.00	1,015,246,910.00	1,054,900,000.00	1,601,750,000
Feb	3,181,600,000.00	4,991,500,000.00	636,250,000.00	4,696,250,000.00	6,234,200,000
Mar	2,831,360,000.00	3,623,925,000.00	132,650,000.00	2,859,700,000.00	7,807,810,000
Apr	2,724,850,000.00	2,140,800,000.00	1,005,100,000.00	6,002,150,000.00	6,266,300,000
May	2,146,900,000.00	3,177,200,000.00	787,700,000.00	4,783,250,000.00	9,555,150,000
Jun	2,768,750,000.00	5,337,650,000.00	1,295,300,000.00	8,128,350,000.00	8,970,150,000
Jul	2,421,400,000.00	2,397,450,000.00	1,461,900,000.00	7,383,500,000.00	8,238,100,000
Aug	5,324,050,000.00	842,800,000.00	1,784,500,000.00	6,440,400,000.00	10,829,550,000
Sep	3,549,450,000.00	1,442,800,000.00	1,283,500,000.00	1,497,000,000.00	9,523,150,000
Oct	6,537,100,000.00	2,253,800,000.00	1,524,100,000.00	1,872,060,000.00	3,486,950,000
Nov	3,025,850,000.00	2,119,100,000.00	1,184,100,000.00	2,847,800,000.00	4,705,900,000
Dec	3,675,150,000.00	1,208,265,955.00	1,480,150,000.00	1,009,500,000.00	7,662,105,328
Total	**41,985,460,000.00**	**34,111,640,955.00**	**13,590,496,910.00**	**48,574,860,000.00**	**84,881,115,328**

Year	2008	2009	2010	2011
Jan	5,937,900,000.00	6,643,400,000.00	26,746,900,000.00	19,894,000,000.00
Feb	3,212,550,000.00	6,859,800,000.00	41,638,700,000.00	49,226,500,000.00
Mar	14,281,750,000.00	8,187,600,000.00	50,411,000,000.00	40,116,050,000.00
Apr	2,343,700,000.00	3,816,310,000.00	23,241,000,000.00	42,620,900,000.00
May	3,037,200,000.00	11,555,950,000.00	37,204,450,000.00	31,446,250,000.00
Jun	4,912,035,382.00	10,766,600,000.00	95,241,750,000.00	61,115,450,000.15
Jul	2,397,930,000.00	8,359,100,000.00	63,517,000,000.00	34,245,550,000.00
Aug	18,490,356,350.00	6,140,950,000.00	23,189,800,000.00	44,111,700,000.00
Sep	22,611,941,683.00	9,951,200,000.00	30,839,400,000.00	36,112,400,000.00
Oct	4,344,113,732.00	13,212,950,000.00	29,871,000,000.00	34,567,950,000.00
Nov	6,319,712,659.00	9,214,850,000.00	33,876,500,000.00	26,691,600,000.00
Dec	7,473,441,011.00	15,936,650,000.00	23,068,250,000.00	24,999,050,000.00
Total	**95,362,630,817.00**	**110,645,360,000.00**	**478,845,750,000.00**	**445,147,400,000.15**