LONG RUN PORTFOLIO RETURNS ON BONDS AND STOCKS IN THE KENYAN MARKET

BY

STEPHEN WANYONYI LUKETERO

A RESEARCH PROJECT PRESENTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTERS IN BUSINESS ADMINISTRATION (MBA), SCHOOL OF BUSINESS UNIVERSITY OF NAIROBI

November, 2008

DECLARATION

I, Stephen Wanyonyi Luketero hereby certify that;

1. Except where due acknowledgement has been made, this project work is mine alone.
2. The project has not been submitted in whole or in part to qualify for any other academic award.

Signed..........................Date...21-11-2008...

Stephen Wanyonyi Luketero

D61/9201/05

I, Mr. Otieno Luther Odhiambo hereby certify that this project has been presented for examination with my approval as the University of Nairobi supervisor.

Signed..........................Date...21/11/2008...

Mr. Otieno Luther Odhiambo

Lecturer, School of Business,

University of Nairobi

DEDICATION

This project is dedicated to my beloved wife Olipha Bikeri and our children.

ACKNOWLEDGEMENT

My most sincere gratitude goes to Mr. Otieno Luther Odhiambo, Lecturer School of Business, University of Nairobi for his candid and endurance in supervising me. The many hours we spend together enabled me achieve many valuable results. He pointed out fallacious mistakes which I could have otherwise made.

May I also thank my wife and our children for their patience during the period of writing this project work.

LIST OF ABBREVIATIONS

No.	FULL NAME	SHORT NAME
1	Nairobi Stock exchange	NSE
2	Emerging Stock Markets	ESMs
3	Developed Stock Markets	DSMs
4	Main Investments Market Segment	MIMS
5	Alternative Investment Market Segment	AIMS
6	Fixed Income Securities Segment	FISMS
7	Futures and Options Market Segment	FOMS
8	Central Bank of Kenya	CBK
9	Yield To Maturity	YTM
10	Kenya National Bureau of statistics	KNBS
11	Stock Returns	stockr
12	Bond Returns	Bondr
13	Standard Deviation	Stdev
14	Consumer Price Index	CPI
15	r	Correlation
16	R^2	Coefficient of Determination

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ABSTRACT

This study seeks to investigate long-run real returns on stocks and bonds in the Kenyan market. Empirical evidence suggests that long-run real return on stocks is higher than long-run real return on bonds.

In this project we examine returns on bonds and stocks at the NSE for the period 1999 to 2006. To be able to compute real returns we incorporate inflation for the same period of time. To able to achieve results we perform correlation between the real returns on stocks and bonds.

Furthermore we regress real returns on stocks against returns on bonds, inflation and real returns on bonds. This gives us a regression model relating the given variables. We also test the significance level at 95% Confidence Interval.

CHAPTER 1.0: INTRODUCTION

1.1 Background

The most important uncertainty that investors face is the rate of return that they can expect over the long run (Peter L. Bernstein). Investors are interested in earning good returns from the investments they make hence they are faced with two decisions to make: firstly portfolio mix and secondly long run investments. Investment is about sacrificing current shilling for future shilling. The sacrifice is certain since it takes place now but however returns usually come later hence accompanied by risk. In making a decision to invest, investors are expected to analyze the state of the economy and its potential effects on the security returns. The investors would also assess the industry performance since stock prices would be influenced by industry conditions that affect firm performance .Investors would in reality buy those securities that would preserve the capital invested or those that could lead to capital appreciation (Reilly et al 2006).

The interest rate on debt securities will depend on a number of factors. Some aspects will relate to the supply of securities (i.e. if the government reduces the securities available by net repayments of stock, the yields on the stocks are likely to be lower than would be the case if the government were a net issuer of securities) while other aspects will be influenced by the demand side (i.e. the levels of liquidity available to buyers of securities such as private individuals, corporate bodies, institutions and foreign governments). Investors which lend their assets can expect, in theory, to receive a payment to compensate them for the loss of purchasing power in their cash while it is lent, plus some premium for actually giving someone else the use of the money. A.J.FROST and D.P.HAGER (1990). Furthermore, the longer the money is lent, the greater the risks to the lender and hence lending for longer periods could be expected to be at higher rates of interest than for shorter periods.

Markowitz (1952) asserts that investors seek both maximum expected returns for a given level of risk and minimum risk for a given level of expected return. Expected return is the measure of potential reward associated with a portfolio and standard deviation is a measure

of a portfolio risk. This study seeks to investigate the long run returns on bonds and stocks at the Nairobi Stock Exchange (NSE). We analyze returns over the period 1996-2006.
In the case of NSE there has been phenomenon investor enthusiasm to buy shares traded at the market. From period 2002 - 2007 the main NSE index rose by 817% in dollar terms according to Standards and Poor's, a leading investment research firm, making it be among the world's best performing markets.

Africa Research Bulletin (2008) explains that Kenyan investors are stocks frenzy such that they even sell their cattle to buy the shares. Investors must first determine and if possible measure their predictive ability. They should actively seek above-average returns only where they have a predictive capability. Where they don't passive approach is the appropriate way to go Farrell Jr. (1993).

The equity market consists of ordinary shares and preference shares. The debt market consists of treasury bonds, corporate bonds, commercial paper, municipal bonds, assets backed securities and mortgage backed securities. In this study we tend to analyze bonds and stocks. Treasury bonds and stocks are competing assets particularly when their prices are not at equilibrium. A wise investor chooses one or both assets not only according to his/her goals and the amount of capital available but also according to his own tolerance for risk. Correct choice ensures that investors are able to reduce their risk and enhance their returns by taking into account the market forces and taking rightful decisions.

Bonds are capital investments that attract institutional investors and require astronomical amounts of capital for trade. Retail investors are more attracted to investing in equities and unit trusts. Treasury bills are the least risking and most marketable of all of the securities, Elton and Gruber (1995). In Kenya, Treasury bonds are medium to long term government securities sold by central bank of Kenya on behalf of treasury. An investor earns a return during the period of the security and payment of the face value is made on maturity date. Currently T/bonds on offer are for maturity periods ranging from 1 (one) year and above. The minimum amount one can purchase has a face value of kshs 50,000 after which any additional amounts must be in multiple of kshs 50,000. T/bonds may be offered with any of the following types of returns according to the terms.

1.1.1 Fixed rate Coupon

Entitles investors to a fixed sum of interest that applies constantly throughout the bond life.

1.1.2 Floating rate coupon

Investors earn a floating sum of interest which is pegged to the 91 days treasury bills average rate. Since treasury bills rates are influenced by market forces, different rates are applied through out the bond life. Therefore the relevant Treasury bill rate at the beginning of each interest period plus a fixed premium is applied. In most cases interest on bonds are paid every six months so investors will receive two payments in a year.

1.1.3 Zero coupon bonds

This is a bond with only the payment (redemption) and is sold at a discount to its face value as in treasury bills.

The question whose answer an investor would wish to know is: ***how can an investor tell how much interest a treasury bond will earn?*** Investors can use the following formula to determine amount of interest.

$$\frac{fr}{100n} = I$$

Where f= face value of bonds

r= Interest (coupon) rate per year

n= No of interest payments in a year

I= Amount of interest payments

Another question that ponders an investor is ***how he/she can determine the yield rate (price) at which to purchase treasury bonds.*** The face value of a bond is not necessarily how much it costs. A bond may cost same, more or less than the face value depending on the market. Investors are required to determine the desired rate of return (i.e. yield rate) in percentage terms. Once they settle on a desired yield rate they can use the following formula to get the price for every kshs 100.

$$P = \frac{I_1}{(1+r)^1} + \frac{I_2}{(1+r)^2} + ... + \frac{I_n + fv}{(1+r)^n}$$

Where

P = the price for every kshs 100 of Treasury bond

r = desired rate of return (interest rate per year)

n = number of interest periods in bond life

I = Interest amount per coupon (day count convention 364)

fv = face value

There are three types of prices:

1.1.4 Par value

When an investor desires a yield rate which is same as the coupon rate they are expected to pay a par price of kshs 100 for every kshs 100 i.e. cost will be equal to face value of quantity desired.

1.1.5 Discount price

Investors who desire a yield rate higher than coupon rate are expected to pay a discount price which is less than every kshs 100 i.e. cost will be lower than face value

1.1.6 Premium price

Investors who desire a yield rate lower than coupon rate are expected to pay a premium price which is more than face value i.e. cost will be higher than face value.

For ease of calculating prices, the Central Bank includes a yield table in the prospectus for the treasury bonds on offer. Investors may apply a price to any face value of treasury bonds desired to determine cost. See formula bellow;

$$\frac{FP}{100} = C$$

Where

F= face value,

P= Price and

C= cost of Treasury bond

The difference between coupon rate and yield rate is explained as follows: ***"coupon rate is interest amount paid on face value of Treasury bond while yield rate is the return for the life of the bond".***

1.1.7 Emerging stock markets

There is evidence that emerging stock markets (ESMs) are segmented from world capital markets, and as a result local information has increased importance in these markets Harvey (1995b0. A consequence of the segmented nature of these markets is that ESMs returns are only weakly correlated with the returns from developed stock markets (DSMs). This allows an international investor to enhance the mean-variance efficiency of their portfolio Errunza (1977); Divecha et al (1992). The diversification benefits, however, will be greatest when the factors driving return variation are uncorrelated across markets.

Since the 1980s, there have been substantial changes in political and economic environments in many regions such as China, Eastern Europe, Latin America and Russia. As a result, emerging markets now represent a feasible investment alternative for international investors and the last decade has witnessed massive capital flows in and out of emerging stock markets.

1.1.8 Sectored Return

The analysis of sectored characteristics does indicate that there are significant differences between sectors in terms of their risk-return relationships Muriuki J.(2003). The portfolio return characteristics do not only differ across sectors but also from one period to the other. The existence of risk-return difference is a manifestation of the inherent differences in the impact of market conditions on different sectors. Prior research has already suggested that interest rates, inflation rates are possible influences on industry returns Gibson, (1992), Whittington, Saporta and Singh, (1997). This study will employ inflation to be able to determine real returns.

1.1.9 The Nairobi Stock Exchange

The Nairobi Stock Exchange was established in 1954. The introduction of the trading floor has led to a substantial increase in trading volumes and upward movement in the various indexes. The NSE has been instrumental in enabling the public and private sectors in

Kenya to raise large amounts of capital for expansion of new businesses (NSE manual, 2005).

The NSE thus represents the financial markets in Kenya. It has 19 registered brokers and has about 55 firms listed on the exchange. It deals in ordinary shares and fixed income securities such as preference shares and most recently treasury bonds. The NSE also has some of its shares cross-listed with other stock exchanges in South Africa, Uganda and Tanzania. Both operational and informational efficiencies are key in ensuring that the NSE fulfils its mandate as the capital markets intermediary for Kenya and the world over (NSE Handbook, 2005), hence, the fundamental reforms of the market structure were undertaken in year 2000. These reforms saw the market recognized into the following four independent market classes:

I. The Main Investment Market Segment (MIMS)
II. The Alternative Market Investment Segment (AIMS)
III. Fixed Income Securities Market Segment (FISMS)
IV. Futures and Options Market Segment (FOMS).

1.2 Statement of the Problem

Research findings due to Ibbotson et al 1990 and Peter L. Bernstein in the developed markets, especially United States (U.S), Britain and Japan, suggest that in the long run stocks are fundamentally less risky than bonds. During the period 1952 to 1979, almost all the variation in bond returns can be accounted for by news about future inflation. When the data for the 1980s also was included, in addition to inflation news, news about future risk premiums for holding bonds were equally important in accounting for variations in bond returns. Shiller and Beltratti, (1992) using annual data from the U.S during the period 1948-1989 showed small positive co-movement between stocks and bond returns. Stock and bond returns tend to move in opposite directions when expected future inflation varies (Campbell and Ammer, 1993). Only a few of such studies have been done in other countries (especially in the developing markets) as compared to what has been done in the developed markets.

Domestic macro-economic factors influences stock price movements in the stock market exchange, such as extreme variations in exchange rates and high inflation, can have significant effects on stock price indices (Choudry, 2001 as quoted by Jennifer and Bruce, 2001). Kwon, Chung S (1997) used three time series regression models to find out whether principal economic indicators such as industrial production, inflation, interest rates, yield of corporate and government bonds, trade balance, dividend yield, foreign exchange, oil price, and money supply are significant explanatory factors of stock market in Korea. They concluded that inflation and interest rate-related variables are not significant factors to the Korean stock market.

In Kenya many studies have been conducted on the stock market touching on various aspects. Among them is Regina (2006) who analyzed the effect of treasury bills on stock market returns. Also Nyamute (1998) analyzed the movement and /or changes in four of the major economic indicators (interest rates, money supply, inflation rate and exchange rates). However Nyamute (1998) and Regina (2006) did not compute real returns on stocks and bonds, and hence did not compute long run returns. To date there has not been any study on long run returns on stocks and bonds in the Kenyan market.

The search for the answers to questions about long-run rates of returns usually begins with the Ibbotson Associates database, which provides monthly rates of return from the end of 1925 to present. In Kenya the bearish nature of the stock market before 2002 has been blamed on the excessive borrowing by the Kenya government. Jiwaji (2004), writing for G21 notes, "Kenyans have paid and continue to pay a very high price, both in budgetary and economic costs, for the financial indiscipline of the 1990s which was characterized by high fiscal deficits, excessive domestic borrowing….". Government borrowing is expressed in many ways one of which is the sale of treasury bonds through open market operations.

Proponents of the stock market as an indicator of economic activity explain that investors are observant of economic trends and factors impacting the performance of corporation, MacEwan (1990). Investors are expected to sell off their shares in anticipation of harsh economic conditions and hold on to their shares in anticipation of economic boom, Pearce (1985)

The main purpose of this study is to examine and compare returns between stocks and bonds at the Nairobi Stock Exchange (NSE) for the period 1996 to 2006, and determine whether the long run real returns on stocks are higher than long run real returns on bonds.

1.3 Objective of the study

The key objective is to investigate the long run returns on stocks and bonds in the Kenyan market. This will lead us to correlate real returns on stocks and bonds. Finally we try to develop a model to forecast stock/bond real returns.

1.4 Hypothesis Testing

The following hypothesis shall be tested:

$$H_0: \mu_1 = \mu_2$$

The mean real long run returns on stocks is the same as mean real long run returns on bonds.

$$H_1: \mu_1 \neq \mu_2$$

The mean real long run returns on stocks and bonds are not the same.

1.5 Justification of the Study

The study will be of use to the following parties:

1.5.1 Investors

Based on the findings of the study, investors will henceforth be able to make informed decisions and judgments as to which portfolio or combination of portfolios to hold.

1.5.2 Actuaries/Asset managers/Fund managers

Portfolio managers and fund mangers can use this study to counter check their investment plans and make appropriate recommendations to clients so as to reap maximum gains.

1.5.3 Policy makers

The findings of the study will be valuable to policy makers especially those in government authorities in terms of streamlining their fiscal and monetary policies. These parties will gain a deeper appreciation of the impact of their decisions on the industry returns of the business communities.

1.5.4 Financial Intermediaries

Financial intermediaries will appreciate the information contained within this document and utilize it for purpose of planning their financial strategies and the development of financial products that will meet the requirement of their corporate and private customers in the future. The balance between the value of investment in T-bills and the amount of funds to leave available in order to extend credit to the economy is a decision that needs to be made based on an understanding of the national implications and not just monetary gains.

1.5.5 Financial Analysts

The study will provide guidance on how best to construct long run investment portfolios based on bonds and stocks.

1.5.6 World Bank/International Bodies

The study may also be useful for international organizations such as the World Bank and foreign governments who are interested in the emerging and developing capital markets of the economies of various countries.

1.5.7 Academics

Research will add to the body of knowledge not only in finance but in other disciplines such as statistics, actuarial science etc. Moreover the study will act as a foundation for further research related to this area of long run returns.

CHAPTER 2.0: LITERATURE REVIEW

The most important uncertainty that investors face is the rate of return that they can expect over the long run. The search for the answers to questions about the long run rates of return usually begins with the Ibbotson Associates database, which provides monthly rates of return from the end of 1925 to the present. The search for the markets' basic return-a long term rate of return independent of changes in valuation- combined Siegel annual returns data and Ibbotson quarterly return data with information on stock prices, earnings, and dividends since 1871 furnished by professor Robert Shiller for the early years and Standard and Poor's for recent years.

Remember Keynes had this to say "Even for institutions such as charitable foundations and educational endowments that aim to be around into perpetuity, the time required to assure them of 10 percent, or even the old fashioned 8 percent, requires more endurance than most human trustees can manage. Indeed, this kind of long run will exceed the life expectancies of most people mature enough to be invited to join such boards of trustees" as quoted by Peter L. Bernstein,1997.

The Kenyan Stock and bond markets have seen radical transformations since their inceptions. The change pervades many dimensions: size, trading value, diversity and complexity of instruments e.g. electronic trading and the number of market players/ participants.

Regulation of markets is not an end in itself but a means to ensure proper functioning of the markets to facilitate their development. Capital markets in Kenya are divided into equity and debt markets. Equity and debt markets are sub-divided into primary and secondary markets. Derivative market is yet to be introduced due to inappropriate market infrastructure. The Equity market consists of ordinary shares and preference shares. The debt market consists of treasury paper, municipal bonds, assets backed securities and mortgage backed securities. Of these only the first three are practiced in to Kenyan capital market.

Kenya has 52 companies, 8 corporate bonds and 68 government bonds. Treasury bills and stocks are competing assets particularly when their prices are not at equilibrium. The Kenyan Capital Market offers the following investment products:

- Stocks and shares (equities) bonds and
- Collective investment schemes (Unit trust and mutual funds)

A wise investor chooses one or more of the above investment assets not only according to his/her goals and the amount of capital available, but also according to his own tolerance for risk. Correct choice ensures that investors are able to reduce their risk and enhance returns by recognizing the underlying direction of the markets and taking positions accordingly. Investors are always in search of assets whose returns are commensurate with risk, Markowitz (1952). Bonds are capital investments that attract institutional investors and require astronomical amounts of capital to trade.

Retail investors are more attracted to investing in equities and unit trusts. Treasury bills are the least risky and most marketable of all of the securities Elton and Gruber (1995). Treasury bills are issued by the Kenya government so as to raise money. They are sold at a discount from their face value i.e. it is a pure discount security issued by the government with a maximum term to maturity of one year. Upon maturity, the investor receives the face value. The difference between the face value and the price at which it was sold is treated as the rate of return for the investor. Treasury bill interest rate is generally used to test various hypotheses about the effect of such economic variables as the rate of inflation or the money supply on the general level of short term interest rates, cook and Laweyer (1983).

Collection and presentation of capital market data was pioneered by Cowles (1938) and Macaulay (1938). In 1996 Fisher and Lovie constructed stock market total returns from period-end to period-end. Ibbotson and Singuefield (1976) extended this work to assets, enabling a comparative study. In the case of bonds and bills, Homer (1963) provides an exhaustive compilation of yield data from around the world. U.S market values were addressed by Ibbotson and Fall (1979), with work extended later to the entire world by Ibbotson, Siegel and Love (1985).

The interest rate and inflation rate have long been recognized as important to the performance of the stock market and bonds. Darrat and Dickens (1999) noted in their study that interest rates lead stock returns. The June 2004 study by CFA institutes show that stocks in the US averaged greater returns during periods of expansive monetary policy and smaller returns were realized when the policy on interest rates was restrictive. The study found that markets performed poorly, resulting in lower than average returns and higher than average risk. Conversely, periods of expansive monetary policy- when interest rates are falling, generally coincide with strong performance including longer than average returns and less risk.

In theory in the long term the investor should receive a rate of return to at least compensate for the changes in money values due to inflation. In stable low-inflationary conditions the redemption yield on fixed-interest securities may be loosely based on a continuation of current inflation levels, plus some risk premium against an upward move in inflation levels.

The CBK management of the country's monetary policy has a strong bearing on the stock market. If there is excessive money in the economy, interest rates may be low, but the excess money pumped into the economy may fuel future inflation and could overheat the economy. Conversely, tight monetary conditions may be accompanied by high interest rates. The government's ability to control the money supply will depend on the way in which it sells or repays securities and how it borrows. The bank injects money to the economy when it buys T-bills and drains money when it sells it. As the law of supply and demand dictates the cost of loanable funds (interest rates) adjusts itself to the desired level, CBK home page (2005). Thus the bank controls the amount of cash in the economy by selling T/bills to relieve a cash surplus or buying T/bills when the system needs cash.

2.1 The CBK and setting treasury bills rates

Many factors determine interest rates. The CBK controls interest rates charged by Commercial banks through the sale and purchase of treasury bills. The CBK sets the T-bill rate hence it plays an important role in setting very short term interest rates within the economy.

2.2 Treasury bill rates and Crowding Effects

An investor buys T-bills on a discount and receives payment of face value on maturity date. In Kenya T-bills on offer are for maturity periods of 91 days (three moths) and 182 days (six months). Minimum face values = kshs.1,000,000 and thereafter additional values in multiples of kshs. 50,000 this makes T-bill unaffordable to most individual investors. As a result, the major purchasers of T-bills tend to be financial institutions, Mukherjee (1999). When banks invest their money in the purchase of T-bills they reduce the amount of money available to the economy for expansion and development. The crowding out effect is an economic theory explaining an increase in interest rates due to rising government borrowing in the money market, Shenk (2000), Girmens and Guillard (2002). The problem occurs when government debt 'crowds out' in private companies and individuals from the lending market. The government issues T-bills at high interest rates so as to make them attractive and competitive to potential investors, Ahmed and Miller (1999).

2.2.1 Factors Affecting T-bill rates

- Demand for risk free fixed income securities in general Stanton (2000)
- Government deficit reduces supply of treasury securities.
- During business expansion period T-bills rates rise, while they fall during recess, Roses and Peter (1994).
- CBK's monetary policy actions including issue of short term T-bills, federal reserve bank of San Francisco (2005)
- When inflation increases and decreases results to increase and decrease on T-bills respectively, American Institute of Economics research (2000).

2.3 Bonds

Bonds are simply contracts between a lender and borrower by which the borrower promises to repay a loan with interest. However bonds can take on many additional features and/or options that can determine the way in which prices and yields are calculated. The classification of a bond depends on its type of

- Issues

- Priority
- Coupon rate and
- Redemption features

2.3.1 Bond Issuers

The major determiner of a bond's quality, the issuer is one of the most important characteristics of a bond. There are significant differences between bonds issued by corporations and those issued by a state government/municipality, or national government. In general, securities issued by the government have the lowest risk of default while corporate bonds are considered more risky. However, like corporate bonds, government bonds carry various levels of risks: because all national governments are different, so are the bonds they issue.

International bonds are issued within a market that is foreign to the issuer's home market. They may be denominated in the currency of the issuer or receiver. **A Eurobond** refers to any bond that is denominated in a currency other than that of the country in which it is issued. **A foreign bond** is denominated in the currency of the country in to which a foreign entity issues the bond. An example of such a bond is the Samurai bond, which is a yen denominated bond issued in Japan by an American company. **A global bond** is structured so that it can be offered in both foreign and Eurobond markets. Essentially, global bonds are similar to Eurobonds but can be offered within the country whose currency is used to denominate the bond. As an example, a global bond denominated in yen could be sold to Japan or any other country throughout the Eurobond market.

2.3.2 Priority

The priority of the bond is a determiner of the probability that the issuer will pay you back your money. The priority indicates your place in line should the company default on payments. If one holds an unsubordinated (senior) security and the company defaults, one would be first in line to receive payment from the liquidation of their assets. On the other hand, if one owned a subordinated (junior) debt security, one would get paid out only after the senior debt holders have received their share.

2.3.3 Coupon rate

Bond issues may choose from a variety of types of coupons, or interest payments. **Straight, plain vanilla or fixed –rate bonds** pay an absolute coupon rate over a specific period of time. Upon maturity, the last coupon payment is made along with the par value of the bond. **Floating rate debt instruments or floaters** pay a coupon rate that varies according to the movement of the underlying bench mark.

.These types of coupons could, however be set to be a fixed percentage above, below, or equal to the benchmark itself. Floaters typically follow benchmarks such as the 3 months or 6 months T-bill rate or Libor (London Inter-Bank Offer Rate). **Zero Coupon** or accrual bonds do not pay a coupon. Instead, these types of bonds are issued at a deep discount and pay the full face value at maturity

2.3.4 Redemption Features

Both investors and issuers are exposed to interest rate risk since they are locked into their receiving or paying a set of coupon rate over a specified period of time. For this reason some bonds offer additional benefits to investors or some flexibility for issuers. **Callable or a redeemable bond** feature gives the bond issuer the right but not the obligation to redeem their issue of bonds before the bonds maturity- the issuers, however must pay the bond holders a premium. The optimal time for issuers to call their bonds is when the prevailing interest rate is lower than the coupon rate they are paying on the bonds. After calling its bonds, the company could refinance its debt by reissuing bonds at a lower coupon rate. **Convertible bonds** give bondholders the right but not the obligation to convert their bonds into a predetermined number of shares at predetermined dates prior to the bonds maturity. (Obviously this only applies to corporate bonds). **Puttable bonds** give bondholders the right but not the obligation to sell their bond back to the issuer at a predetermined price and date. These bonds generally protect investors from interest rates risk. If the prevailing bond prices are lower than the exercise par of the bond, resulting from interest rates being higher than the bonds coupon rate, it is optimal for investors to sell their bond back to the issuer and re invests their money at a higher interest rate. **Face value** is the par value of a bond. A bond or a debenture is generally issued at par value. Interest is paid on the face value. **Interest Rate** is fixed and usually known to the bondholder. It is tax deductible and is the coupon rate referred to earlier.

Maturity: A bond /debenture is issued for a specified period of time. It is repaid on maturity.

Redemption value: The Value which a bondholder will get on maturity. A bond may be redeemable at par or at a premium (more than par value) or at discount (less than par value).

Market value; A bond may be traded in a stock exchange. The price at which it is currently sold or bought is the market value. Market price may be different from par value or redemption value.

2.4 Bond valuation

The determinant attributes of a bond in bond valuator are

- Length in time until maturity
- Coupon rate
- Call and put provisions
- Tax status
- Marketability
- Likelihood of default

2.4.1 Coupon rate and length of time until maturity

These attributes determine the size and the timing of the cash flows that are promised to the bondholder by issuer. If the market for treasury securities is viewed as being efficient, then the yield-to- maturity on treasury security that is similar to the bond under evaluation can form a starting point for analyzing a bond.

2.4.2 Call and put provisions

Most corporate bonds have a call provision that enables the issuer to redeem the bonds before maturity usually for a price higher than par value. This price is called the call price and a difference between it and the par value of the bond is known as the **call premium**

An issuer will often find it financially advantageous to call the existing bonds if yields drop. Substantially after the bonds were initially sold because the issuer will be able to replace them with the lower yielding securities that are less costly.

Bonds with **put** provisions allow the investor to return the bond to the issuer before maturity and receive the par value in return. The put provision is beneficial to the investors and costly to issuers, since it allows investors to receive the par value of the bond after the waiting period has elapsed (unlike call provisions, the put provision will typically allow the put to be exercised only for a brief time at the end of the waiting period, not for rest of the bonds' life). If the interest rates rise, an investor can turn in the bond and use the proceeds to invest in a higher yielding bond, thereby forcing the issuer to issue a new bond at a higher rate. Consequently, put provisions are likely to be used when interest rates rise whereas call provisions are likely to be used when interest rates fall. Since the put provisions are potentially beneficial to investors the result is that puttable bonds will have lower yields than non puttable bonds.

2.4.3 Tax Status

Any low coupon taxable bonds selling at a discount provides return in two forms: coupon payment and gains from price appreciation. In the United States both are taxable as ordinary income, but taxes on the later may be deferred until the bond either is sold or matures if the bond was initially sold at par.

2.4.4 Marketability

This refers to the ability of an investor to sell an asset quickly without having to make a substantial price concession. An example of an illiquid asset would be a collectible such as an artwork. Because most bonds are bought and sold in dealers markets, one measure of bonds marketability is the **bid-ask spread** that the dealers are quoting on the bond.

Bonds that are actively traded should have a lower yield to maturity and a higher intrinsic value than bonds that are inactive, everything else being equal.

2.4.5 Risk of Default

When an investor purchases a bond, he faces the risk that the issuer will default or fail to make the interest payments when they fall due or even the face value at maturity. Government bonds do not normally default on payments therefore the default risk is low. A loss making company might suspend the interest payments meaning the default risk becomes high. The higher the risk, the higher the interest rates required to compensate investors for holding such a security.

2.5 Valuation and bond pricing

Bonds can be priced at a premium, discount or at par. If the bond's price is greater than par value, it sells at a premium because its' interest rate is higher than current prevailing rates. If price is less than par value, it sells at a discount because its' interest rate is lower than current prevailing interest rates. **Required yield** or **required rate of return** is the interest rate that a security needs to offer in order to encourage investors to purchase it.

$$Bondprice = \frac{C}{1+i} + \frac{c}{(1+i)^2} + ... + \frac{c}{(1+i)^n} + \frac{M}{(1+i)^n}$$

$c = coupon\ payment$
$n = number\ of\ payments$
$i = interests\ rates\ or\ required\ yield$
$M = value\ at\ maturity\ or\ par\ value$

The succession of coupon payments to be received in the future is referred to as an ordinary annuity:

The present value PV is given by

$$PV = PMT\left(\frac{1-(1+i)^{-n}}{i}\right)$$

Where

PV = Present value

PMT = Coupon payment

i = Interest rates

n = Number of periods

By incorporating the annuity model into the bond pricing formula, which requires us to include also the present value of the par value received at maturity, we arrive at the following formula

$$Bondprice = c\frac{\left(1-\frac{1}{(1+i)^n}\right)}{i} + \frac{M}{(1+i)^n}$$

If we incorporate the frequency (f) of coupon payments

$$Bondprice = \frac{c}{f}\frac{\left(1-\frac{1}{\left(1+\frac{i}{f}\right)^{n}}\right)}{\frac{i}{f}} + \frac{M}{\left(1+\frac{I}{f}\right)^{nf}}$$

For bonds paying annual coupons, F would have a value of 1. Should a bond pay quarterly payments, F would equal 4, if the bond paid semi-annual coupons, f would equal 2.

2.5.1 Pricing Zero Coupon bonds

For zero coupon bonds, there is no coupon payment until maturity. Because of this, the present value of annuity formula is unnecessary. Simply calculate the present value of the par value at maturity.

2.5.2 Pricing Bonds between payment periods

To price a bond between payment periods, we must use the appropriate day-current convention. Day count is a way of measuring the appropriate interest rate for a specific period of time. Actual day count is used mainly for treasury securities. This method counts the exact number of days until the next payment. **Accrued interest** is the fraction of the coupon payment the bond seller earns for holding the bond for a period of time between bond payments. The bond prices' inclusion of any interest accrued since the last payment period determines whether the bonds' price is **dirty** or **clean**. Dirty bond prices include any accrued interest that has accumulated since the last coupon payment while clean bond prices do not. The amount of the coupon payment that the budget should receive is the coupon payment minus accrued interest.

2.5.3 Price - Yield Relationship

The general definition of yield is the return an investor will receive by holding a bond to Maturity so if you want to know what your bond investment will earn, you should know how to calculate yield.

The *current yield* calculates the percentage return that the annual coupon payment provides the investor. In other words, this yield calculates what percentage the actual dollar coupon payment is of the price the investors pays for the bond.

$$\text{Current yield} = \frac{\text{Annual dollar Interest Paid}}{\text{Market Price}} \times 100\%$$

This formula does not include any capital gains or loses the investors would make if the bond were bought at a discount or premium. Hence we use the following modified current yield formula

$$\text{Adjusted current yield} = \left(\frac{\text{Annual coupon x } 100\%}{\text{Market Price}} \right) + \left(\frac{100 \quad \text{market price}}{\text{years to maturity}} \right)$$

For a zero coupon bond, which has only one coupon payment, the yield calculation would be

$$Yield = \left[\frac{Future\,value}{Purchase\,value} \right]^{1/n} - 1$$

Where n = years left until maturity

2.5.4 Calculating yield to maturity (YTM)

The YTM can be considered as the resulting rate the investor receives if he or she invested all of his or her cash flows (coupon payments) at a constant rate until the bond matures. YTM is the return the investor will receive from his or her entire investment. It is the return you get by receiving the present values to the coupon payments, the par value, and capital gains in relation to the price you pay.

$$\text{Bond price=Cash flow x } \frac{1-\left[\frac{1}{(1+i)^n}\right]}{i}+\left[\frac{Maturity}{value} x \frac{1}{(1+i)^n}\right]$$

Where I = YTM

2.6 Term Structure of Interest Rates

2.6.1 Definitions

The term structure of interest rates represents the relationships between the maturities and the yields of bonds. While short term interest rates are influenced by monetary policy longer interest rates mainly reflect market player expectation for future macroeconomic development.

A Finance manager should be interested in the term structure of interest rates because of two major reasons:

I. For model building i.e. so as to be able to develop a model in order to realize and identify the various assumptions made concerning the behavior of interest rate over time.
II. Policy formulation i.e. to select the interest rate to manipulate in order to influence the microeconomic performance of the six different theories of the form structure of interest rates. It is therefore possible to select a given theory, which will be applicable to a particular firm depending on the social economic structure of the firm.

Constructed by graphing the yield to maturities and the respective maturity dates of benchmark fixed income securities, the term structure of interest rates **(yield curve)** is a measure of the market's expectations of future interest rates given the current market conditions.

Securities, issued by the government, are considered risk-free, and as such, their yields are often used as the benchmarks for fixed-income securities with the same maturities. The term structure of interest rates is graphed as though each coupon payment of a non-callable fixed-income security were a zero coupon bond that matures on the coupon payment date. The exact shape of the curve can be different at any point in time. So if the normal yield curve changes shape, it tells investors that they may need to change their outlook on the economy. The yield curve is drawn on the assumption that all the factors are held constant and the only factor, which affects rate, is the time to maturity of the loan.

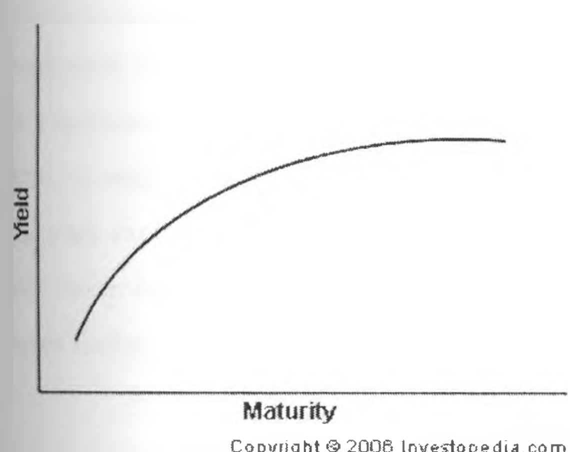
2.6.2 Curves of Term Structure of Interest Rates

There are three main patterns created by the term structure of interest rates:

2.6.2.1. Normal Yield Curve

As its name indicates, this is the yield shape that forms during normal market conditions, wherein investors generally believe that there will be no significant changes in the economy, such as in inflation rates, and that the economy will continue to grow at a normal rate. During such conditions, investors expect higher yields for fixed income instruments with long-term securities to offer higher yields than short-term fixed income securities. This is a normal expectation of the market because short-term instruments generally hold less risk than long-term instruments: the further into the future the bond's maturity, the more time and therefore uncertainty the bondholder faces before being paid back the principal. To invest in one instrument for a longer period of time, an investor needs to be compensated for undertaking the additional risk. As general current interest rates increase, the price of a bond will decrease, and its yield will increase.

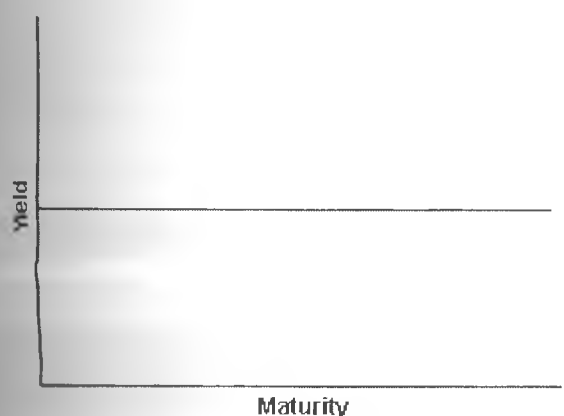
Figure 2.1



2.6.2.2. Flat Yield Curve

These curves indicate that the market environment is sending mixed signals to investors, who are interpreting interest rate movements in various ways. During such an environment, it is difficult for the market to determine whether interest rates will move significantly in either direction further into the future. A flat yield curve usually occurs when the market is making a transition that emits different but simultaneous indicators of what interest rates will do: there may be some signals that short-term interest rates will rise and other signals that long-term interest rates will fall. This condition will create a curve that is flatter than its normal positive slope. When the yield curve is flat, investors can maximize their risk/return tradeoff by choosing fixed-income securities with the least risk, or highest credit quality. In the rare instances wherein long-term interest rates decline, a flat curve can sometimes lead to an inverted curve.

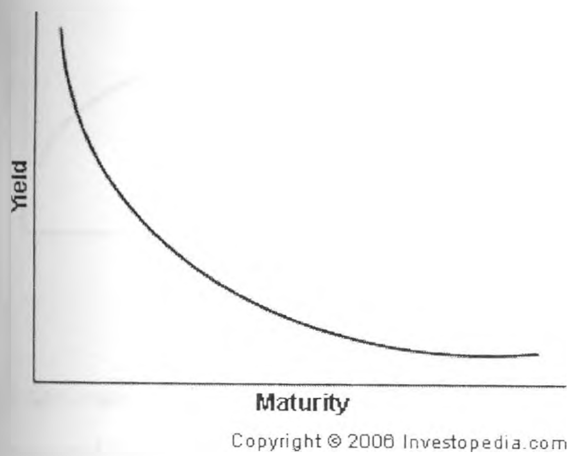
Figure 2.2



2.6.2.3 Inverted Yield Curve

These yield curves are rare, and they form during extraordinary market conditions wherein the expectations are completely the inverse of those demonstrated by the normal yield curve. In such abnormal market environments, bonds with maturity dates further into the future are expected to offer lower yields than bonds with shorter maturities. The inverted yield curve indicates that the market currently expects interest rates to decline as time moves further into the future, which in turn means the market expects yields of long-term bonds to decline. Note that as interest rates decrease, bond prices increase and yields decline.

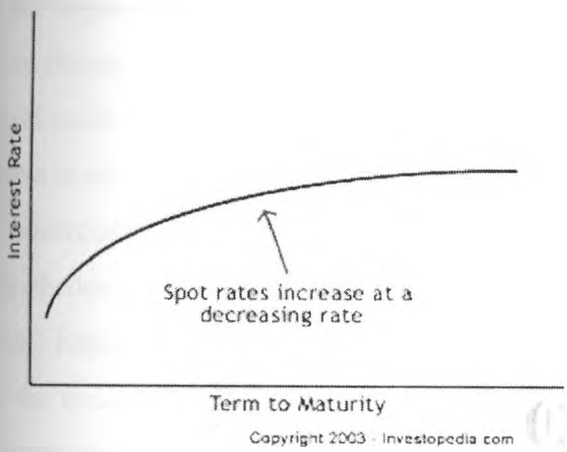
Figure 2.3



2.7 The Theoretical Spot Rate Curve

When the yield to maturity was calculated, we assumed that the coupons were reinvested at an interest rate equal to the coupon rate; therefore, the bond was priced at par as though prevailing interest rates were equal to the bond's coupon rate. The spot rate curve addresses this assumption and accounts for the fact that many treasuries offer varying coupons and would therefore not accurately represent similar non-callable fixed-income securities. If for instance you compared a 10-year bond paying a 7% coupon with a 10-year Treasury bond that currently has a coupon of 4%, your comparison would not mean much. Both of the bonds have the same term to maturity, but the 4% coupon of the Treasury bond paying 7%. The spot-rate curve, offers a more accurate measure as it adjusts the yield curve so it reflects any variations in the interest rate of the plotted benchmark. The interest rate taken from the plot is known as the spot rate.

Figure2.4



The spot-rate curve is created by plotting the yields of zero-coupon treasury bills and their corresponding maturities. The spot rate given by each zero-coupon security and the spot-rate curve are used together for determining the value of each zero-coupon component of a non-callable fixed income security.

Since T-bills issued by the government do not have maturities greater than one year, the bootstrapping method is used to fill in interest rates for zero-coupon securities greater than one. Bootstrapping is a complicated and involving process; however, it is important to remember that the bootstrapping method equates a T-bill's value to the value of all zero-coupon components that form the security.

2.8 Determinants of Term Structure of Interest Rates

The following are the key determinants of the term structure of interest rates.

2.8.1 The Premium

This is the yield inducement to borrow on long term basis. The presence or absence of the term premium will determine whether the investor will invest in the long-term bond or not. This inducement is based on the principle that on average the yields from long-term bonds are higher. This principle maintains that investors pay a price premium (resulting in lower yields) on short maturities to avoid the higher interest rate risk prevalent in longer maturities, thus an upward sloping curve is considered normal.

2.8.2 Segmentation of the financial markets

Any change in supply and demand in one market will cause a change in the shape of the yield curve and hence the rate of interest, the segmentation principle asserts that the yield curve is composed of a series of somewhat independent maturity segments. For example commercial banks predominantly purchase short maturities; savings and loan associations mainly demand intermediate maturities and pension funds purchase long term bonds.

2.8.3 Expectations of Market

If the market believes that interest rates will rise then the yield curve will be upward sloping all the other things kept constant and vice versa. In the first case the investors are willing to buy the long term bonds that yield no more than the short term bonds. If the interest rates are expected to decline, they will invest in long term securities providing a lower yield than short term securities because they can do better with short term strategy. If the investors expect rates to fall the yield curve will slope downward.

2.8.4 Maturity Period

The longer the maturity period of a financial debt instrument the greater the change in the price that accompanies the shift in interest.

2.8.5 Coupon Effect

If the coupon rate to a particular bond is low, the yield will be high and vice versa. This is because the effect is either reflected in the coupon or in the interest rate.

2.9 Theories of Term Structure of Interest Rates

The term structure of interest rates is defined as the static relationship between the term (period) to maturity and the yield to maturity for a sampled bond at a given point in time. It is the relationship between bonds of different terms. When plotted against their terms, the interest yield curves are produced. Using this yield curve, future prediction can be made in the management of monetary policy. There are basically four theories:

I. The Unbiased Expectations theory
II. The Market Segmentation Theory
III. The Liquidity Preference Theory
IV. The Preferred Habitat Theory

They have been put forward to explain the term structure of interest rates:

2.9.1 The Unbiased Expectations theory

It holds that the forward rates represent the average opinion of what the expected future spot rate for the period in question will be. Thus a set of spot rates that is rising can be explained by arguing that the market place (i.e. the general opinion of investors) believes that the spot rate will be increasing in future. Conversely, asset of decreasing spot rates is explained by arguing that the market place expects spot rates to fall in future.

It also states that the shape of the yield curve depends on the market expectations about the future interest rates. If interest rates are expected to rise in the future, then the yield curve will be upward slopping and vice versa.

2.9.2 The Market Segmentation Theory

The theory rests on the assumption that there is market segmentation. Various investors and borrowers are thought to be restricted by law, preference, or custom to certain maturities. Perhaps there is market for short term securities, another for intermediate securities, another for intermediate securities and a third for long term securities.

According to the market segmentation theory therefore, spot rates are determined by supply and demand conditions in the market. Furthermore, in restrictive terms, investors and borrowers will not leave their market and enter a different one when the current rates suggest to them that there is a substantially higher expected return available by making such a move.

2.9.3 The Liquidity Preference theory

This theory starts with the notion that investors are primarily interested in purchasing short term securities. That is, even though some investors may have longer holding periods, there is a tendency for them to prefer short tern securities. These investors realize that they may need their funds earlier than anticipated and recognize that they face less 'price risk' (i.e. interest rate risk) if they invest in short term securities. They have to be offered a liquidity premium to encourage them to hold longer term bonds.

The longer the period they are deprived off their liquidity the higher the premium they expect to be paid. Hence the shape of the yield curve in this case will be upward slopping and the normal shape of the yield curve which is drawn upward slopping by this theory.

2.9.4 The Preferred Habitat Theory

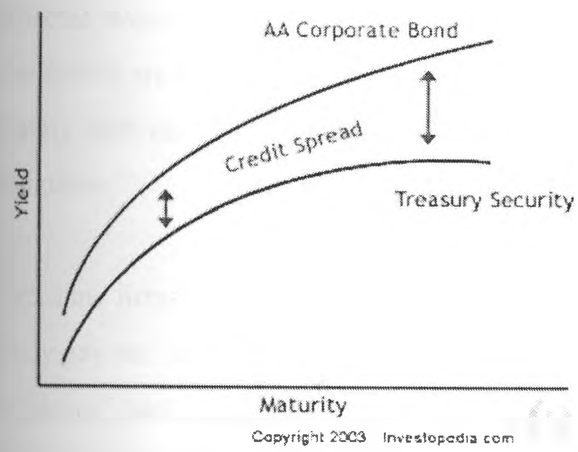
According to this theory, investors and borrowers have segment of the market in which they prefer to operate, similar to the Market Segmentation Theory. However, they are unwilling to leave their desired maturity segments if there are significant differences in yields between the various segments. These yield differences are determined by supply and demand for funds within the segments.

This theory states that the market for short term and long term debt instruments can be separated and they are different. The shape of the yield curve in each of these markets depends on the supply and demand forces in each market. Whenever these two markets meet there will be a disturbance in the yield curves and this disturbance is called wiggle.

2.10 The Credit Spread

The credit spread, or quality spread, is the additional yield an investor receives for acquiring a corporate bond instead of a similar federal instrument. As illustrated in the graph below, the spread is demonstrated as the yield curve of the corporate bond and is plotted with the term structure of interest rates. Remember that the term structure of interest rates is a gauge of the direction of interest rates and the general state of the economy. Corporate fixed-income securities have more risk of default than federal securities and, as a result, the prices of corporate securities are usually lower, while corporate bonds have a higher yield.

Figure 2.5



When inflation rates are increasing (or the economy is contracting) the credit spread between corporate and Treasury securities widens. This is because investors must be offered additional compensation (in the form of a higher coupon rate) for acquiring the higher risk associated with corporate bonds. When interest rates are declining (or the economy is expanding), the credit spread between Federal and corporate fixed-income securities generally narrows. The lower interest rates give companies an opportunity to borrow money at lower rates, which allows them to expand their operations and also their cash flows. When interest rates are declining, the economy is expanding in the long run, so the risk associated with investing in a long-term

corporate bond is also generally lower. Now you have a general understanding of the concepts and uses of the yield curve. The yield curve is graphed using government securities, which are used as benchmarks for fixed income investments. The yield curve, in conjunction with the credit spread, is used for pricing corporate bonds. Now that you have a better understanding of the relationship between interest rates, bond prices and yields, we are ready to examine the degree to which bond prices change with respect to a change in interest rates

2.11 Determinants of stock prices

The price of a share of stock, like any other financial assets equals the present value of the expected stream of future cash payments to the owner. The cash payments available to a shareholder are uncertain and subject to the earnings of the firm. This uncertainty contrasts sharply with cash payments to bondholders, the value of which is fixed by contractual obligation.

Over time firms pay rising/increasing dividends which occur for two reasons. First, firms rarely pay out all their earnings as dividends so that the difference called retained earnings is 'blown" back or reinvested. This, in turn, often produces greater future earnings and hence higher prospective dividends. Second, the earnings of a firm will rise as the price of its output rises with inflation.

The value of publicly traded shares is liquidity. Publicly traded companies are worth more than private one simply because there is greater access to buyers and sellers and market efficiency can better determine share price. Among the determinants of stock prices are:

2.11.1 New Information

The market will price a stock based on all information that the public is aware of. Rumor mongering and especially with current technology (mobile and mail) etc plays a big role in flow of information. Also leakage of insider information to those close to company management leads to change in buying and selling of stocks in the market.

2.11.2 Uncertainty

The market is nervous about the future of the company hence expected stock price volatility.

2.11.3 Psychological factors – fear and greed

Human characteristics are also factors in how share prices move. Greed often causes stock to go higher than they deserve to go. New information can cause frenzy in the market that makes investors lose sight of rational valuation and simply buy the stock for fear of being left behind.

Fear motivated by negative information can cause every one to rush for exit at once and take a stock, or entire market, dramatically lower very quickly. Most of the selling pressure that prevails during market crashes is out of fear, not a rational thought process based on information.

2.11.4 Supply and Demand

Established companies trade huge stocks daily in tock markets, while most stocks investors are interested in do not have such huge volumes hence less liquidity.

If a large shareholders wants to sell a large number of shares into a market with weak liquidity that shareholder can dramatically move share price. The flip side is also true when a large buy order comes in to a market that lacks sellers.

2.12 Efficient Markets

An efficient market is one which security prices adjust rapidly to the arrival of new information, and therefore current prices reflect all information about the security.

2.12.1 Assumptions that imply an efficient capital market

- A large number of competing profit maximizing participants analyze and value Securities each independently of one another
- Information regarding the security come into the market in a random manner
- The competing investors attempt to adjust security prices to reflect new information

The efficient market hypothesis implies that it is not generally possible to make above average returns in the stock market by trading (including market timing), except through luck or obtaining and trading on inside information.

2.13 Inflation

Inflation is defined as a persistent increase in general price levels in an economy over time Brealey et al, (1991). Inflation effectively reduces the purchasing power of a currency. Low or moderate level of inflation in a country can have a positive effect on the business sector in that they can act as an incentive to production. High level of inflation however can harm a company's profitability by affecting the cost of inputs as well as reducing final demand for its output.

Inflation is likely to influence stock prices directly through changes in the price level and through the policies designed to control it. Deflation should have a negative impact on share prices. Inflation also influences the risk free rate thus determining the value of future cash flows.

Inflation is expected to have an impact on the stocks and bond returns. Kaul (1990) notes research evidence from major economies (U.S, Canada, U.K and Germany) show a very significant negative relationship between stock returns and changes in the expected inflation. Inflation is taken as “bad news” for the stock and bond market; that is, when inflation rises, stock prices should fall since inflation erodes people’s wealth, hence reduces their propensity to invest, Kanniainen and Kurikka (1984). Hasbrouck (1984) also arrived at the negativity relationship conclusion between stock returns and inflation in his study of the relationship between stock returns, inflation and economic activity.

The relationship between inflation and the returns in the stock market was examined by Jaffee and Mandelker (1976), with a view of investigating the effectiveness of stocks as a hedge against inflation and found that there existed a significant negative relationship between the returns on the market portfolio of stocks and inflation.

However, Kwon, Chung S (1997) in his empirical study of the effects of macroeconomic variables on stock returns in developing markets contradicts this finding and states that the inflation-and interest rate –related variables are not significant factors to the Korean stock market. Pattison (1971) also found the relationship between inflation rates and aggregate equity prices to be significantly positive.

CHAPTER 3.0: RESEARCH METHODOLOGY

This chapter deals with the research design used to conduct the study. It covers the population of the study, the sample selected and the date collection process.

3.1 Population

The study uses all the fifty-five (55) companies listed in the Nairobi Stock Exchange and all the treasury and corporate bonds.. Study period covers the year 1996 to the year 2006. Inflation for the period year 1996 to year 2006 is also considered to enable us compute real returns per annum on equities and stocks. This period was considered adequate enough for long term securities performance and hence returns differential if it exists between stocks and treasury bonds

For clear analysis of the impact of inflation on long term equity returns and long term bond returns, we divide the securities into various categories thus the companies that make up the NSE-20 share index, and the companies that make up the various market segments namely: Finance and Investment, Agricultural, Commercial and Services, and Industrial and Allied.

Any company that was one that listed in the stock exchange qualify for the study hence we limit ourselves only to quoted securities to avoid non-availability of data , share prices and dividend payment information from among private companies

3.2 Sampling Design

The sample will consist of securities that constitute the NSE-20 share index. The bonds issued for the period under study will be considered. We capture stock prices for the companies from the NSE with attention/emphasis to the firms that make up the NSE-20 index. We assume the information given on the NSE-20 index is accurate and representative. The sample is further broken down into various market segments in order to get a clear understanding of the impact of inflation.

3.3 Data Collection

Secondary data from NSE includes share prices (adjusted for rights issues, stock splits and stock dividends if any) and bond prices. For securities selected, weekly opening and closing share prices and dividend (interim &final) information will be collected and used to compute weekly and monthly returns.

For bonds, yield data is to be collected from Central Bank of Kenya (CBK) database available on their website where as data on inflation is to be sourced from Kenya National Bureau of Statistics (KNBS). The monetizing power of CBK makes government bonds practically free from default. For this reason we restrict our compilation of historical yield and return data to government bonds and bills. Annual returns are formed by linking (compounding) the monthly returns. No transactions costs are assumed.

3.4 The variables and their measurements

The assets under consideration are long term equities and long term treasury bonds. We need to compile their real returns per annum (%) and standard deviation.

3.5 Return on Equities

Annual return R_{it} of asset is given by the formula

$$R_{it} = \frac{P_{it_1} - P_{it_0} + D_{it}}{P_{it_0}} \text{.......................} i = 1, 2, 3, ...n$$

Where

R_{it} = Return of stock at period t

P_{it_1} = Price of stock at period t

P_{it_0} = Price of stock at period t-1

D_{it} = Dividend paid using the period on stock

The formula above is to be used in calculating return on stocks that constitute the NSE-20 share index on a weekly basis. The weekly returns are to be averaged to come up with monthly returns. The yearly average return is also to calculated through compounding. The weekly treasury bills interest rates released will them enable us computer weekly returns on t-bulls and stocks. These will then compare with yearly real returns.

3.6 Returns on 91 (or 182) day Treasury bill

Treasury bill is issued on a discount basis. All are issued in entry form i.e. the buyer receives a receipt at the time of the purchase and treasury bills face value at the time of maturity. The return denoted r_{tb} on treasury bills is calculated from the following equation.

$$PP_{tb} = \frac{MV}{(1 + r_{tb})^n}$$

Where

PP_{tb}= Purchase price of the treasury bills

MV= Maturity value or face value of treasury bills

r_{tb}= the return on treasury bills

n= the period to maturity

3.7 Inflation

Inflation per annum (%) is to be obtained from data on yearly Economics Reviews from the Ministry of Planning and national development at the Kenya National Bureau of Statistics library.

3.8 Risk

Stocks be are fundamentally less risky than bonds, not only because their returns have been consistently higher than those of bonds over the long run but also because less uncertainty surrounds the long term retain investors can expect on the basis of past history. Stock returns may be riskier or more volatile than treasury bills. Since government bonds are risk free we calculate variability in return on stocks treasury bonds. We compute the standard deviation of the observations. Standard deviation denoted s is the square root of variance denoted s^2 where

$$s^2 = \frac{1}{n-1} \sum_{i=1}^{n} \{Ri - R\}^2$$

CHAPTER 4.0: DATA ANALYSIS

4.1 Correlation

Bivariate Correlation analysis differs from non-parametric measures of association and regression analysis in two important ways. First, parametric correlation requires two continuous variables measured on an interval or ratio scale. Second, the coefficient does not distinguish between independent and dependent variables. It treats the variables symmetrically since the coefficient r_{xy} has the same interpretation as r_{yx}. We generally write r instead of r_{xy} or r_{yx} and $-1 \leq r \leq +1$.

In this case we assume bond and stock returns data are normally distributed in a joint manner. The amount of common variance in bonds and stocks returns may be summarized by r^2, the coefficient of determination. The area of overlap represents the percentage of the total relationship accounted for by one variable or the other. So 2.6% of the variance in bonds returns is explained by stock returns and vice versa.

The table below shows the monthly equity premium for the period 1999 to 2006. The results show relatively many negative values for the earlier period of 1999 to third quarter of 2002 indicating that bond returns were higher than stock returns within the period. However from the last quarter of 2002 to 2006 there are relatively many positive values of equity premium largely due to the fact that stock returns are higher than bond returns.

Table 4.1: Monthly Equity Premium

year	month	stockr	bondr	premium	stock_stdev	CPI	bonds_stdev
1999	1	-1.511701356	0.859765	-2.37147	1.124146296	-0.4	0.048879
1999	2	3.24621456	0.862176	2.384038	0.648381368	1.5	0.050654
1999	3	-6.659101541	0.856353	-7.51545	0.716403917	3.0	0.052085
1999	4	0.513660725	0.862647	-0.34899	0.703545018	3.8	0.049115
1999	5	-1.981862386	0.865824	-2.84769	0.715845106	5.7	0.054828
1999	6	0.66243939	0.867	-0.20456	0.463066391	5.0	0.048571
1999	7	-0.74936859	1.300706	-2.05007	0.299077393	5.2	0.045948
1999	8	-12.43667717	1.287053	-13.7237	1.308154805	6.6	0.045616
1999	9	-1.943948075	1.324368	-3.26832	0.910225399	8.4	0.155915

1999	10	-1.907766672	1.284789	-3.19256	4.763401798	9.5	0.05107
1999	11	-3.527908179	1.312	-4.83991	0.450148553	10.7	0.069461
1999	12	0.886009586	1.304263	-0.41825	0.554278289	10.5	0.068905
2000	1	0.835059271	1.497967	-0.66291	0.299485587	9.6	0.195021
2000	2	-2.606636441	1.497967	-4.1046	1.235274079	7.5	0.195988
2000	3	-4.158883849	1.497967	-5.65685	1.275657966	5.9	0.197477
2000	4	-4.136413779	1.497967	-5.63438	0.389702947	7.2	0.256627
2000	5	-7.333856272	1.497967	-8.83182	0.801355274	8.6	0.188239
2000	6	-1.401637052	1.497967	-2.8996	0.369665793	11.2	0.199141
2000	7	-0.117994949	1.497967	-1.61596	0.708666029	11.5	0.084245
2000	8	-1.13745842	1.497967	-2.63543	0.588642711	11.3	0.083239
2000	9	2.287512309	1.497967	0.789545	0.613758094	11.6	0.080397
2000	10	5.41620205	1.497967	3.918235	0.703441472	11.3	0.07951
2000	11	-0.599237361	1.497967	-2.0972	0.726222462	11.6	0.079068
2000	12	-2.640947875	1.497967	-4.13892	0.671185309	11.8	0.078272
2001	1	-0.82487624	1.286121	-2.111	0.4216941	12.0	0.020805
2001	2	2.343619646	1.285	1.05862	0.78202264	10.2	0.032705
2001	3	-6.040053896	1.286394	-7.32645	0.650656533	9.5	0.036437
2001	4	-3.629441842	1.296439	-4.92588	0.65214623	9.1	0.030721
2001	5	-2.616254893	1.283388	-3.89964	0.656168971	6.9	0.038331
2001	6	1.139127406	1.268394	-0.12927	0.488226971	4.6	0.145712
2001	7	-1.986373569	1.09991	-3.08628	0.925905772	4.3	0.025309
2001	8	-7.660791849	1.10406	-8.76485	0.422597357	4.0	0.040652
2001	9	-6.426844356	1.108776	-7.53562	1.314597951	3.1	0.041856
2001	10	3.229018224	1.104269	2.12475	0.8191744	3.2	0.042176
2001	11	-4.308405377	1.098731	-5.40714	1.051817539	2.1	0.040989
2001	12	-7.673264388	1.103636	-8.7769	1.717903854	1.6	0.036158
2002	1	-3.616327	1.03461	-4.65094	0.589606987	0.5	0.176313
2002	2	-0.66752194	1.048555	-1.71608	0.339844069	1.2	0.176041
2002	3	-5.302821599	1.039561	-6.34238	1.292605141	2.0	0.18068
2002	4	-4.537717732	1.044727	-5.58244	0.478742711	0.9	0.182965
2002	5	-1.202818911	1.032152	-2.23497	0.489387711	1.7	0.174922
2002	6	0.976005435	1.047936	-0.07193	0.348834501	2.8	0.192891
2002	7	2.737443134	0.937727	1.799716	0.584845703	2.1	0.195862
2002	8	-7.109575745	0.741964	-7.85154	0.903638031	1.8	0.639928
2002	9	-2.658497163	0.941847	-3.60034	0.717296836	1.8	0.198227
2002	10	7.305303124	0.937504	6.3678	1.067849524	1.9	0.202171
2002	11	11.11092078	0.941932	10.16899	1.329387946	2.6	0.197181
2002	12	35.05545602	0.936684	34.11877	15.34098596	4.2	0.198961

2003	1	17.63982076	0.8563	16.78352	2.272445801	2.0	0.213224
2003	2	1.647953602	0.863345	0.784609	0.585485008	7.4	0.213834
2003	3	5.706610147	0.864827	4.841783	0.855911475	10.1	0.221968
2003	4	16.52265762	0.86075	15.66191	0.888213102	11.6	0.213484
2003	5	11.9922727	0.963747	11.02853	2.334682202	14.9	1.050994
2003	6	-3.750217539	0.860451	-4.61067	3.103409826	13.7	0.21616
2003	7	5.648297683	0.585494	5.062804	0.535957095	10.9	0.456857
2003	8	13.1272968	0.596445	12.53085	1.441228277	8.3	0.457344
2003	9	11.83104186	0.947143	10.8839	0.55113825	7.9	3.701183
2003	10	2.220191359	0.59211	1.628081	0.535023924	9.1	0.454864
2003	11	15.311221	0.638192	14.67303	1.524076149	9.0	0.685615
2003	12	1.912250507	0.624249	1.288002	1.069177786	8.3	0.444005
2004	1	13.96891704	0.90824	13.06068	1.081957784	9.1	0.282419
2004	2	3.921372457	0.90824	3.013132	0.814359176	9.9	0.282419
2004	3	-18.79574488	0.90824	-19.704	0.665917441	8.3	0.282419
2004	4	-1.191780337	0.90824	-2.10002	2.050895608	7.6	0.282419
2004	5	-4.864140119	0.90824	-5.77238	0.838783389	4.7	0.282419
2004	6	-1.12825919	0.90824	-2.0365	0.52099373	5.9	0.282419
2004	7	3.113867931	0.90824	2.205628	0.606255848	8.5	0.282419
2004	8	-2.374430087	0.90824	-3.28267	0.430359095	15.8	0.282419
2004	9	0.854112612	0.90824	-0.05413	0.478060209	19.0	0.282419
2004	10	3.013644258	0.90824	2.105404	0.473793301	18.3	0.282419
2004	11	5.052878286	0.90824	4.144638	0.549295899	16.6	0.282419
2004	12	-2.401426322	0.90824	-3.30967	0.597055932	16.3	0.282419
2005	1	5.52612127	0.770267	4.755855	0.621465157	14.9	0.326019
2005	2	4.50417716	0.770267	3.73391	0.488091575	13.9	0.326019
2005	3	-1.863985058	0.7709	-2.63489	0.720657787	14.1	0.326305
2005	4	1.633235478	0.770267	0.862969	0.331593777	16.0	0.326019
2005	5	7.758397958	0.770267	6.988131	0.590479888	14.8	0.326019
2005	6	10.57962968	0.770267	9.809363	0.554249676	11.9	0.326019
2005	7	-0.081238536	0.770508	-0.85175	0.926916012	11.8	0.325163
2005	8	-1.266336905	0.770808	-2.03715	0.433137148	6.9	0.325272
2005	9	-0.807435184	0.770808	-1.57824	0.462280062	4.3	0.325272
2005	10	2.432225678	0.770808	1.661417	0.491873685	3.7	0.325272
2005	11	-0.322882476	0.771042	-1.09392	1.391614922	6.0	0.325368
2005	12	-4.065433411	0.770808	-4.83624	1.073993217	7.6	0.325272
2006	1	6.622284313	0.788972	5.833312	0.934052804	15.4	0.315449
2006	2	-1.86794951	0.788972	-2.65692	0.214129201	18.9	0.315449
2006	3	5.706561815	0.788972	4.91759	5.258593528	19.1	0.315449

2006	4	0.284555593	0.788972	-0.50442	4.34997565	14.9	0.315449
2006	5	8.61463142	0.788972	7.825659	0.874084149	13.1	0.315449
2006	6	-0.823065136	0.788972	-1.61204	0.671667065	10.9	0.315449
2006	7	-0.353887262	0.788972	-1.14286	0.34422253	10.1	0.315449
2006	8	7.680682943	0.788972	6.891711	2.831013258	11.5	0.315449
2006	9	6.685632049	0.788972	5.89666	1.196831383	13.8	0.315449
2006	10	7.17832167	0.788972	6.389349	0.836210599	15.7	0.315449
2006	11	6.402804079	0.788972	5.613832	1.4270006	14.6	0.315449
2006	12	0.570090755	0.788972	-0.21888	1.010068937	15.6	0.315449

By compounding the monthly returns and incorporating inflation it results into the following table showing the annual equity premium. It appears that the equity premium for the earlier period is negative giving an indication that real return on bonds was higher than real returns on stocks. In 2003, for example there was highest equity premium of 88.7478% due to investor confidence in the stock market after the successful 2002 presidential election. The 2001 equity premium was lowest due to fear by market participants about the uncertainty of expected presidential election slated for 2002. The equity premium increases significantly between 2004 and 2006 an indication of shift in investors from bond market to stock market. This explains the fact that Kenyan investors are rigid since they tend to move in one direction as to whether they invest in bonds or stocks.

Table 4.2: Annual Equity Premium

year	CPI	Real Returns stocks	Real Returns Bonds	Equity premium	Annual stock returns	Stock Stdev	Annual Bonds returns	Bonds Stdev
1999	5.8	-18.751	7.2344	-25.9854	-7.20	4.8483	12.986944	0.229969
2000	10.0	-33.599	8.0205	-41.6195	-13.64	2.0041	17.975607	0.303329
2001	5.8	-44.829	8.5679	-53.3969	-33.27	2.6720	14.325119	0.094782
2002	6.4	-1.458	5.3134	-6.7714	11.31	5.6107	11.685197	0.089098
2003	9.8	88.185	-0.5628	88.7478	107.80	10.8688	9.253052	0.149210
2004	11.6	-6.325	-0.7249	-5.6001	16.90	5.3664	10.898880	0.001884
2005	10.3	5.818	-1.0644	6.8824	26.43	5.2180	9.247017	0.000304
2006	14.5	21.774	-4.9877	26.7617	50.73	6.0541	9.467667	0.000538
2007	8.92	23.483	-8.9228	32.4058	41.33	8.4280		

Table4.3: Returns on bonds

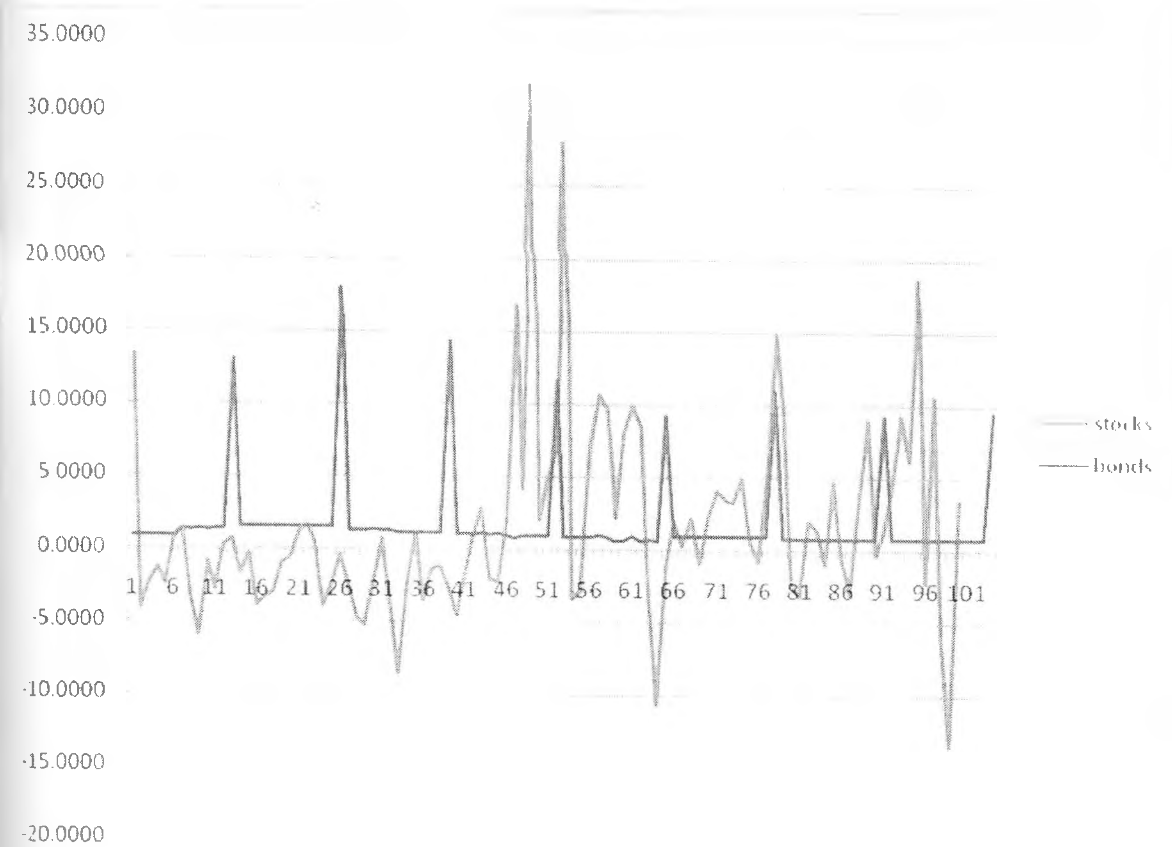
YEAR	STATISTIC	RETURN PER ANNUM (%)	INFLATION PER ANNUM (%)	REAL RETURN PER ANNUM (%)
1999	Mean	12.98694	5.8	7.2344
	Std dev.	0.229969	3.529614	
2000	Mean	17.97561	10.0	8.0205
	Std dev.	0.303329	2.091261	
2001	Mean	14.32512	5.8	8.5679
	Std dev.	0.094782	3.498957	
2002	Mean	11.6852	6.4	5.3134
	Std dev.	0.089098	0.981245	
2003	Mean	9.253052	9.8	-0.5628
	Std dev.	0.149210	3.318391	
2004	Mean	10.89888	11.6	-0.7249
	Std dev.	0.001884	5.13006	
2005	Mean	9.247017	10.3	-1.0644
	Std dev.	0.000304	4.505859	
2006	Mean	9.467667	14.5	-4.9877
	Std dev.	0.000538	2.817753	

Table4.4: Returns on stocks

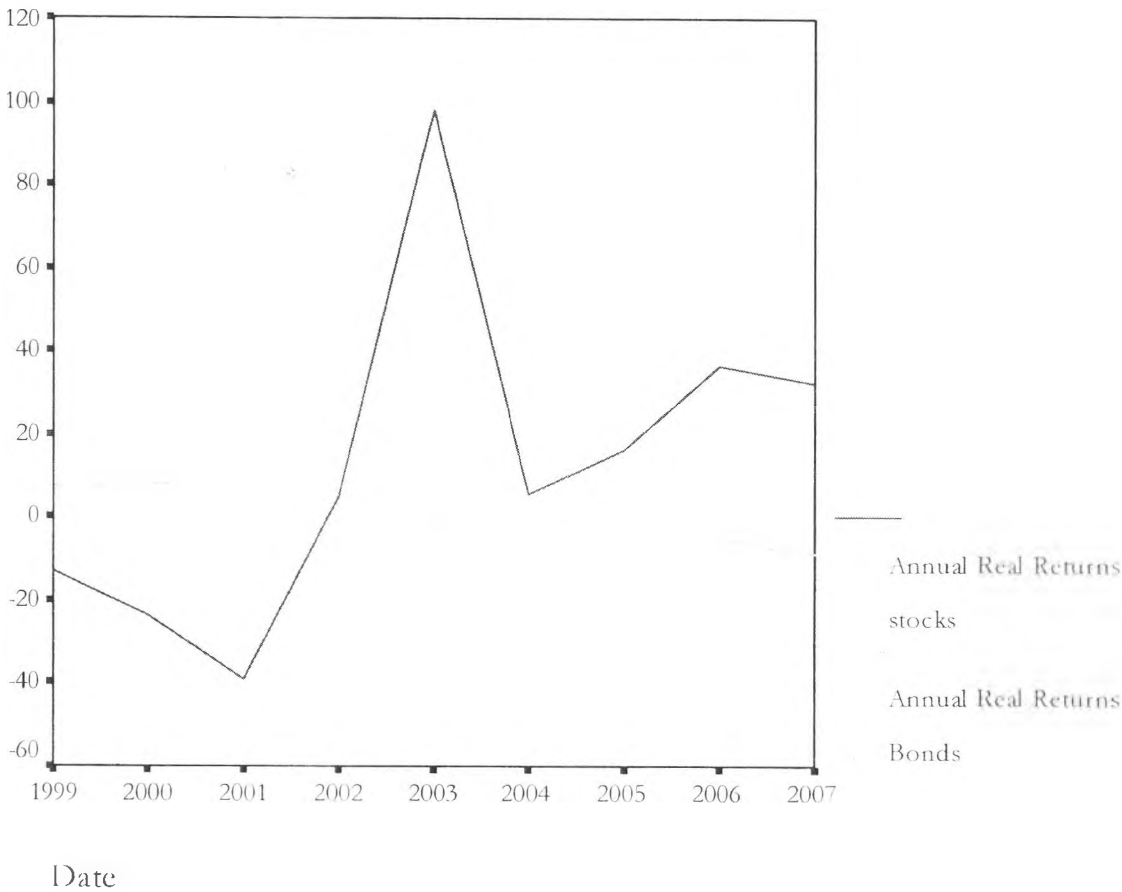
YEAR	STATISTIC	RETURN PER ANNUM (%)	INFLATION PER ANNUM (%)	REAL RETURN PER ANNUM (%)
1999	Mean	-0.5999	5.8	-6.352
	Std dev.	4.8483	3.529614	
2000	Mean	-1.1370	10.0	-11.092
	Std dev.	2.6041	2.091261	
2001	Mean	-2.7727	5.8	-8.530
	Std dev.	2.7720	3.498957	
2002	Mean	0.9428	6.4	-5.429
	Std dev.	5.6107	0.981245	
2003	Mean	8.9834	9.8	-0.832
	Std dev.	10.8688	3.318391	
2004	Mean	1.4082	11.6	-10.216
	Std dev.	5.3664	5.13006	
2005	Mean	2.2024	10.3	-8.109
	Std dev.	5.2180	4.505859	
2006	Mean	4.2274	14.5	-8.9228
	Std dev.	6.0541	2.817753	

From the results in table 4.3 and table 4.4 above we can be able to come up with the following figure below. The results show that annual real returns on stocks are higher than annual real returns on bonds in the long run.

Graph 4.1: Average Returns on Stocks and Bonds



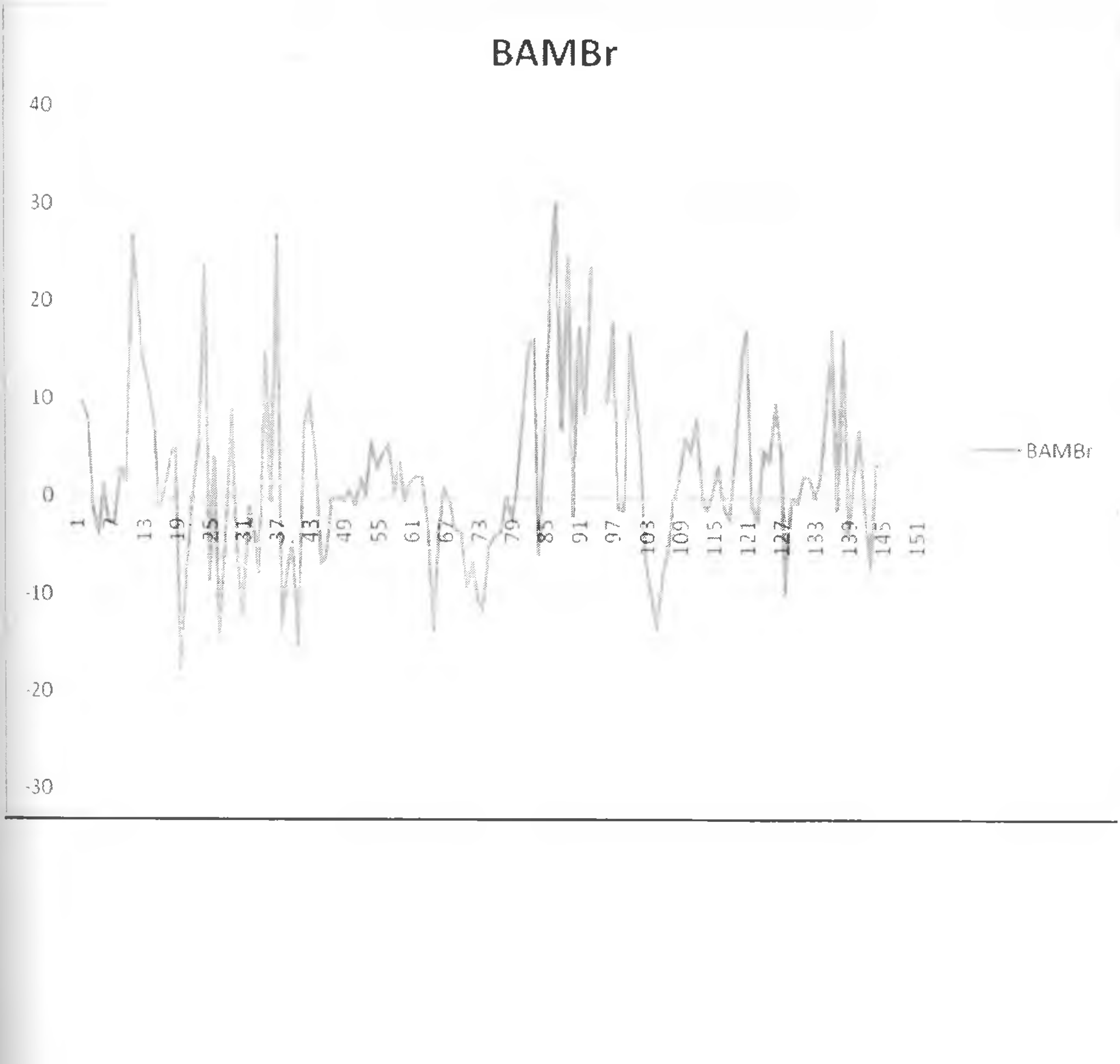
Graph 4.2: Annual real returns on stocks and bonds



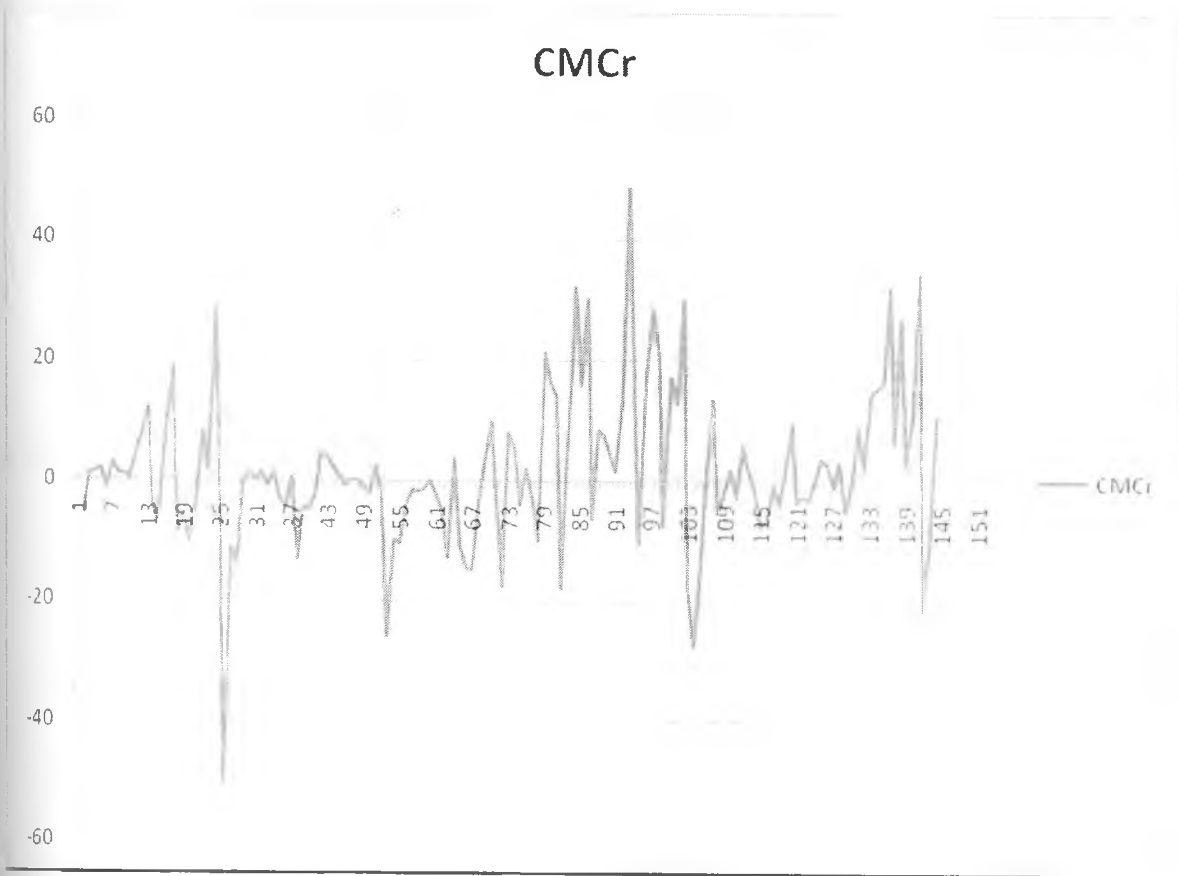
From graphs 4.1 and 4.2 it appears that the stocks and bonds returns and real returns are moving in opposite direction thus when real returns on bonds is high then real returns on stocks is low. In the second half of the period real returns on stocks appear to be much higher than real return on bonds explaining Markowitz's fact that real returns on stocks is usually higher than real returns on bonds in the long due to high risk involved in investing in stocks.

For graphs on individual returns on a few selected stocks they are as shown in graphs 4.3, 4.4, 4.5, 4.6, 4.7 and 4.8.

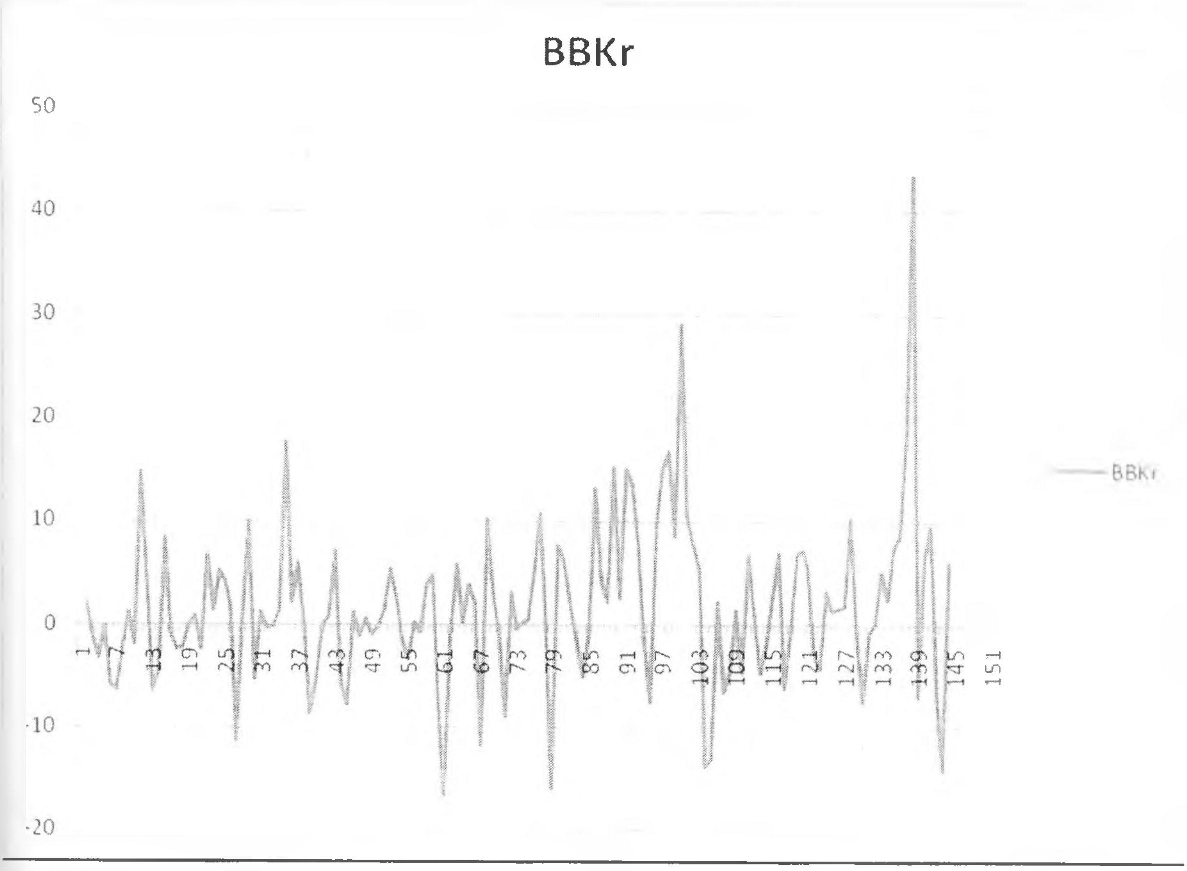
Graph 4.3 Returns on BAMB. Stock



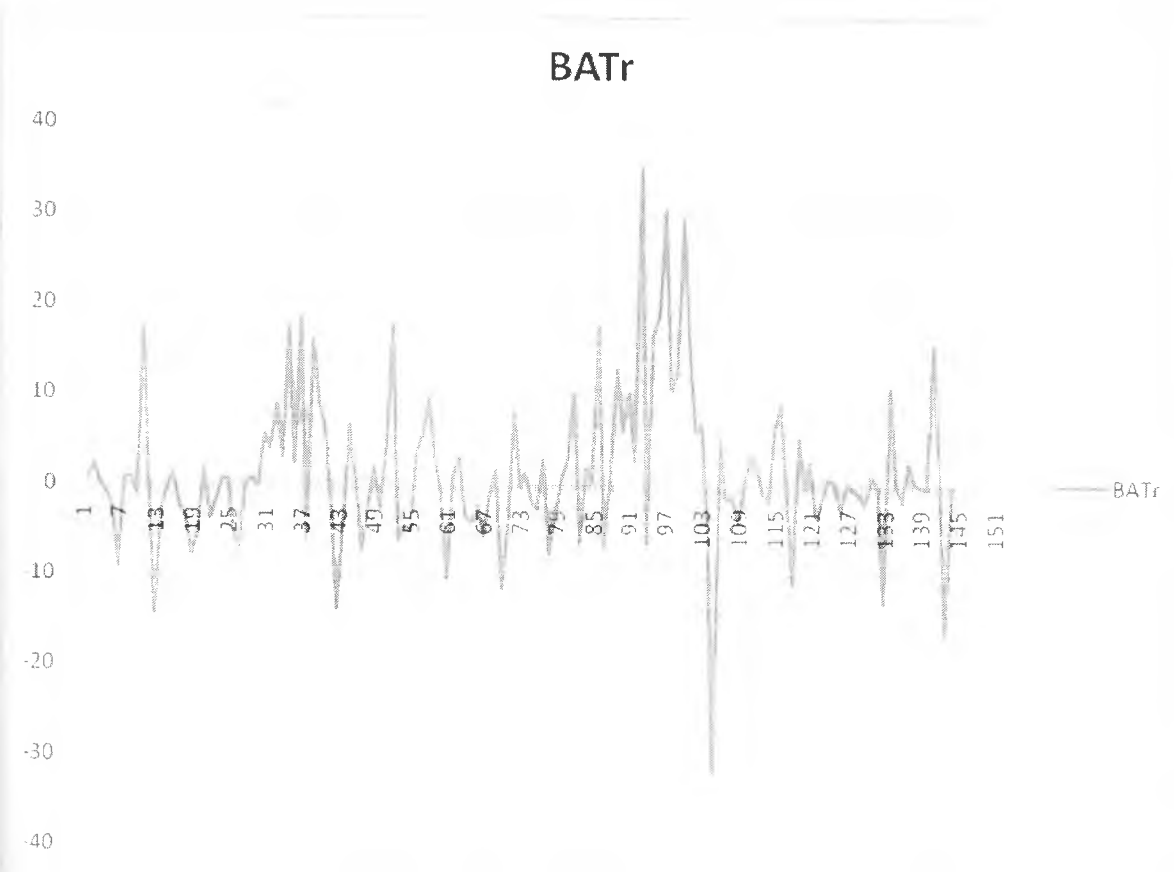
Graph 4.4: Returns on CMC. Stock



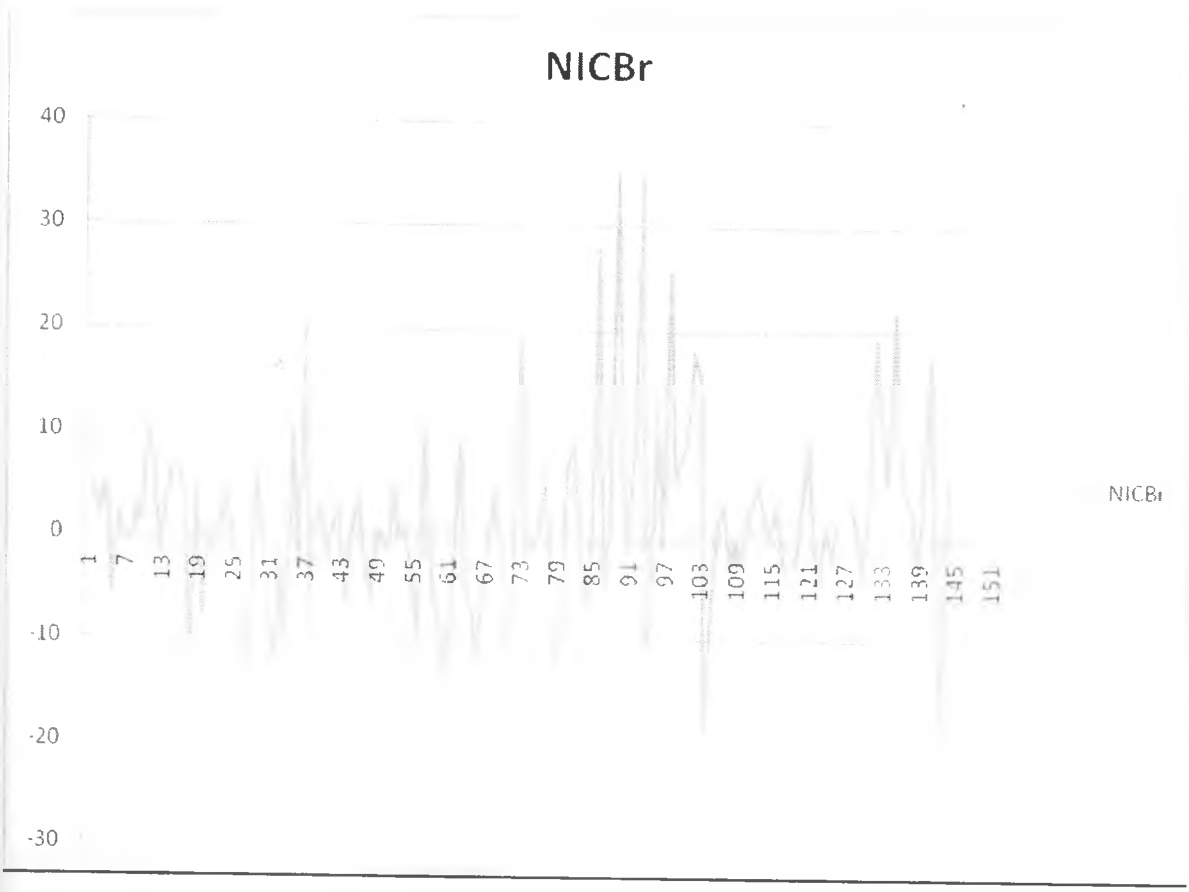
Graph 4.5: Returns on BBK stock



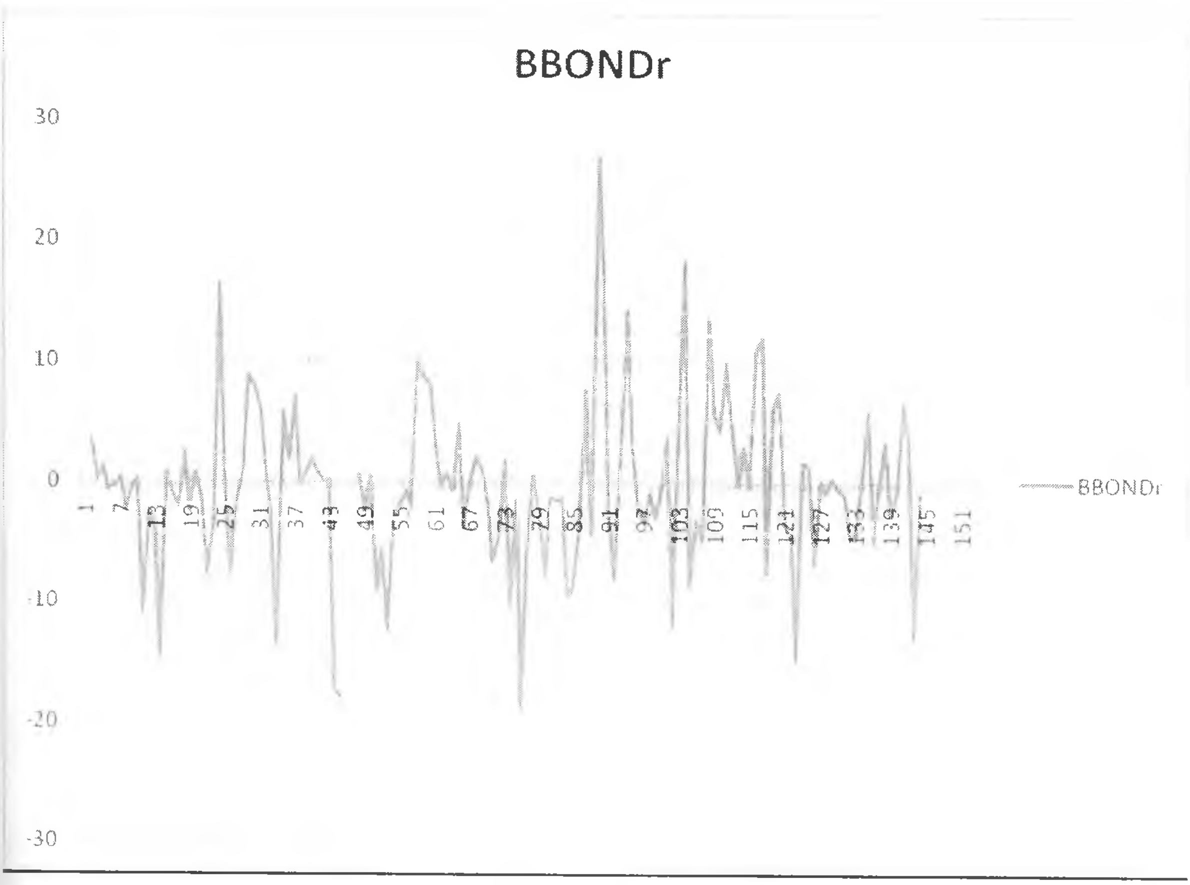
Graph 4.6: Returns on BAT stock



Graph 4.7: Returns on NICB stock



Graph 4.8: Returns on BBOND stock



The table below gives the stocks and bonds standard deviation for 96 month period. It is found that the correlation between real return for stocks and bonds is -0.328 showing that it is significant at 0.01 levels. The standard deviation of stocks real returns is higher than that of bonds for each consecutive period indicating that inflation impacts positively on stocks returns much higher than bonds returns. The equity premium increases significantly between 2004 and 2006 an indication of shift in investors from bond market to stock market.

Table 4.5: Overall correlations between stock returns and bond returns

Correlations

		STOCKR	BONDR
STOCKR	Pearson Correlation	1.000	-.328
	Sig. (2-tailed)	.	.001
	N	96	96
BONDR	Pearson Correlation	-.328	1.000
	Sig. (2-tailed)	.001	.
	N	96	96

** Correlation is significant at the 0.01 level (2-tailed).

The table below gives the annual correlations between returns on stocks and bonds together with the Consumer Price Index. The results are generated from appendix1 and appendix 2.

Table 4.6 Annual correlations between stocks returns and bonds returns

id	*stocks*	*bonds*	CPI				*correlation, r*	R^2	*Stdev CPI*
1	13.2967	**0.859765**	-0.4	Jan-99	1999	Jan			
2	-4.0663	**0.862176**	1.5	Feb-99	1999	Feb			
3	-2.3000	**0.856353**	3.0	Mar-99	1999	Mar			
4	-1.2984	**0.862647**	3.8	Apr-99	1999	Apr			
5	-2.3324	**0.865824**	5.7	May-99	1999	May			
6	0.7238	**0.867**	5.0	Jun-99	1999	Jun			
7	1.3881	**1.300706**	5.2	Jul-99	1999	Jul			
8	-3.2651	**1.287053**	6.6	Aug-99	1999	Aug			
9	-5.9592	**1.324368**	8.4	Sep-99	1999	Sep			
10	-0.8797	**1.284789**	9.5	Oct-99	1999	Oct			
11	-2.7529	**1.312**	10.7	Nov-99	1999	Nov			

12	0.3024	**1.304263**	10.5	Dec-99	1999	Dec	-0.28224	0.07966	3.52961
14	0.7395	**12.98694**	9.6	Jan-00	2000	Jan			
15	-1.6935	**1.497967**	7.5	Feb-00	2000	Feb			
16	-0.2600	**1.497967**	5.9	Mar-00	2000	Mar			
17	-3.8721	**1.497967**	7.2	Apr-00	2000	Apr			
18	-3.3142	**1.497967**	8.6	May-00	2000	May			
19	-3.0106	**1.497967**	11.2	Jun-00	2000	Jun			
20	-0.9656	**1.497967**	11.5	Jul-00	2000	Jul			
21	-0.6323	**1.497967**	11.3	Aug-00	2000	Aug			
22	1.2145	**1.497967**	11.6	Sep-00	2000	Sep			
23	1.6130	**1.497967**	11.3	Oct-00	2000	Oct			
24	0.4786	**1.497967**	11.6	Nov-00	2000	Nov			
25	-3.9413	**1.497967**	11.8	Dec-00	2000	Dec	0.294858	0.086941	2.091261
27	-2.3162	**1.497967**	12.0	Jan-01	2001	Jan			
28	-0.3735	17.97561	10.2	Feb-01	2001	Feb			
29	-2.5527	**1.286121**	9.5	Mar-01	2001	Mar			
30	-4.6588	**1.285**	9.1	Apr-01	2001	Apr			
31	-5.1670	**1.286394**	6.9	May-01	2001	May			
32	-2.2432	**1.296439**	4.6	Jun-01	2001	Jun			
33	0.7205	**1.283388**	4.3	Jul-01	2001	Jul			
34	-3.7987	**1.268394**	4.0	Aug-01	2001	Aug			
35	-8.5812	**1.09991**	3.1	Sep-01	2001	Sep			
36	-2.1545	**1.10406**	3.2	Oct-01	2001	Oct			
37	1.1010	**1.108776**	2.1	Nov-01	2001	Nov			
38	-3.5317	**1.104269**	1.6	Dec-01	2001	Dec	0.288314	0.083125	3.498957
40	-1.3660	**1.098731**	0.5	Jan-02	2002	Jan			
41	-1.1338	**1.103636**	1.2	Feb-02	2002	Feb			
42	-2.6286	**14.32512**	2.0	Mar-02	2002	Mar			
43	-4.5241	**1.03461**	0.9	Apr-02	2002	Apr			
44	-1.6441	**1.048555**	1.7	May-02	2002	May			
45	1.0004	**1.039561**	2.8	Jun-02	2002	Jun			
46	2.8506	**1.044727**	2.1	Jul-02	2002	Jul			
47	-2.0497	**1.032152**	1.8	Aug-02	2002	Aug			
48	-2.1944	**1.047936**	1.8	Sep-02	2002	Sep			
49	1.9766	**0.937727**	1.9	Oct-02	2002	Oct			
50	16.8498	**0.741964**	2.6	Nov-02	2002	Nov			
51	4.2238	**0.941847**	4.2	Dec-02	2002	Dec	-0.22294	0.049703	0.981245
53	31.9255	**0.937504**	2.0	Jan-03	2003	Jan			
54	2.0183	**0.941932**	7.4	Feb-03	2003	Feb			
55	4.9546	**0.936684**	10.1	Mar-03	2003	Mar			

56	7.0183	11.6852	11.6	Apr-03	2003	Apr			
57	27.9467	0.8563	14.9	May-03	2003	May			
58	-3.3728	0.863345	13.7	Jun-03	2003	Jun			
59	-2.8175	0.864827	10.9	Jul-03	2003	Jul			
60	7.1911	0.86075	8.3	Aug-03	2003	Aug			
61	10.6856	0.963747	7.9	Sep-03	2003	Sep			
62	9.7075	0.860451	9.1	Oct-03	2003	Oct			
63	2.2204	0.585494	9.0	Nov-03	2003	Nov			
64	7.9564	0.596445	8.3	Dec-03	2003	Dec	-0.0431	0.001858	3.318391
66	9.9459	0.947143	9.1	Jan-04	2004	Jan			
67	8.4847	0.59211	9.9	Feb-04	2004	Feb			
68	-3.3021	0.638192	8.3	Mar-04	2004	Mar			
69	-10.6523	0.624249	7.6	Apr-04	2004	Apr			
70	-1.0206	9.253052	4.7	May-04	2004	May			
71	2.0460	0.90824	5.9	Jun-04	2004	Jun			
72	0.2632	0.90824	8.5	Jul-04	2004	Jul			
73	2.2320	0.90824	15.8	Aug-04	2004	Aug			
74	-0.9539	0.90824	19.0	Sep-04	2004	Sep			
75	2.2950	0.90824	18.3	Oct-04	2004	Oct			
76	4.1328	0.90824	16.6	Nov-04	2004	Nov			
77	3.4282	0.90824	16.3	Dec-04	2004	Dec	-0.12161	0.01479	5.13006
79	3.3093	0.90824	14.9	Jan-05	2005	Jan			
80	4.9611	0.90824	13.9	Feb-05	2005	Feb			
81	0.5434	0.90824	14.1	Mar-05	2005	Mar			
82	-0.7844	0.90824	16.0	Apr-05	2005	Apr			
83	5.1679	0.90824	14.8	May-05	2005	May			
84	14.9164	10.89888	11.9	Jun-05	2005	Jun			
85	9.6193	0.770267	11.8	Jul-05	2005	Jul			
86	-2.3979	0.770267	6.9	Aug-05	2005	Aug			
87	-3.0700	0.7709	4.3	Sep-05	2005	Sep			
88	2.0432	0.770267	3.7	Oct-05	2005	Oct			
89	1.3936	0.770267	6.0	Nov-05	2005	Nov			
90	-0.9157	0.770267	7.6	Dec-05	2005	Dec	0.728513	0.530731	4.505859
92	4.6878	0.770508	15.4	Jan-06	2006	Jan			
93	-0.4635	0.770808	18.9	Feb-06	2006	Feb			
94	-2.8927	0.770808	19.1	Mar-06	2006	Mar			
95	3.3777	0.770808	14.9	Apr-06	2006	Apr			
96	8.8993	0.771042	13.1	May-06	2006	May			
97	-0.2869	0.770808	10.9	Jun-06	2006	Jun			
98	1.1833	9.247017	10.1	Jul-06	2006	Jul			

99	4.3426	**0.788972**	11.5	Aug-06	2006	Aug			
100	9.2442	**0.788972**	13.8	Sep-06	2006	Sep			
101	6.2213	**0.788972**	15.7	Oct-06	2006	Oct			
102	18.6297	**0.788972**	14.6	Nov-06	2006	Nov			
103	-2.2138	**0.788972**	15.6	Dec-06	2006	Dec	-0.15681	0.02459	2.81775
105	10.5904	**0.788972**	9.7	Jan-07	2007	Jan			
106	-6.0384	**0.788972**	6.8	Feb-07	2007	Feb			
107	-13.4729	**0.788972**	5.9	Mar-07	2007	Mar			
108	**3.4438**	**0.788972**	5.7	Apr-07	2007	Apr			
		0.788972	6.3	May-07	2007	May			
		0.788972	11.1	Jun-07	2007	Jun			
		0.788972	13.6	Jul-07	2007	Jul			
		9.467667	12.4	1900	Aug				

The correlation between stock returns and average bond returns in 1999 is -0.282 and therefore the coefficient of determination r^2 is 0.08. That is 8% of stock returns can be explained by movements in average bond returns in 1999. This implies that stock movements could not be explained by bond returns in that year.

Table 4.7: p-value

Year	N	Correlation Coefficient	p-value
1999	12	-0.282	
2000	12	-0.279	0.380
2001	12		
2002	12	0.327	0.299
2003	12	-0.109	0.737
2004	12	0.147	0.650
2005	12		
2006	12	-0.766	0.004

From table 4.7 it can be seen that correlation between stock returns and bond returns on the average is negative. To be able to explain the bond/stock return relationship more compactly we compare them on biannual basis as shown in the table below.

Table 4.8 Paired Sampled Test Statistic

Period	d = stock return – bond return	Standard error	95% C.I (Confidence Interval)	p-value
1999 - 2000	-3.00	0.75	-4.55 to -1.44	0.001
2001 - 2002	-1.18	1.81	-4.92 to -2.56	0.52
2003 - 2004	3.28	1.71	-0.25 to -6.82	0.067
2005 - 2006	2.17	0.85	0.41 to 3.92	0.018

For the period 1999 to 2002 it appears that bond returns were higher than stock returns. The difference between the two was significant at 95% confidence Interval especially for the 1999 – 2000 periods. The opposite is experienced for the 2003 – 2006 where stock returns were higher than bond returns. There was a significant difference of 0.018 at 95% C.I for the 2005 -2006 period.

The analysis above indicates that there is negative co-movement between stock returns and bond returns. It can be noticed that that there is little association between real returns on stocks and bonds on short term basis. However, in the long run period of 96 months the correlation is -0.328 indicating insignificant relationship. This is largely explained by the fact that bond returns are more largely affected by inflation than returns on stocks.

4.2 Regression

Regression is a process by which we obtain a functional relationship between the two variables under consideration. The regression equation to be employed is

$r_s = \alpha + \beta_1 I_s + \beta_2 \mathrm{Re}al\,\mathrm{Re}turn + \beta_3 r_b$

Where r_s = real return on stocks

I_s = Inflation index

r_b = return on bonds.

The equation above with appropriate values of α, β_1, β_2 and β_3 may be used to *predict* the values of the stock returns given values of inflation, real return and inflation. The following table gives values of coefficient of determination.

Table 4.9: Regression

Model Terms	Adjusted R^2	R^2
CPI	0.022	0.032
Bond Returns	0.098	0.107
Real Returns on Bonds	0.027	0.038
Real Returns on Stocks	0.602	0.606
CPI + Real Return of Stocks	1	1
CPI - Real Return of Bonds	0.109	0.128

From the above table and on the basis of regression coefficients table below, we may come up with the following regression equation.

Table 4.10: Regression Coefficients

		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
Model		B	Std. Error	Beta		
1	(Constant)	7.914	3.061		2.585	.011
	CPI	.200	.136	.143	1.468	.145
	BONDR	-8.354	2.614	-.311	-3.195	.002

a Dependent Variable: STOCKR

$\hat{r} = 7.91(\pm 3.06) - 8.15(\pm 2.63)CPI - 8.35(\pm 2.61)R.RBonds$,

Where R.RBonds denotes real return on bonds. Thus the return on stocks can be explained by CPI real return on bonds.

CHAPTER 5.0: SUMMARY OF FINDINGS AND RECOMMENDATIONS

5.1 Summary of Findings and Conclusions

Stocks and bonds are the two main investment vehicles at the NSE and that is why a lot of research has to be carried out about them. The movement of the real returns for the two is important to investors so that they can be able to make fair judgment about investment plan to execute. The relationship of the two also enhances investor's predictability. The study is about the correlation between real returns on stocks and bonds for the period 1999 to march 2007.

In the study the use of Karl Pearson's correlation and a student's t-Test for the two samples assuming unequal variance are employed. It is concluded that there is significant difference between the real return on stocks and real return on bonds. It appears like returns on bonds are higher than returns on stocks in the short run. However the reverse is true for a longer period of time. This conforms to other studies as reviewed in the literature review. The coefficient of determination explains the movement in one variable and can be explained by movements in the other in percentage terms.

The period of study is not sufficient enough to be able to make outstanding conclusions about a long term scenario. The trading of bonds in the secondary market started way back in 1996 and data on it is not readily available. Thus I had to rely on a few bond results that were available. At 2-tailed significance level the overall correlation between bonds return and stocks return is -0.328 indicating a high degree of association between the two. This only explains the fact that stocks and bonds trade in the opposite direction, a fact explained by rigidity due to Kenyan investors who tend to move together in one direction.

5.2 Limitations of the study

Among a few limitations are that the bond market is still bear though the number of bonds trading in the secondary market is growing significantly. There are a few corporate bonds trading in the Kenyan market hence making it difficult to make comparisons. The other limitation was that floating bonds traded up to 2003 and there after fixed bonds were introduced. The terms of such bonds trading in the market are different hence affect expected returns. Also information on bonds trading in the secondary market is not readily available. In the study inflation is the only macro-economic factor used hence the need for more research to establish other factors that affect bond returns and stock returns besides inflation.

5.3 Recommendations

There is need for either the Capital Markets Authority and/or the Nairobi Stock Exchange to keep and provide data on bonds trading to researchers with ease. There is need for investors to access information easily about what trades at the NSE. The purpose of this study was to establish a relationship between real stock returns and real bond returns. It appears like there is a significant relationship between the two, hence real returns in one can explain the other and conversely.

5.4 Suggestions for Further Research

Further research should be carried out especially on a longer period to establish the co-movements between real stock returns and real bond returns. In the findings it was established that presidential elections could have had an impact hence the need to carry out such event studies.

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: *Monthly stocks returns in percentages. See next page*

YEAR	MONTH	BAMBr	BATr	BBKr	BBONDr	CMCr	DTKr	EABr	EXPRESSr	FIRESTr	KAKUZIr	KCBr	KENAIRr	NICBr	NMGr	SASINIr	KPLCr	SCBKr	GWKr	TOTALr	SERENAr	Average	Stdev
1996	4																						
	5	9.62	0.60	2.15	3.56	-5.52	-1.06	2.12	2.56	6.62	8.53	1.70		4.50	6.42	17.68	1.16	6.51	0.37	8.28		4.2115	
	6	8.00	2.35	-1.03	0.24	1.16	3.51	5.45	6.64	8.19	6.65	-7.30		1.84	6.98	-7.28	5.28	6.75	17.26	-4.04		3.3691	
	7	-1.55	0.17	-3.28	1.22	1.28	3.80	5.70	13.24	7.26	-6.71	1.91	-9.30	5.13	11.60	-1.01	19.03	-3.95	4.42	-4.51		2.3392	
	8	-3.83	-0.83	-0.15	-0.71	1.89	-8.36	-1.66	-4.45	-4.63	-2.47	2.15	-11.59	-5.71	-0.01	-7.68	4.05	-1.89	0.47	-7.26		-2.7730	
	9	1.16	-2.42	-5.96	-0.34	-1.34	-10.45	-1.61	-2.36	-2.86	2.24	-4.44	3.33	2.02	4.53	-1.26	2.08	-4.39	2.90	-7.14		-1.3843	
	10	-2.70	-9.21	-6.36	0.35	3.15	-1.52	0.52	0.91	2.92	2.92	1.21	-9.30	0.09	1.33	1.75	5.35	1.02	2.97	-3.31		-0.4163	
	11	-2.53	0.60	-2.32	-2.38	1.11	-8.07	6.11	14.67	-1.46	0.78	3.54	-4.27	-0.72	0.18	5.46	14.74	2.56	2.31	-6.45		1.2572	
	12	2.91	0.85	1.25	-0.37	1.13	-2.44	2.73	5.69	10.48	0.73	27.74	-11.88	2.72	1.40	9.44	7.49	1.50	0.37	-2.07		2.5411	
	Annual Average	**1.39**	**-0.99**	**-1.96**	**0.20**	**0.36**	**-3.08**	**2.42**	**3.19**	**3.32**	**1.58**	**3.31**	**-7.17**	**1.24**	**4.06**	**2.14**	**7.40**	**1.02**	**3.88**	**-3.31**		**0.9988**	**2.4472**
1997	1	26.72	17.32	14.69	-10.87	4.34	7.86	1.27	-4.06	5.86	1.30	15.18	16.42	9.90	2.62	12.70	62.83	13.54	2.72	26.95		11.9626	
	2	19.87	0.00	4.25	-2.52	7.90	-1.11	6.52	-9.81	6.28	1.18	9.45	-8.44	7.08	-1.30	-3.11	53.95	4.94	2.18	-1.90		5.0220	
	3	13.92	-14.25	-6.33	-3.90	12.11	-8.22	6.82	11.36	-1.26	1.93	3.58	-0.75	-1.31	0.31	13.24	1.97	-14.99	-0.56	-16.37		-0.1426	
	4	11.46	-2.74	-4.59	-14.60	-5.60	-10.82	-1.60	-6.09	-16.12	0.07	-4.54	-5.24	2.86	24.86	2.95	2.99	-6.77	-3.63	-4.43		-2.1875	
	5	7.78	-0.27	8.50	0.82	-6.51	7.23	2.20	-8.43	10.89	0.55	3.31	3.84	6.29	19.90	0.34	16.88	3.05	-1.33	5.48		4.2379	
	6	-1.10	1.20	-1.04	-0.93	8.92	-0.78	-2.00	-1.21	0.16	0.03	11.65	-0.56	7.12	-0.11	3.15	18.82	1.98	0.35	-1.41	-7.08	1.8587	
	7	0.71	-2.36	-2.41	-2.20	18.75	-1.39	-1.42	-2.90	5.52	2.60	1.51	-3.13	3.87	3.65	5.30	2.66	4.10	0.24	-3.11	3.37	1.6678	
	8	4.46	-3.56	-2.17	2.41	-8.49	-3.86	-4.72	-5.00	7.54	10.49	9.12	-0.73	-12.89	3.91	-0.36	-4.93	-4.47	5.03	-5.18	-2.00	-2.4357	
	9	4.88	-7.99	0.10	-2.40	-5.96	-11.56	-3.84	-2.63	-8.37	30.99	1.71	-2.16	4.62	5.95	17.00	1.80	1.37	41.87	-3.63	-2.64	2.8191	
	10	-17.85	5.37	0.88	0.75	-10.09	-6.12	-8.89	-7.89	-8.23	-3.87	-12.55	-6.02	7.71	2.81	-2.30	16.40	-3.59	18.34	-6.98	-4.56	-3.6422	
	11	-7.42	1.91	-2.37	-1.25	-4.35	-4.18	2.56	-1.11	3.64	-12.68	-9.21	-4.55	0.22	-0.55	-2.84	-16.28	-2.65	-6.42	-5.75	-11.00	-4.5770	
	12	-0.03	3.79	6.79	-7.58	8.00	-5.04	-0.71	0.51	2.14	-26.93	-3.77	2.27	-1.65	1.57	-0.88	0.73	3.62	-28.27	0.81	0.83	-2.5695	
	Annual Average	**5.28**	**-1.66**	**1.36**	**-3.52**	**1.59**	**-3.16**	**-0.32**	**-3.10**	**-1.19**	**0.47**	**0.60**	**-0.75**	**1.53**	**5.30**	**3.76**	**13.15**	**-0.22**	**2.54**	**-1.29**	**-3.30**	**0.8537**	**4.6710**
1998	1	23.66	0.58	5.22	16.36	28.53	4.80	2.66	3.70	11.82	5.07	13.65	16.99	4.65	1.38	2.75	14.41	9.97	8.54	14.30	12.93	10.0984	
	2	-8.67	0.57	4.22	-0.07	-3.82	-2.29	-1.27	-5.21	7.82	20.65	-4.73	-9.73	-0.35	2.28	10.00	3.47	-6.29	26.87	1.94	2.04	1.8708	
	3	3.96	-5.34	1.87	-7.64	-50.29	-0.67	3.56	-8.61	7.83	9.84	-9.47	-3.42	-2.28	3.84	11.96	-1.75	-8.30	13.34	-9.69	-0.15	-2.5709	
	4	-14.71	-6.95	-11.32	-1.42	-11.17	-8.33	-3.69	-7.42	-9.10	-0.50	-4.47	-3.11	-14.23	39.93	-0.14	-11.49	-2.36	18.24	-15.94	-12.47	-4.0322	
	5	-3.85	0.23	1.20	1.03	-14.25	7.86	-11.54	-18.99	-4.47	-5.85	-3.00	-1.97	-9.24	3.79	-5.49	1.82	-2.97	-1.70	-9.98	-7.55	-4.2462	
	6	9.05	0.77	9.97	8.85	0.09	3.13	19.51	-15.02	1.43	7.99	3.05	-1.27	5.87	20.69	5.87	9.80	8.61	2.70	-0.91	4.71	5.2447	
	7	-5.34	-0.06	5.27	8.02	1.13	-8.19	5.13	-11.17	-1.62	10.70	-0.69	15.12	1.61	-6.32	-2.70	-0.81	-5.71	-15.71	0.74	-3.18	-1.2157	
	8	-12.29	5.55	1.21	6.13	0.05	-3.81	2.87	0.63	2.18	-0.03	3.77	-3.28	-7.05	5.49	2.72	4.81	-2.69	-0.08	-0.02	-1.04	-0.1201	
	9	-1.15	3.96	-0.31	0.67	1.24	-3.77	-5.18	-0.66	-8.66	1.84	-1.59	-10.57	-13.91	3.39	-2.18	-3.88	1.38	-0.13	-3.61	-14.17	-2.8647	
	10	-2.76	8.73	-0.18	-2.48	-1.02	1.81	-7.11	2.59	-1.33	-5.18	-11.27	2.90	-1.54	-9.83	0.31	1.46	-4.21	1.66	-7.22	2.80	-1.5933	
	11	-7.86	2.84	1.33	-13.37	1.39	4.34	-0.11	0.59	-5.51	-1.88	0.74	1.82	-12.02	8.46	-6.47	-8.32	1.98	1.85	-5.12	1.34	-1.6981	
	12	14.93	17.43	17.60	5.80	-3.24	1.10	17.77	-6.77	1.38	0.79	-5.25	2.91	9.87	6.36	-1.69	-0.49	15.16	1.24	10.39	8.29	5.6781	
	Annual Average	**-0.42**	**2.36**	**2.13**	**1.82**	**-4.28**	**-0.34**	**1.88**	**-5.53**	**0.15**	**3.62**	**-2.23**	**0.53**	**-3.22**								**-0.2709**	**4.4672**
1999	1	26.82	18.48	6.05	7.03	0.39	13.93	4.48	25.46	22.05	1.95	15.09	12.36	21.12	7.57	3.93	14.60	5.45	4.33	35.58	19.28	13.2967	
	2	-13.56	-6.09	0.12	-0.05	-13.14	9.31	0.97	7.81	0.78	0.73	-1.78	-9.71	-8.50	-1.82	-9.57	-4.34	-2.69	-3.02	-14.55	-12.22	-4.0663	
	3	-7.25	16.19	-8.68	0.72	-4.62	-0.77	10.40	-11.74	-9.55	-1.42	-15.47	1.16	1.16	-0.44	-9.35	-6.15	1.40	1.41	-1.97	-1.02	-2.3000	
	4	-4.54	9.06	-5.07	1.98	-4.78	-1.76	8.27	-2.20	-1.71	-12.83	-13.40	1.66	2.90	-1.11	-4.47	-3.52	-2.22	0.75	4.20	2.81	-1.2984	
	5	15.40	6.31	0.08	0.76	-2.15	-5.14	4.48	-20.13	0.83	-4.55	-4.09	3.00	-2.42	-4.47	2.71	-2.14	-2.58	0.79	2.13	0.76	-2.3324	
	6	7.68	-1.70	0.83	0.04	4.65	0.09	0.41	-3.55	-1.43	3.13	-1.26	2.92	1.62	-1.68	-2.20	-1.67	7.52	0.73	0.58	-2.22	0.7238	
	7	10.28	-13.84	7.06	0.27	4.01	-0.22	2.63	2.22	1.49	1.33	6.94	-11.14	2.09	2.09	0.57	-0.40	9.15	-2.05	5.48	4.26	1.3881	
	8	3.73	-4.71	-5.89	-17.26	2.29	-3.76	4.57	-4.60	3.67	-0.45	-11.41	-13.82	-6.55	-12.19	1.60	-2.52	4.93	-1.00	3.32	2.09	-3.2651	
	9	-6.97	6.59	-7.72	-17.83	0.83	-9.10	-0.61	17.48	14.96	-11.80	-11.02	-4.87	0.78	5.72	2.44	-9.64	-1.15	-17.68	-3.16	9.89	-5.9592	
	10	-6.17	0.59	1.29		-0.98	12.39	-3.93	-7.91	1.87	-6.44	-2.61	1.28	3.96	-0.48	-2.62	-6.72	3.76	-1.75	-5.74	3.49	-0.8797	
	11	-0.28	7.52	-1.07		0.35	-1.82	12.99	1.09	-0.42	-1.58	-10.41	16.93	-2.86	-3.46	-14.26	-12.30	4.25	-7.05	2.87	0.40	-2.7529	
	12	0.04	2.36	0.65	0.62	0.00	7.82	4.49	2.69	10.27	-10.22	1.29	10.44	-6.05	-2.40	-5.29	12.47	-6.47	-12.36	0.19	0.24	0.3024	
	Annual Average	**-0.47**	**1.75**	**-1.03**	**-2.37**	**-1.10**	**1.75**	**1.93**	**-2.91**	**0.46**	**-3.51**	**-4.01**	**0.85**	**0.60**	**-2.01**	**-3.49**	**-1.86**	**1.78**	**-3.07**	**2.41**	**2.31**	**-0.5999**	**4.8483**
2000	1	0.73	-2.53	-0.13	0.51	-2.08	2.15	4.07	5.25	4.34	6.71	3.90	-2.26	-0.47	3.10	-2.21	2.96	3.32	0.89	0.71	0.19	0.7395	

	3	1.90	17.57	5.50	-5.69	-3.28	5.20	2.53	0.65	-16.92	-25.76	-5.09	3.44	4.56	-1.31	8.04	-2.38	19.75	-4.52	4.91	1.78	-0.2600	
	4	0.15	-6.14	2.88	-12.27	-25.74	-2.87	-1.11	1.50	1.22	-0.52	-0.90	6.14	-0.06	-15.51	-10.60	-11.42	3.91	2.18	-6.02	-2.25	-3.8721	
	5	5.64	-4.68	-1.61	-3.02	-9.81	-17.64	-2.00	-0.43	-5.21	-3.73	-4.02	3.29	0.46	-1.77	11.93	-16.30	-8.36	-9.28	-0.73	0.98	-3.3142	
	6	2.93	-5.19	-3.37	-1.80	-10.34	-3.56	-6.90	-2.63	6.63	-2.87	-0.40	3.31	-3.62	-0.70	1.47	-24.42	-3.68	-5.69	1.44	-0.83	-3.0106	
	7	4.59	3.63	0.28	-0.78	-3.97	-3.76	4.86	-4.17	-1.83	-3.16	-6.83	-6.13	-10.13	0.97	-3.92	1.56	7.25	-5.29	7.87	-0.33	-0.9656	
	8	5.31	5.59	-0.77	-2.12	-1.64	-4.14	6.68	-6.87	-8.30	-0.13	-6.95	-1.33	10.14	-3.45	-1.24	-4.73	5.79	-13.12	4.47	4.16	-0.6323	
	9	0.51	9.49	3.84	10.25	-1.74	-17.97	8.75	-0.47	3.06	-5.26	5.43	13.85	-1.48	-2.36	-0.91	-7.84	3.95	3.83	-0.79	0.16	1.2145	
	10	3.55	2.75	4.90	8.65	-1.46	-1.06	2.18	-1.19	2.05	-4.66	7.81	4.43	-7.05	-2.17	0.88	-12.46	0.06	26.35	0.44	-1.76	1.6130	
	11	-0.48	-1.06	-7.70	8.27	-0.01	-5.53	3.95	7.55	-0.37	-4.48	3.80	-2.85	-10.01	0.63	1.51	11.51	-7.41	10.39	1.03	0.82	0.4786	
	12	1.52	-10.39	-16.67	3.08	-2.08	-5.92	-8.99	-0.46	-2.34	1.19	-14.87	2.16	-14.05	0.85	0.43	-1.75	-10.36	2.98	-2.16	-1.00	-3.9413	
	Annual Average	**2.13**	**1.12**	**-0.96**	**-0.32**	**-4.97**	**-4.34**	**0.55**	**-0.29**	**-2.08**	**-3.54**	**-2.29**	**1.17**	**-2.76**	**-2.85**	**-1.86**	**-5.52**	**2.07**	**0.62**	**1.23**	**0.16**	**-1.1370**	**2.0041**
2001	1	2.05	3.05	5.88	0.68	-12.86	0.63	0.55	-21.08	-5.19	-2.64	10.47	1.68	8.96	-1.95	-6.79	-6.91	7.28	2.73	-9.89	-2.05	-2.3162	
	2	-2.60	-3.61	0.22	-0.73	3.81	-5.78	1.50	-6.58	-14.93	-2.67	-2.58	1.19	-5.32	2.76	9.25	19.02	6.09	1.58	-10.31	2.24	-0.3735	
	3	-13.78	-4.05	3.95	5.01	-10.88	-1.11	3.46	-1.50	-15.30	-9.64	20.77	-12.45	-7.50	-4.00	-2.47	-5.45	5.22	5.05	-9.51	3.12	-2.5527	
	4	-3.44	-2.20	2.19	-3.78	-14.42	-0.99	1.23	0.00	-6.26	-14.94	1.04	-2.27	-12.13	-14.58	-9.04	-12.79	-8.35	-2.22	9.50	0.26	-4.6588	
	5	0.94	-5.77	-11.80	-0.08	-15.04	-5.02	-2.75	2.36	-6.81	-0.67	-13.28	1.67	-5.34	-10.96	-5.35	-24.68	3.78	1.19	-0.97	-0.05	-5.1670	
	6	-0.46	-1.18	10.24	2.08	-4.10	-10.40	-0.27	-0.54	-1.45	-0.20	-16.74	10.22	0.46	-17.13	-6.39	-3.51	4.04	2.08	-11.12	-0.49	-2.2432	
	7	-3.41	1.65	3.15	1.09	3.43	-0.59	-2.28	-4.46	1.36	-1.09	-1.80	-0.35	4.53	15.32	-3.28	-2.82	1.77	0.63	2.72	-1.16	0.7205	
	8	-3.49	-11.57	-0.89	-1.76	9.91	0.59	5.72	19.06	1.07	-10.78	0.69	-9.01	-1.68	-2.01	-5.68	-10.16	-4.03	-2.68	-8.73	-2.43	-3.7987	
	9	-9.42	-5.00	-8.90	-6.56	-4.09	-2.69	1.72	-31.64	-2.17	-2.84		-2.10	-13.00	-5.46	-12.91	-15.10	-11.68	-5.60	-17.42	-8.17	-8.5812	
	10	-6.73	8.06	3.21	-4.58	-17.59	-17.02	0.94	0.62	-0.38	3.93		-6.36	-3.21	-4.51	-12.74	22.53	7.28	-2.31	-13.18	1.10	-2.1545	
	11	-10.59	-0.26	-0.43	1.88	8.07	1.58	-2.36	-3.21	3.93	4.55	-3.38	3.50	19.32	9.08	-5.17	-29.19	-0.03	0.22	16.78	7.73	1.1010	
	12	-11.63	1.35	0.23	-10.19	5.54	-2.62	-6.90	4.27	-2.34	-1.50		0.54	1.32	-9.14	-10.44	5.66	-0.10	-27.39	-4.61	4.55	-3.5317	
	Annual Average	**-5.21**	**-1.63**	**0.59**	**-1.41**	**-4.02**	**-3.62**	**0.05**	**-7.13**	**-4.04**	**-3.21**	**-2.86**	**-1.23**	**-1.35**	**-3.55**	**-5.92**	**-5.28**	**0.94**	**-2.23**	**-4.73**	**0.39**	**-2.7727**	**2.6720**
2002	1	-4.03	-2.59	5.33	-18.62	1.98	2.78	0.59	3.28	0.67	-1.22		2.06	0.47	1.11	-2.30	-7.08	6.12	-11.08	-5.31	1.90	-1.3660	
	2	-3.64	2.87	10.69	-4.55	-2.70	-1.39	0.59	0.00	7.09	0.00	-2.86	-0.85	5.95	3.08	-8.88	-10.47	4.62	-15.51	-8.21	1.51	-1.1338	
	3	-0.17	-7.77	0.11	0.64	-9.87	-11.08	2.92	0.00	0.29	-5.45	-7.27	-3.75	-2.97	30.34	3.07	-19.69	-7.96	-3.24	-8.48	-2.24	-2.6286	
	4	-2.18	-3.17	-15.96	-2.79	21.28	-5.95	-0.36	0.00	-5.86	-11.86	-3.62	-1.92	-12.60	6.74	-0.04	-26.11	-7.84	-7.46	-9.82	-0.95	-4.5241	
	5	0.74	0.62	7.67	-7.72	16.36	12.53	-0.83	0.00	-1.03	-0.91	-19.59	-0.36	-9.12	-4.66	-2.74	-5.60	2.23	-5.44	-14.76	-0.29	-1.6441	
	6	7.29	2.55	6.29	-1.25	13.90	6.45	8.49	0.00	15.85	-4.89	-14.68	2.46	6.91	-0.01	-0.91	-3.62	6.53	-2.74	-25.33	-3.30	1.0004	
	7	15.14	10.06	2.21	-1.52	-17.78	-0.36	-4.37	0.00	-1.03	-6.32	0.51	-0.69	8.86	-2.10	-5.12	-7.70	4.77	-4.92	70.06	-2.70	2.8506	
	8	16.46	-6.37	-1.39	-1.34	6.64	0.34	2.42	0.00	-0.77	-25.53	0.18	-7.07	1.41	9.05	-0.99	-15.71	-0.60	-20.10	-0.20	2.56	-2.0497	
	9	-5.96	1.74	-5.08	-9.54	32.07	8.28	11.94	0.00	-9.65	-21.03	-13.57	-7.05	-6.83	4.23	0.28	-7.97	-3.03	-20.16	9.56	-2.13	-2.1944	
	10	7.05	0.43	-0.85	-8.89	15.84	12.65	3.83	0.00	-0.54	-0.54	15.21	-3.79	-1.26	1.44	-4.82	2.96	6.70	1.50	-7.89	0.53	1.9766	
	11	24.05	17.54	13.19	-4.26	30.18	-1.19	7.70	0.00	16.50	-6.06	25.28	-6.11	27.89	17.37	-3.48	78.06	6.54	55.62	25.47	12.72	16.8498	
	12	30.28	-6.75	4.18	7.63	-6.42	-5.03	11.27	-1.76	2.90	0.11	-4.81	3.02	-4.92	32.28	1.88	9.57	1.23	3.59	7.04	-0.82	4.2238	
	Annual Average	**7.09**	**0.76**	**2.20**	**-4.35**	**8.46**	**1.50**	**3.68**	**0.13**	**2.04**	**-6.98**	**-2.29**	**-2.00**	**1.15**	**8.24**	**-2.00**	**-1.11**	**1.61**	**-2.50**	**2.68**	**0.57**	**0.9428**	**5.6107**
2003	1	24.61	13.08	15.30	26.90	7.63	19.08	16.34	-1.67	21.51	9.68	117.32	12.87	35.05	24.72	33.06	128.53	12.19	39.63	31.25	51.43	31.9255	
	2	-2.13	6.15	2.47	17.45	4.63	5.82	5.28	8.85	1.88	1.37	-7.94	-9.02	7.84	-2.28	2.52	1.70	6.05	7.26	3.15	-16.92	2.0183	
	3	17.54	10.31	15.00	-2.93	1.73	21.04	21.24	1.26	-3.51	-4.78	13.30	-0.65	-1.24	-2.39	-0.76	-9.86	4.52	4.35	4.43	10.51	4.9546	
	4	8.52	2.65	13.68	-8.03	12.71	19.76	17.62	2.25	-7.33	3.46	34.25	-2.91	8.27	3.37	-1.53	5.42	15.35	9.45	7.65	-4.25	7.0183	
	5	23.68	35.33	7.81	3.43	48.81	49.61	8.81	3.67	39.00	57.28	48.83	16.77	34.79	14.33	29.97	39.63	11.49	46.80	17.31	21.58	27.9467	
	6		-6.44	-1.62	14.42	12.59	1.02	-1.19	0.00	4.41	-13.83	-10.26	-4.00	-10.78	-0.54	-0.48	-12.14	-1.29	-12.80	0.40	-21.55	-3.3728	
	7		16.85	-7.59	3.41	-10.35	-17.21	11.57	2.28	-10.67	-7.51	-11.82	1.33	-8.34	4.43	-9.05	-6.20	-2.26	-4.05	-2.20	3.85	-2.8175	
	8	9.58	18.87	9.95	-1.88	18.39	10.39	19.30	6.46	-4.92	9.38	-1.43	-3.71	13.62	15.46	-3.64		8.79	2.85	-2.78	11.98	7.1911	
	9	18.11	30.56	15.05	-3.17	28.54	17.89	13.67	7.53	0.80	1.91	11.27	15.58	-1.29	35.29	-6.72		20.43	-4.11	6.87	-5.19	10.6856	
	10	-1.24	10.50	16.74	-0.90	21.02	10.81	11.76	0.00	3.19	1.64	4.86	8.45	25.60	9.26	20.43	8.70	24.80	-0.94	2.88	16.57	9.7075	
	11	-1.43	12.30	8.45	-2.90	-7.46	-2.90	11.22	2.25	-2.53	9.38	3.00	-1.55	5.64	2.56	1.35	5.29	3.47	0.42	-1.07	-1.09	2.2204	
	12	16.75	29.55	29.25	-0.91	17.18	9.38	8.06	-4.85	3.47	-2.79	5.36	3.66	7.49	6.71	-10.49	20.02	18.86	-0.37	0.77	2.00	7.9564	
	Annual Average	**11.40**	**14.98**	**10.37**	**3.74**	**12.95**	**12.06**	**11.97**	**2.34**	**3.46**	**5.43**	**17.23**	**3.07**	**9.72**	**9.24**	**4.55**	**18.11**	**10.20**	**7.37**	**5.72**	**5.74**	**8.9834**	**10.8688**
2004	1	5.05	5.88	7.75	-11.93	29.99	25.92	9.64	0.00	1.70	-0.40	24.38	6.72	17.97	2.82	-0.79	68.67	6.13	-3.08	7.31	-4.81	9.9459	

	3	9.90	-5.43	-13.69	18.36	-27.59	-20.60	-2.11	30.39	-0.72	-1.03	-13.72	25.17	-18.92	0.06	14.00	-6.46	-8.72	-1.64	-10.43	-13.07	-3.3021	
	4	-13.47	-31.87	-13.12	-8.49	-18.03	-4.30	-6.92	-2.89	-13.06	-2.70	-20.32	-2.49	-6.18	-18.82	-12.12	-3.99	-16.27	1.45	-12.99	-6.45	-10.6523	
	5	-8.02	5.06	2.29	-3.22	-0.71	0.91	-4.78	-14.54	-3.50	-10.59	-2.91	7.10	1.64	9.20	4.56	-6.60	2.43	5.06	-6.89	3.12	-1.0206	
	6	-5.95	-1.58	-6.64	4.86	13.65	-6.90	0.53	-5.92	-0.20	28.79	2.58	7.69	2.80	-2.51	11.35	1.10	-6.28	4.18	3.88	5.20	2.0460	
	7	-0.77	-1.26	-4.57	13.67	-5.16	0.05	4.22	0.42	-0.02	5.99	3.25	-1.31	-3.05	-1.05	-7.79	-4.89	-2.30	0.72	0.69	8.42	0.2632	
	8	1.89	-4.15	1.52	5.65	-2.23	-4.00	9.37	0.00	16.50	0.75	1.86	1.69	-0.58	-2.02	0.49	2.25	0.42	-1.24	-1.88	18.36	2.2320	
	9	6.15	0.01	-4.59	4.37	1.96	-9.32	3.99	0.00	-10.02	-0.75	-8.78	8.95	-2.75	-2.56	7.76	0.01	-8.11	0.47	-2.96	-2.90	-0.9539	
	10	4.59	3.26	6.88	9.82	-2.75	5.40	-5.21	0.00	5.82	2.39	2.46	15.51	1.15	-0.12	7.63	-8.39	3.53	-2.37	-3.13	-0.58	2.2950	
	11	8.20	2.05	0.89	4.62	5.82	0.82	6.24	-8.13	10.00	9.98	6.54	5.42	3.66	2.59	4.84	1.96	0.57	11.66	-2.02	6.94	4.1328	
	12	-0.06	-0.96	-4.72	-0.25	1.59	0.66	19.38	-1.97	-2.49	18.47	6.63	-1.24	4.81	1.68	16.83	-0.45	-9.37	2.62	1.69	15.71	3.4282	
	Annual Average	**-1.58**	**-1.84**	**-1.90**	**2.89**	**-1.79**	**0.60**	**3.12**	**-0.22**	**0.65**	**4.36**	**2.37**	**6.68**	**1.38**	**-0.06**	**2.97**	**6.54**	**-2.11**	**1.38**	**0.68**	**4.02**	**1.4082**	**5.3664**
2005	1	0.22	6.29	2.88	-0.51	-7.84	6.10	3.53	2.72	1.98	7.29	3.80	10.72	0.78	2.07	2.93	2.58	0.93	4.99	11.87	2.86	3.3093	
	2	3.33	9.10	6.91	10.94	-6.79	-2.86	1.02	16.91	6.66	16.16	1.15	6.68	2.88	1.97	15.07	2.86	2.62	10.10	-3.69	-1.80	4.9611	
	3	-1.14	-1.53	-6.30	11.96	-0.84	15.82	-0.57	0.00	-8.21	-5.54	-8.65	13.10	-3.14	14.75	-6.38	-3.44	-6.51	4.60	-3.99	6.86	0.5434	
	4	-2.30	-10.75	-0.64	-7.58	-4.18	0.47	5.41	-1.53	-5.61	-2.64	-0.26	8.98	-2.66	5.12	7.90	-1.95	-0.59	-4.72	-3.04	4.87	-0.7844	
	5	4.58	5.11	6.85	6.14	2.16	5.89	13.44	-4.90	13.24	5.43	6.14	13.24	-2.42	9.15	9.81	-0.11	6.81	2.21	-0.43	1.02	5.1679	
	6	14.43	-0.33	7.24	7.53	9.67	-3.60	15.52	40.58	34.51	14.34	2.94	64.57	3.45	6.46	-7.29	18.83	1.08	19.19	6.37	42.85	14.9164	
	7	17.17	2.42	5.47	-3.74	-3.62	-0.13	5.43	12.03	12.38	27.55	10.82	47.20	8.97	-2.22	20.71	14.21	5.25	-4.50	4.17	12.82	9.6193	
	8	-0.84	-3.73	-2.81	-4.25	-2.47	-0.69	0.06	-8.82	2.24	-20.25	5.48	3.08	-1.48	-2.01	-5.45	17.26	2.37	-7.23	-9.00	-9.42	-2.3979	
	9	-2.43	-1.58	-4.23	-14.76	-3.07	-1.25	-5.13	1.96	-0.86	-7.46	0.34	6.24	-4.44	-6.25	-11.16	-0.86	-2.96	-6.42	1.59	1.33	-3.0700	
	10	4.85	0.72	3.19	1.75	-0.04	-0.01	-5.17	1.31	-3.91	-4.66	12.66	12.83	1.04	1.34	-4.32	14.88	1.73	-9.45	8.66	3.47	2.0432	
	11	3.56	0.36	1.41	1.22	3.64	0.50	-4.90	1.28	22.00	2.51	9.40	-6.14	-1.85	2.23	2.42	-8.45	0.70	-0.69	-7.70	6.35	1.3936	
	12	9.72	-3.15	1.53	-6.74	2.83	13.89	-18.84	-0.07	-8.94	-0.12	12.11	1.09	1.15	1.33	-8.33	-1.98	-0.26	0.83	-10.38	-3.96	-0.9157	
	Annual Average	**4.26**	**0.24**	**1.79**	**0.16**	**-0.88**	**2.85**	**0.82**	**5.12**	**5.46**												**2.2024**	**5.2180**
2006	1	-9.82	-0.43	10.21	-0.92	3.34	22.18	25.30	11.70	1.53	-3.14	4.79	10.31	2.70	2.73	-5.49	0.02	1.46	-2.37	19.74	-0.08	4.6878	
	2	-0.08	-1.09	-1.12	0.29	-5.02	9.03	-3.19	2.17	-7.81	-5.41	-0.98	5.09	1.16	2.20	3.79	-5.33	-0.05	-2.04	-0.88	0.00	-0.4635	
	3	-0.74	-2.07	-7.58	-0.52	-0.99	-1.87	-0.29	-0.63	-6.31	-13.53	-0.14	-0.40	-3.60	-4.18	-7.82	-3.02	-0.31	-5.20	-2.02	3.38	-2.8927	
	4	2.12	1.18	-0.91	-0.94	8.61	8.02	0.19	17.75	-4.40	-5.99	1.76	13.03	2.80	3.45	-3.62	7.04	0.83	-2.08	-3.36	22.08	3.3777	
	5	2.03	-0.05	0.15	-4.46	2.24	5.29	6.44	44.54	9.76	6.62	29.52	18.28	19.41	1.66	9.00	16.28	0.33	-7.02	8.89	9.08	8.8993	
	6	-0.08	-13.11	5.06	-4.69	14.41	2.71	-0.25	-5.20	-8.97	-0.06	5.29	-7.16	10.22	0.17	2.81	4.52	2.58	-7.70	-9.47	3.18	-0.2869	
	7	1.77	10.75	2.42	-0.18	15.48	9.22	-1.51	0.61	-6.66	-10.89	3.14	-1.29	5.13	0.50	-2.02	-4.32	5.44	1.16	-4.48	-0.58	1.1833	
	8	8.03	-0.08	7.48	5.96	16.32	28.17	1.02	3.91	-9.79	1.13	-4.52	1.34	21.84	0.19	5.90	9.94	1.29	0.58	-0.21	-11.62	4.3426	
	9	17.33	-1.79	8.63	-4.90	32.24	8.78	3.24	-2.91	2.85	6.40	18.19	7.70	8.35	5.78	46.28	37.02	5.66	-2.30	-1.63	-10.05	9.2442	
	10	-1.27	2.33	17.71	-0.63	6.26	1.75	4.86	0.66	6.35	8.76	5.13	4.31	4.15	10.69	42.59	8.06	9.90	-3.54	-1.48	-2.18	6.2213	
	11	16.27	0.35	43.59	3.45	27.15	1.50	-3.92	18.39	69.50	2.29	10.06	-7.43	2.94	40.38	98.00	8.00	15.52	34.61	-5.18	-2.88	18.6297	
	12	-3.56	-0.19	-7.09	-2.77	2.40	-7.20	-3.65	-11.18	-12.63	-2.07	0.32	-1.83	-4.23	-6.51	10.61	-2.68	-1.76	12.56	-3.03	0.23	-2.2138	
	Annual Average	**2.67**	**-0.35**	**6.55**	**-0.86**	**10.20**	**7.30**	**2.35**	**6.65**	**2.78**	**-1.32**	**6.05**	**3.50**	**5.91**	**4.75**	**16.67**	**6.29**	**3.41**	**1.39**	**-0.26**	**0.88**	**4.2274**	**6.0541**
2007	1	7.02	15.45	9.50	6.64	34.40	16.35	5.33	11.95	3.67	9.35	18.85	-2.33	17.37	5.41	4.59	12.45	12.48	12.68	5.34	5.31	10.5904	
	2	-1.57	0.55	-6.82	3.87	-21.32	-8.72	3.99	-5.14	-27.23	-6.10	-7.51	-6.71	-1.37	-9.06	-9.36	-8.53	-7.54	10.15	-9.94	-2.42	-6.0384	
	3	-7.28	-16.63	-14.26	-12.86	-11.11	-7.90	-7.86	-10.20	-23.01	-6.81	-11.09	-19.37	-20.22	-16.70	-20.02	-28.63	-14.84	-5.86	-6.47	-8.32	-13.4729	
	Annual Average	**3.45**	**-0.23**	**6.08**	**-0.95**	**10.72**	**4.77**	**0.84**	**4.34**	**0.55**	**0.61**	**6.12**	**-0.92**	**5.79**	**3.11**	**17.09**	**4.87**	**2.71**	**3.89**	**-2.33**	**-1.61**	**3.4438**	**8.4280**

Appendix 1: Monthly bonds returns in percentages. See next page

RETURNS IN PERCENTAGE

BOND RETURNS 1999

	JAN	FEB	MAR	APR	MAY	JUN	JUL
ONE YEAR BONDS							
1yrTBd S/1/99(91 Day TB)	0.9	0.892	0.892	0.892	0.892	0.892	
1yrTBd 2/99(91 Day MA, TB+0 25%)	0.84	0.813	0.813	0.813	0.84	0.843	
1yrTBd 3/99(91 Day MA, TB+0 25%)	0.813	0.813	0.813	0.813	0.813	0.814	
1yrTBd S/2/99(91 Day TB)	0.9	0.9	0.9	0.9	0.875	0.9	
1yrTBd 1/99(91 Day MA, TB+0 25%)	0.813	0.813	0.785	0.814	0.813	0.813	
TWO YEAR BONDS							
2yrTBd 2/98(91 Day MA, TB+0 25%)	0.833	0.933	0.833	0.833	0.833	0.85	
2yrTBd 2/99(91 Day MA, TB+0 25%)	0.813	0.813	0.813	0.813	0.813	0.813	
2yrTBd 3/98(91 Day MA, TB+0 50%)	0.833	0.833	0.833	0.833	0.833	0.833	
2yrTBd 2/98(91 Day MA, TB+0 50%)	0.833	0.833	0.833	0.831	0.833	0.833	
2yrTBd S/2/99(91 DayTB	0.9	0.9	0.9	0.9	0.9	0.9	
2yrTBd S/1/99(91 Day TB	0.9	0.9	0.9	0.9	0.919	0.9	
2yrTBd 1/98(91 Day MA, TB+0 50%)	0.933	0.933	0.938	0.933	0.931	0.933	
2yrTBd 1/99(91 Day MA, TB+0 50%)	0.933	0.933	0.933	0.933	0.968	0.933	
2yrTBd 5/98(91 Day MA, TB+0 50%)	0.933	0.909	0.933	0.933	0.97	0.933	

	AUG	SEP	OCT	NOV	DEC	Return per annum(%)
1.206	1.206	1.206	1.206	1.214	1.206	12.604
1.273	1.349	1.273	1.273	1.399	1.408	12.937
1.273	1.273	1.273	1.365	1.282	1.433	12.778
1.282	1.282	1.306	1.282	1.265	1.363	13.155
1.349	1.349	1.349	1.365	1.402	1.349	13.014
1.37	1.331	1.37	1.294	1.37	1.3	13.15
1.349	1.349	1.349	1.349	1.433	1.34	13.047
1.375	1.344	1.328	1.344	1.37	1.361	13.12
1.294	1.294	1.294	1.294	1.332	1.37	12.874
1.282	1.282	1.282	1.282	1.282	1.282	13.092
1.282	1.282	1.261	1.206	1.206	1.206	12.862
1.37	1.294	1.944	1.294	1.294	1.344	14.141
1.294	1.294	1.294	1.313	1.294	1.294	13.416
1.294	1.294	1.294	1.294	1.294	1.294	13.375

THREE YEAR BONDS							
3yrTBd S/2/99(91 Day TB)							
3yrTBd S/1/99(91 Day TB)							
3yrTBd 2/98(91 Day MA, TB+0.25%)	0.813	0.813	0.813	0.813	0.814	0.813	
3yrTBd 3/98(91 Day MA TB+0.25%)	0.813	0.813	0.813	0.898	0.813	0.923	
3yrTBd 4/98(91 Day MA TB+0.25%)	0.813	0.813	0.813	0.813	0.859	0.813	
Ave. Gvt Floating Bond Returns	0.85976471	0.86217647	0.85635294	0.86264706	0.86582353	0.867	1.30

BOND RETURNS 2000

	JAN	FEB	MAR	APR	MAY	JUN	JUL
ONE YEAR BONDS							
1yr TBd FR 1/2000(91 Day MA, TB+0.25%)	1.31	1.294	1.244	1.386	1.374	1.31	
1yr TBd FR 1/99(91 Day MA, TB+0.25%)	1.31	1.31	1.374	1.324	1.31	1.244	
1yr TBd FR 2/2000(91 Day MA, TB+0.25%)	1.31	1.244	1.31	1.386	1.324	1.31	
1yr TBd FR 2/99(91 Day MA, TB+0.25%)	1.31	1.31	1.374	1.31	1.294	1.31	
1yr TBd FR 3/2000(91 Day MA, TB+0.25%)	1.31	1.244	1.31	1.31	1.374	1.341	
1yr TBd FR 3/99(91 Day MA, TB+0.25%)	1.31	1.294	1.31	1.294	1.31	1.31	
1yr TBd FR 4/2000(91 Day MA, TB+0.25%)	1.31	1.31	1.374	1.31	1.324	1.244	
1yr TBd FR 4/99(91 Day MA, TB+0.25%)	1.31	1.31	1.341	1.294	1.31	1.31	
1yr TBd FR 5/2000(91 Day MA, TB+0.25%)	1.31	1.31	1.244	1.341	1.374	1.31	
1yr TBd FR 6/2000(91 Day MA, TB+0.25%)	1.31	1.244	1.31	1.324	1.31	1.294	
1yr TBd/s/ 7/2000(91 Day, TB+0.25%)	1.31	1.294	1.324	1.244	1.341	1.31	
1yr TBd/S/1/99(91 Day TB+0.25%)	1.31	1.341	1.374	1.341	1.294	1.31	
1yr TBd/S/1/99(91 Day TB)	1.692	1.692	1.72	1.675	1.692	1.692	
1yr TBd/S/2/99(91 Day TB+0.25%)	1.713	1.713	1.713	1.713	1.713	1.713	
1yr TBd/2/99(91 Day TB)	1.692	1.692	1.76	1.756	1.756	1.692	
1yr TBd/S/3/99(91 Day TB+0.25%)	1.713	1.713	1.713	1.713	1.675	1.713	
1yr TBd/S/4/2000(91 Day TB)	1.692	1.692	1.692	1.756	1.749	1.692	
1yr TBd/S/5/2000(91 Day TB+0.25)	1.713	1.739	1.713	1.713	1.675	1.788	
1yr TBd/S/6/2000(91 Day TB+0.25)	1.713	1.675	1.713	1.739	1.675	1.739	
1yr TBd/S/7/2000(91 Day TB+0.25)	1.713	1.754	1.698	1.713	1.698	1.698	
1yr TBd/S/3/99(91 Day TB)	1.692	1.756	1.692	1.692	1.692	1.692	
1yr TBd/S/4/2000(91 Day TB-0.25)	1.713	1.713	1.675	1.727	1.713	1.713	
TWO YEAR BONDS							
2yr TBd FR 1/2000(91 Day MA TB+0.50)	1.331	1.34	1.407	1.35	1.331	1.331	
2yr TBd FR 1/98(91 Day MA TB+0.50)	1.331	1.331	1.331	1.331	1.407	1.331	
2yr TBd FR 1/99(91 Day MA TB+0.50)	1.331	1.331	1.407	1.331	1.331	1.331	
2yr TBd FR 2 /2000(91 Day MA TB+0.50)	1.331	1.331	1.331	1.407	1.331	1.331	
2yr TBd FR 2/98(91 Day MA TB+0.50)	1.331	1.342	1.331	1.331	1.331	1.331	
2yr TBd FR 2/99(91 Day MA TB+0.50)	1.331	1.407	1.331	1.331	1.407	1.331	
2yr TBd FR 3/2000(91 Day MA TB+0.50)	1.331	1.34	1.331	1.407	1.331	1.331	
2yr TBd FR 3/99(91 Day MA TB+0.50)	1.331	1.407	1.331	1.362	1.331	1.331	
2yr TBd FR 4/2000(91 Day MA TB+0.50)	1.331	1.407	1.331	1.407	1.34	1.331	
2yr TBd FR 4/98(91 Day MA TB+0.50)	1.331	1.407	1.407	1.331	1.331	1.331	
2yr TBd FR 4/99(91 Day MA TB+0.50)	1.331	1.331	1.331	1.407	1.331	1.331	
2yr TBd FR 5/98(91 Day MA TB+0.50)	1.331	1.34	1.331	1.407	1.407	1.331	
2yr TBd FR 6/2000(91 Day MA TB+0.25)	1.31	1.326	1.31	1.338	1.31	1.31	
2yr TBd/S/1/99(91DayTB)	1.692	1.692	1.692	1.692	1.692	1.692	

	1 206	1.206	1.206	1.206	1 206	6 03
	1 206	1 314	1 206	1 331	1 206	6 263
1 273	1 273	1.273	1 273	1 273	1 273	12 517
1 273	1 273	1.283	1.292	1 274	1 273	12 741
1 273	1 273	1 264	1 273	1 407	1 273	12.687
070588	**1.28705263**	**1.32436842**	**1.28478947**	**1.312**	**1.30426316**	**12.9869443**

	AUG	SEP	OCT	NOV	DEC	**Return per annum(%)**
0 822	0 841	0 9	0 822	0 822	0 822	12 947
0 822	0 841	0 853	0 822	0.822	0.822	12 854
0 841	0 872	0 841	0 866	0 869	0 841	13 014
0 841	0 871	0 841	0 872	0 841	0 841	13 015
0.841	0 841	0.871	0.841	0 841	0 841	12 965
0 841	0 841	0 841	0 872	0 841	0.841	12.905
0 85	0.872	0.841	0 841	0 841	0.841	12.958
0 841	0.841	0.85	0 871	0.866	0 841	12.985
0 841	0 866	0.841	0 872	0.841	0.841	12.991
0 872	0 871	0 841	0 841	0 872	0 841	12 93
0 841	0.85	0 841	0 866	0 871	0.841	12.933
0.846	0.846	0.846	0.846	0 846	0.846	13.046
0.825	0.825	0.825	0.825	0.825	0.825	15 113
0 846	0 855	0 846	0 863	0 846	0 875	15 409
0 825	0 825	0.825	0 851	0 825	0.825	15.324
0 846	0.855	0 846	0 846	0 875	0.846	15 354
0 825	0 851	0 825	0 851	0 825	0 825	15.275
0 855	0 863	0.846	0 875	0 863	0.855	15 498
0 863	0 846	0.875	0 855	0 846	0 846	15.385
0 878	0 888	0 922	0 888	0 919	0 919	15.688
0 825	0 825	0 851	0 825	0 825	0 825	15 192
0 846	0 855	0 846	0.846	0 875	0.846	15.368
0 888	0 919	0 888	0 888	0 888	0.888	13 449
0 913	0 919	0 888	0 888	0.888	0 888	13.446
0 888	0 888	0 919	0 878	0 919	0 919	13 473
0 888	0 888	0 888	0 922	0 888	0 888	13 424
0 922	0 913	0.919	0.888	0 919	0 888	13.446
0.919	0.919	0.913	0.888	0 888	0.888	13.553
0 878	0 888	0 919	0 919	0 888	0.888	13 451
0 919	0 922	0.888	0.878	0 919	0.922	13.541
0 913	0 888	0.922	0 919	0 888	0 888	13 565
0 878	0 913	0.919	0 919	0 878	0 888	13.533
0 871	0 872	0.861	0 861	0.872	0.873	13 272
0 61	0 861	0.871	0 872	0 861	0 872	13 094
0 841	0 841	0.841	0.841	0 871	0.841	12 98
0 825	0 836	0.825	0.825	0.825	0.825	15 113

2yr TBd/s/ 1/99(91 Day TB+0.50)	1.733	1.705	1.802	1.733	1.733	1.733
2yr TBd/s/2/99(91 Day TB+0.50%)	1.733	1.733	1.733	1.733	1.802	1.733
2yr TBds/ 2/99(91 Day TB)	1.692	1.692	1.743	1.692	1.59	1.692
2yr TBd /s /3/99(91 Day TB+0.50)	1.733	1.733	1.802	1.733	1.65	1.733
2yr TBd/s/ 3/99(91 Day TB)	1.692	1.692	1.692	1.802	1.692	1.692
2yr TBd/s 4/2000(91 Day TB+0.50)	1.733	1.705	1.733	1.733	1.705	1.733
2yr TBd/s/ 4/2000(91 Day TB)	1.698	1.698	1.698	1.698	1.698	1.698
2yr TBd/s/ 5/2000(91 Day TB+0.50)	1.733	1.733	1.705	1.733	1.633	1.733
2yr TBd/s/ 6/2000(91 Day TB+0.50)	1.733	1.733	1.703	1.733	1.733	1.733
2yr TBd/s/ 7/2000(91 Day TB+0.25)	1.713	1.713	1.713	1.713	1.743	1.713
THREE YEAR BONDS						
3yr TBd 1/2000(91 Day MA,TB+0.65%)	1.26	1.269	1.291	1.343	1.229	1.26
3yr TBd 1/99(91 Day MA,TB+0.65%)	1.26	1.231	1.169	1.287	1.26	1.289
3yr TBd 1/99(91 Day TB)	1.692	1.68	1.692	1.692	1.692	1.692
3yr TBd 2/99(91 Day MA,TB+0.65%)	1.343	1.343	1.343	1.343	1.343	1.343
3yr TBd 2/99(91 Day TB)	1.692	1.723	1.692	1.675	1.692	1.692
3yr TBd/s/ 1/99(91 DayTB+0.65%)	1.343	1.343	1.343	1.723	1.343	1.343
3yr TBd/s 1/99(91 Day TB)	1.692	1.692	1.692	1.692	1.723	1.692
3yr TBd/s/ 2/99(91 DayTB+0.65%)	1.343	1.375	1.343	1.343	1.343	1.343
3yr TBd/s/ 2/99(91 DayTB)	1.692	1.692	1.756	1.675	1.692	1.723
3yr TBd/s/ 3/99(91 DayTB+0.65%)	1.343	1.343	1.343	1.343	1.343	1.343

0 867	0 883	0.867	0.95	0 867	0.931	15 804
0 867	0 867	0.931	0.895	0.867	0.867	15.761
0.825	0 853	0.825	0.825	0.825	0.825	15 079
0.867	0 867	0.867	0.881	0.867	0.867	15 6
0 825	0 825	0.825	0.825	0.825	0.825	15.212
0 867	0 881	0.867	0.867	0.881	0.867	15.572
0 831	0.831	0.831	0 831	0.831	0.831	15.174
0 867	0.867	0.931	0.931	0 867	0 931	15.664
0 867	0 931	0.881	0 867	0.881	0.867	15.662
0 864	0.846	0.862	0.846	0.857	0.846	15 429

1 26	1 288	1.291	1 26	1 288	1 26	15 299
1 26	1.299	1.26	1.288	1.26	1 26	15.123
0.825	0 837	0 825	0.825	0.825	0.825	15 102
0.874	0 874	0 874	0.885	0.874	0.874	13 313
0 825	0 825	0 856	0.834	0 825	0 825	15 156
0.874	0.99	0.874	0.89	0.874	0 874	13.814
0.825	0.834	0.825	0.856	0.825	0.825	15.173
0 874	0.874	0.874	0.874	0 874	0 874	13.334
0 825	0 825	0 825	0 825	0 834	0 825	15.189
0 874	0 89	0.874	0.874	0 89	0 874	13 334

3yr TBd/s/ 3/99(91 DayTB)	1.692	1.675	1.692	1.723
3yr TBd/s/ 4/2000(91 DayTB)	1.692	1.692	1.675	1.692
3yr TBd/s/ 5/2000(91 Day TB+0.65%)	1.343	1.343	1.723	1.643
3yr TBd/s/ 6/2000(91 Day TB+0.65%)	1.343	1.343	1.343	1.312
3yr TBd/s/ 7/2000(91 Day TB+0.65%)	1.713	1.713	1.682	1.713
Average Government Floating Bond returns	1.49796721	1.49796721	1.49796721	1.49796721
	JAN	FEB	MAR	APR
ONE YEAR BONDS				
1yr TBd FR 1/2000(91 Day MA, TB+0.25)	1.274	1.274	1.293	1.301
1yr TBd FR 1/99(91 Day MA, TB+0.25)	1.274	1.333	1.255	1.348
1yr TBd FR 2/2000(91 Day MA, TB+0.25)	1.274	1.301	1.243	1.274
1yr TBd FR 2/2001(91 Day MA, TB+0.25)	1.274	1.274	1.215	1.274
1yr TBd FR 2/99(91 Day MA, TB+0.25)	1.348	1.293	1.274	1.293
1yr TBd FR 3/2000(91 Day MA, TB+0.25)	1.274	1.255	1.333	1.274
1yr TBd FR 3/2001(91 Day MA, TB+0.25)	1.274	1.274	1.274	1.301
1yr TBd FR 3/99(91 Day MA, TB+0.25)	1.274	1.301	1.274	1.274
1yr TBd FR 4/2000(91 Day MA, TB+0.25)	1.348	1.274	1.274	1.333
1yr TBd FR 4/2001(91 Day MA, TB+0.25)	1.274	1.293	1.255	1.293
1yr TBd FR 4/99(91 Day MA, TB+0.25)	1.274	1.274	1.274	1.333
1yr TBd FR 5/2000(91 Day MA, TB+0.25)	1.274	1.215	1.301	1.274
1yr TBd FR 6/2000(91 Day MA, TB+0.25)	1.274	1.274	1.274	1.333
1yr TBd FR 7/2000(91 Day MA, TB+0.25)	1.274	1.293	1.293	1.274
1yr TBd FR 8/2000(91 Day MA, TB+0.25)	1.274	1.274	1.333	1.348
1yr TBd/s/ 1/99(91 Day TB+0.25)	1.251	1.269	1.282	1.31
1yr TBd/s/2/99(91 Day TB+0.25)	1.251	1.221	1.234	1.251
1yr TBd/s/ 3/2001(91 Day TB+0.25)	1.251	1.269	1.251	1.234
1yr TBd/s/ 3/99(91 Day TB+0.25)	1.251	1.225	1.251	1.251
1yr TBd/s/ 4/2000(91 Day TB+0.25)	1.251	1.31	1.221	1.269
1yr TBd/s/ 4/2001(91 Day TB+0.25)	1.251	1.251	1.251	1.251
1yr TBd/s/ 5/2000(91 Day TB+0.25)	1.282	1.269	1.269	1.225
1yr TBd/s/ 6/2000(91 Day TB+0.25)	1.251	1.251	1.251	1.282
1yr TBd/s/ 7/2000(91 Day TB+0.25)	1.251	1.234	1.251	1.269
1yr TBd/s/ 8/2001(91 Day TB+0.25)	1.251	1.251	1.221	1.251
1yr TBd/s/ 9/2001(91 Day TB+0.25)	1.251	1.269	1.251	1.225
TWO YEAR BONDS				
2yr TBd FR 1/2000 (91 Day MA, TB+0.50%)	1.293	1.302	1.2	1.319
2yr TBd FR 1/98 (91 Day MA, TB+0.50%)	1.293	1.308	1.293	1.293
2yr TBd FR 1/99(91 Day MA, TB+0.50%)	1.293	1.293	1.319	1.293
2yr TBd FR 2/2000 (91 Day MA, TB+0.50%)	1.293	1.293	1.293	1.302
2yr TBd FR 2/99 (91 Day MA, TB+0.50%)	1.293	1.293	1.328	1.293
2yr TBd FR 3/2000 (91 Day MA, TB+0.50%)	1.293	1.293	1.302	1.293
2yr TBd FR 3/98(91 Day MA, TB+0.50%)	1.293	1.293	1.319	1.293
2yr TBd FR 3/99(91 Day MA, TB+0.50%)	1.293	1.302	1.293	1.308
2yr TBd FR 4/2000 (91 Day MA, TB+0.50%)	1.293	1.293	1.308	1.293
2yr TBd FR 4/98 (91 Day MA, TB+0.50%)	1.293	1.2	1.293	1.319
2yr TBd FR 4/99 (91 Day MA, TB+0.50%)	1.293	1.293	1.293	1.328

1.692	1.692	0.825	0.825	0.834	0.825	0.825	0.825	15.125
1.723	1.692	0.825	0.856	0.825	0.834	0.856	0.825	15.187
1.343	1.343	0.874	0.874	0.874	0.874	0.874	0.89	13.998
1.343	1.343	0.874	0.89	0.874	0.89	0.874	0.9	13.329
1.687	1.713	0.846	0.846	0.846	0.846	0.846	0.846	13.7553
1.49796721	**1.49796721**	**1.49796721**	**1.49796721**	**1.49796721**	**1.49796721**	**1.49796721**	**1.49796721**	17.97560656

BONDS RETURNS 2001

MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	**Return per annum(%)**
1.215	1.274	1.14	1.158	1.118	1.123	1.128	1.028	14.326
1.243	1.317	1.079	1.038	1.04	1.043	1.022	1.079	14.071
1.293	1.274	1.079	1.079	1.123	1.079	1.079	1.079	14.177
1.333	1.301	1.079	1.118	1.079	1.079	1.079	1.079	14.184
1.274	1.274	1.079	1.079	1.079	1.118	1.079	1.079	14.269
1.293	1.348	1.079	1.158	1.079	1.079	1.123	1.079	14.374
1.274	1.255	1.079	1.043	1.079	1.079	1.079	1.079	14.09
1.215	1.293	1.079	1.079	1.079	1.079	1.079	1.079	14.105
1.274	1.274	1.079	1.118	1.185	1.079	1.079	1.123	14.44
1.274	1.215	1.079	1.079	1.043	1.079	1.079	1.079	14.042
1.274	1.274	1.079	1.158	1.079	1.158	1.118	1.079	14.374
1.301	1.243	1.079	1.158	1.079	1.079	1.079	1.079	14.161
1.255	1.293	1.079	1.079	1.118	1.123	1.158	1.123	14.383
1.293	1.274	1.079	1.128	1.079	1.043	1.022	1.079	14.131
1.293	1.274	1.079	1.079	1.022	1.158	1.079	1.079	14.292
1.225	1.251	1.093	1.033	1.149	1.093	1.161	1.093	14.21
1.251	1.269	1.093	1.093	1.033	1.144	1.042	1.093	13.975
1.251	0.1234	1.093	1.093	1.144	1.093	1.093	1.093	12.9884
1.31	1.251	1.093	1.033	1.093	1.093	1.093	1.144	14.088
1.282	1.269	1.093	1.093	1.093	1.149	1.093	1.093	14.216
1.251	1.251	1.251	1.251	1.251	1.251	1.251	1.251	15.012
1.221	1.269	1.093	1.093	1.149	1.033	1.093	1.093	14.089
1.31	1.251	1.093	1.093	1.144	1.093	1.161	1.093	14.273
1.269	1.251	1.093	1.093	1.033	1.093	1.033	1.144	14.014
1.31	1.221	1.093	1.161	1.149	1.093	1.093	1.093	14.187
1.269	1.282	1.093	1.093	1.093	1.033	1.093	1.093	14.045
1.328	1.293	1.135	1.056	1.153	1.141	1.072	1.156	14.448
1.293	1.293	1.109	1.134	1.183	1.049	1.131	1.069	14.448
1.308	1.293	1.041	1.072	1.056	1.032	1.153	1.062	14.215
1.2	1.302	1.1	1.135	1.1	1.1	1.072	1.1	14.29
1.293	1.293	1.1	1.153	1.109	1.056	1.1	1.1	14.411
1.293	1.293	1.1	1.049	1.15	1.109	1.1	1.135	14.41
1.2	1.293	1.1	1.056	1.183	1.141	1.131	1.1	14.402
1.293	1.2	1.1	1.1	1.134	1.135	1.072	1.134	14.364
1.2	1.293	1.1	1.1	1.153	1.183	1.141	1.183	14.54
1.293	1.319	1.1	1.135	1.1	1.109	1.056	1.1	14.317
1.293	1.293	1.1	1.1	1.134	1.153	1.131	1.156	14.567

2yr TBd FR 5/2000 (91 Day MA, TB+0.50%)	1.293	1.293	1.308	1.293
2yr TBd FR 5/98 (91 Day MA, TB+0.50%)	1.293	1.293	1.293	1.302
2yr TBd FR 6/2000 (91 Day MA, TB+0.50%)	1.293	1.288	1.272	1.31
2yr TBd FR 7/2000 (91 Day MA, TB+0.50%)	1.293	1.321	1.293	1.321
2yr TBd/s/ 9/2001 (91 Day TB+0.50%)	1.293	1.217	1.277	1.321
2yr TBd/s/1/99(91 Day TB+0.50%)	1.293	1.356	1.233	1.293
2yr TBd/s/2/99(91 Day TB+0.50%)	1.293	1.293	1.293	1.293
2yr TBd/s/ 3/2001 (91 Day TB+0.50%)	1.293	1.293	1.293	1.293
2yr TBd/s/3/99(91 Day TB+0.50%)	1.293	1.321	1.293	1.233
2yr TBd/s/3/99(91 Day TB+0.50%)	1.293	1.293	1.233	1.293
2yr TBd/s/ 4/2000 (91 Day TB+0.50%)	1.293	1.293	1.293	1.321
2yr TBd/s/ 4/2001 (91 Day TB+0.50%)	1.293	1.293	1.321	1.293
2yr TBd /s/ 5/2000 (91 Day TB+0.50%)	1.293	1.233	1.217	1.293
2yr TBd/s/ 6/2000 (91 Day TB+0.50%)				
2yr TBd/s/7/2000 (91 Day TB+0.50%)	1.272	1.272	1.306	1.297
2yr TBd/s/ 8/2001 (91 Day TB+0.50%)	1.293	1.293	1.293	1.293

THREE YEAR BONDS

3yr TBd 1/2000 (91 Day MA, TB+0.65 %)	1.305	1.333	1.336	1.246
3yr TBd 1/99 (91 Day MA, TB+0.65 %)	1.305	1.305	1.336	1.305
3yr TBd 2/99 (91 Day MA, TB+0.65 %)	1.305	1.343	1.305	1.305
3yr TBd/s/ 1/99 (91 Day TB+0.65 %)	1.305	1.305	1.336	1.336
3yr TBd/s/ 2/99 (91 Day TB+0.65 %)	1.305	1.246	1.336	1.343
3yr TBd/s/ 3/2001 (91 Day TB+0.65 %)	1.305	1.305	1.305	1.336
3yr TBd/s/ 3/99 (91 Day TB+0.65 %)	1.305	1.305	1.336	1.305
3yr TBd/s/4/2000 (91 Day TB+0.65 %)	1.305	1.246	1.305	1.305
3yr TBd/s/ 4/2001(91 Day TB+0.65 %)	1.305	1.305	1.336	1.343
3yr TBd/s/5/2000 (91 Day TB+0.65 %)	1.305	1.305	1.336	1.336

1.2	1.293	1.1	1.056	1.109	1.134	1.049	1.153	14.281
1.293	1.2	1.1	1.1	1.141	1.183	1.135	1.131	14.464
1.272	1.272	1.079	1.079	1.079	1.079	1.079	1.079	14.181
1.356	1.293	1.1	1.1	1.109	1.183	1.069	1.1	14.538
1.293	1.293	1.1	1.141	1.1	1.135	1.049	1.069	14.288
1.293	1.321	1.135	1.1	1.153	1.1	1.134	1.1	14.511
1.293	1.293	1.1	1.1	1.1	1.131	1.056	1.1	14.345
1.293	1.233	[illegible]	1.056	1.1	1.109	1.01	1.183	14.256
1.293	1.293	1.1	1.069	1.135	1.1	1.1	1.049	14.279
1.217	1.293	1.1	1.156	1.049	1.134	1.135	1.1	14.296
1.293	1.293	1.1	1.1	1.109	1.153	1.131	1.1	14.479
1.271	1.321	1.1	1.135	1.1	1.056	1.069	1.156	14.408
1.293	1.233	1.1	1.1	1.049	1.1	1.056	1.1	14.067
1.293	1.293	1.141	1.1	1.141	1.134	1.109	1.1	9.311
1.272	1.333	1.079	1.079	1.079	1.079	1.079	1.079	14.226
1.293	1.293	1.1	1.1	1.156	1.134	1.131	1.1	14.479

1.336	1.343	1.113	1.082	1.172	1.057	1.17	1.074	14.567
1.305	1.305	1.113	1.113	1.113	1.113	1.113	1.113	14.539
1.305	1.305	1.113	1.113	1.113	1.113	1.113	1.057	14.49
1.305	1.305	1.113	1.17	1.113	1.074	1.113	1.113	14.588
1.305	1.305	1.113	1.082	1.113	1.057	1.113	1.113	14.431
1.246	1.305	1.113	1.113	1.113	1.082	1.113	1.113	14.449
1.336	1.305	1.113	1.172	1.057	1.082	1.113	1.113	14.542
1.305	1.336	1.113	1.172	1.113	1.074	1.172	1.057	14.503
1.305	1.336	1.113	1.113	1.113	1.082	1.057	1.113	14.521
1.305	1.305	1.113	1.082	1.113	1.057	1.113	1.17	14.54

3yr TBd/s/ 6/2000 (91 Day TB+0.65 %)	1.305	1.305	1.343	1.305	1.305	1.305	
3yr TBd/s/ 7/2000 (91 Day TB+0.25 %)	1.272	.272	1.328	1.306	1.333	1.272	
3yr TBd/s/ 8/2001 (91 Day TB+0.65 %)	1.305	1.353	1.267	1.361	1.363	1.364	
3yr TBd/s/ 9/2001 (91 Day TB+0.65 %)	1.305	1.346	1.345	1.305	1.368	1.305	
Average Government Floating Bond Returns	**1.28612121**	**1.285**	**1.28639394**	**1.29643939**	**1.28338806**	**1.26839403**	**1.099**

BOND RETURNS 2002

	JAN	FEB	MAR	APR	MAY	JUN	JUL
ONE YEAR BONDS							
1 yr TBd FR 1/2001 (91 Day MA, TB+0.25)	0.925	0.943	0.934	0.925	0.944	0.925	
1 yr TBd FR 2/2001 (91 Day MA, TB+0.25)	0.925	0.925	0.943	0.925	0.925	0.98	
1 yr TBd FR 3/2001 (91 Day MA, TB+0.25)	0.925	0.925	0.953	0.925	0.925	0.978	
1 yr TBd FR 6/2001 (91 Day MA TB+0.25)	0.925	0.925	0.925	0.925	0.944	0.953	
1 yr TBd FR 4/2001 (91 Day MA TB+0.25)	0.925	0.925	0.944	0.925	0.925	0.925	
1 yr TBd/s/1/2002 (91 Day TB)	0.904	0.904	0.924	0.904	0.902	0.904	
1 yr TBd/s/3/2001 (91 Day TB)	0.904	0.904	0.904	0.904	0.923	0.941	
1 yr TBd/s/4/2001 (91 Day TB)	0.904	0.933	0.904	0.904	0.904	0.904	
1 yr TBd/s/5/2001 (91 Day TB)	0.904	0.904	0.904	0.933	0.904	0.904	
1 yr TBd/s/6/2001 (91 Day TB)	0.904	0.904	0.904	0.904	0.913	0.904	
1 yr TBd/s/7/2001 (91 Day TB)	0.904	0.933	0.904	0.904	0.951	0.923	
TWO YEAR BONDS							
2 yr TBd/S/FR 1/2000 (91 Day MA, TB +0.50%)	0.919	0.919	0.919	0.974	0.928	0.919	
2 yr TBd/S/FR 1/2001 (91 Day MA, TB +0.50%)	0.919	0.919	0.892	0.892	0.919	0.864	
2 yr TBd/S/FR 2/2000 (91 Day MA TB +0.50%)	0.919	0.919	0.873	0.919	0.9	0.919	
2 yr TBd/S/FR 2/2001 (91 Day MA, TB +0.50%)	0.919	0.919	0.919	0.919	0.919	0.955	
2 yr TBd/S/FR 3/2000 (91 Day MA TB +0.50%)	0.919	0.956	0.892	0.873	0.919	0.919	
2 yr TBd/S/FR 4/2000 (91 Day MA TB +0.50%)	0.919	0.919	0.919	0.892	0.919	0.919	
2 yr TBd/S/FR 4/99 (91 Day MA TB +0.50%)	0.873	0.919	0.928	0.919	0.892	0.919	
2 yr TBd/S/FR 5/2000 (91 Day MA TB +0.50%)	0.956	0.919	0.919	0.919	0.928	0.919	
2 yr TBd/S/FR 6/2000 (91 Day MA TB +0.50%)	0.919	0.919	0.993	0.919	0.919	0.919	
2 yr TBd/S/FR 7/2000 (91 Day MA, TB +0.50%)	0.919	0.919	0.983	0.919	0.983	0.956	
2 yr TBd/S/1/2002 (91 Day MA, TB)	0.859	0.904	0.973	0.904	0.913	0.904	
2 yr TBd/S/3/2001 (91 Day MA TB)	0.904	0.904	0.939	0.904	0.958	0.904	
2 yr TBd/S/4/2000 (91 Day MA TB)	0.904	0.904	0.904	0.973	0.904	0.859	
2 yr TBd/S/4/2001 (91 Day MA, TB)	0.913	0.904	0.859	0.904	0.939	0.904	
2 yr TBd/S/5/2000 (91 Day MA, TB)	0.904	0.904	0.913	0.904	0.913	0.859	
2 yr TBd/S/5/2001 (91 Day MA,TB)	0.904	0.904	0.939	0.904	0.85	0.904	
2 yr TBd/S/6/2000 (91 Day MA, TB)	0.939	0.904	0.913	0.904	0.904	0.973	
2 yr TBd/S/6/2001 (91 Day MA, TB)	0.904	0.904	0.913	0.913	0.859	0.904	
2 yr TBd/S/7/2000 (91 Day MA TB)	0.904	0.904	0.859	0.904	0.904	0.913	
2 yr TBd/S/9/2001 (91 Day MA, TB)	0.904	0.973	0.904	0.939	0.904	0.973	
THREE YEAR BONDS							
3 yr TBd 1/2000 (91 Day MA TB + 0.625%)	0.93	0.905	0.93	0.976	0.859	1.01	
3 yr TBd 1/2001 (91 Day MA TB +0.625%)	0.93	0.94	0.93	0.93	0.905	0.93	
3 yr TBd 1/99 (91 Day MA TB +0.65%)	0.932	0.991	0.932	1.124	0.932	0.932	
3 yr TBd 2/2000 (91 Day MA, TB + 0.65%)	0.932	0.959	0.932	0.932	0.95	0.932	
3 yr TBd 2/2001 (91 Day MA TB +0.625%)	0.93	0.93	0.93	0.905	0.93	0.93	
3 yr TBd 2/99 (91 Day MA, TB +0.65%)	0.932	0.932	0.991	0.932	0.932	0.932	

1.113	1.057	1.113	1.172	1.082		13.405
1.079	1.079	1.079	1.079	1.079	1.079	14.257
1.113	1.113	1.074	1.113	1.113	1.113	14.647
1.113	1.17	1.113	1.113	1.113	1.113	14.709
9'1045	**1.1040597**	**1.10877612**	**1.10426866**	**1.09873134**	**1.10363636**	**14.3251193**

	AUG	SEP	OCT	NOV	DEC	**Return per annum(%)**
0.703	0.721	0.703	0.667	0.703	0.603	9.696
0.703	0.703	0.703	0.714	0.703	0.703	9.852
0.703	0.714	0.603	0.703	0.703	0.595	9.652
0.703	0.703	0.703	0.703	0.603	0.703	9.715
0.703	0.603	0.714	0.703	0.764	0.703	9.759
0.719	0.75	0.719	0.719	0.719	0.719	9.787
0.719	0.719	0.719	0.631	0.719	0.719	9.706
0.719	0.719	0.758	0.719	0.737	0.719	9.824
0.719	0.719	0.719	0.719	0.77	0.719	9.818
0.719	0.631	0.719	0.631	0.719	0.719	9.571
0.719	0.719	0.719	0.719	0.631	0.719	9.745

0.724	0.724	0.724	0.724	0.724	0.724	9.922
0.724	0.724	0.724	0.724	0.724	0.724	9.749
0.724	0.735	0.724	0.724	0.724	0.724	9.804
0.724	0.724	0.724	0.753	0.724	0.724	9.923
0.724	0.724	0.743	0.724	0.724	0.724	9.841
0.724	0.724	0.724	0.724	0.724	0.724	9.831
0.724	0.724	0.724	0.769	0.724	0.724	9.839
0.724	0.724	0.724	0.724	0.724	0.724	9.904
0.724	0.733	0.713	0.724	0.738	0.724	9.944
0.724	0.724	0.837	0.733	0.724	0.724	10.145
0.651	0.719	0.729	0.719	0.758	0.719	9.752
0.719	0.73	0.719	0.719	0.719	0.719	9.838
0.719	0.719	0.719	0.719	0.719	0.719	9.762
0.719	0.719	0.651	0.719	0.719	0.719	9.669
0.719	0.729	0.719	0.729	0.719	0.651	9.663
0.719	0.719	0.719	0.719	0.719	0.719	9.719
0.651	0.719	0.719	0.651	0.719	0.719	9.715
0.719	0.719	0.729	0.719	0.719	0.719	9.721
0.719	0.651	0.719	0.651	0.719	0.719	9.566
0.719	0.729	0.719	0.719	0.651	0.719	9.853

0.735	0.65	0.735	0.751	0.735	0.735	9.951
0.735	0.735	0.735	0.65	0.735	0.735	9.89
0.737	0.808	0.737	0.737	0.737	0.737	10.336
0.737	0.737	0.737	0.737	0.737	0.737	10.059
0.735	0.735	0.65	0.77	0.735	0.735	9.915
0.737	0.737	0.751	0.737	0.737	0.737	10.087

3 yr TBd 3/2000 (91 Day MA. TB +0.65%)	0.932	0.932	0.993	1.124	0.932	0.991
3 yr TBd 3/2001 (91 Day MA. TB +0.625%)	0.93	0.93	0.93	0.905	0.93	0.93
3 yr TBd 4/2000 (91 Day MA. TB +0.65%)	0.932	0.932	0.932	0.991	0.932	1.124
3 yr TBd/S/1/2002 (91 Day TB)	0.904	0.973	0.904	0.748	0.904	0.904
3 yr TBd/S/1/2002 (91 Day TB)	0.904	0.904	0.973	0.904	0.904	0.904
3 yr TBd/S/2/99 (91 Day TB)	0.904	0.904	0.973	0.904	0.904	0.973
3 yr TBd/S/3/2001 (91 Day TB)	0.904	0.904	0.904	0.973	0.748	0.904
3 yr TBd/S/3/99 (91 Day TB)	0.904	0.904	0.748	0.904	0.973	0.904
3 yr TBd/S/4/2000 (91 Day TB)	0.904	0.973	0.904	0.904	0.948	0.904
3 yr TBd/S/4/2001 (91 Day TB)	0.973	0.904	0.748	0.904	0.973	0.904
3 yr TBd/S/5/2000 (91 Day TB)	0.904	0.904	0.904	0.973	0.904	0.904
3 yr TBd/S/5/2001 (91 Day TB)	0.904	0.748	0.895	0.904	0.973	0.904
3 yr TBd/S/6/2000 (91 Day TB)	0.904	0.904	0.904	0.748	0.904	0.748
3 yr TBd/S/6/2001 (91 Day TB)	0.748	0.973	0.904	0.904	0.904	0.973
3 yr TBd/S/7/2000 (91 Day TB)	0.973	0.904	0.881	0.973	0.904	0.904
3 yr TBd/S/8/2001 (91 Day TB)	0.904	0.904	0.748	0.904	0.904	0.904
3 yr TBd/S/9/2001 (91 Day TB)	0.904	0.904	0.904	0.748	0.973	0.904
FIVE YEAR BONDS						
5 yr TBd 1/2001 (91 Day TB +0.75%)	0.967	0.967	0.967	0.967	0.967	0.967
SIX YEAR BONDS						
6 yr TBd 1/2001 (91 Day TB +0.80%)	0.975	0.975	0.875	0.975	0.975	0.975
6 yr TBd 1/2002 (91 Day TB +0.80%)	0.975	0.975	1.078	0.975	1.043	0.975
6 yr TBd FR 1/2001 (91 Day MA. TB +0.50%)	0.919	0.919	0.919	0.919	0.919	0.919
Average Government Floating Bond Returns	**0.91591379**	**0.92163793**	**0.91601724**	**0.92113793**	**0.92172414**	**0.92639655**
ONE YEAR BONDS						
1 yr TBd FXT 1/2001 (Fxd at 14.5%)	1.208	1.208	1.208	1.292	1.126	1.245
1 yr TBd FXT 1/2002 (Fxd at 13%)	1.083	1.083	1.083	1.278	1.083	1.352
18 months TBd/S/FXT 1/2001 (Fxd at 14.5%)	1.208	1.228	1.233	1.208	1.236	1.208
18 months TBD/S/FXT 2/2001 (Fxd at 14.5%)	1.208	1.255	1.208	1.19	1.19	1.208
TWO YEAR BONDS						
2 yr TBd/S/FXT 1/2001 (Fxd at 14.5%)	1.208	1.393	1.308	1.208	1.126	1.208
2 yr TBd/S/FXT 1/2001 (Fxd at 14.75%)	1.229	1.229	1.229	1.256	1.229	1.229
2 yr TBd/S/FXT 1/2002 (Fxd at 13%)	1.083	1.083	1.083	1.139	1.083	1.083
2 yr TBd/S/FXT 2/2001 (Fxd at 14.25%)	1.188	1.188	1.258	1.188	1.218	1.188
2 yr TBd/S/FXT 2/2001 (Fxd at 14.5%)	1.208	1.208	1.228	1.208	1.179	1.208
2 yr TBd/S/FXT 2/2002 (Fxd at 13%)	1.083	1.083	1.096	1.083	1.096	1.083
THREE YEAR BONDS						
3 yr TBd FXT 1/2002 (Fxd at 13%)	1.083	1.083	1.083	1.083	1.146	1.083
3 yr TBd FXT 1/2002 (Fxd at 14.25%)	1.188	1.188	1.188	1.188	1.188	1.188
3 yr TBd FXT 1/2002 (Fxd at 14.5%)	1.208	1.208	1.208	1.208	1.208	1.208
3 yr TBd FXT 2/2002 (Fxd at 13%)	1.083	1.083	1.152	1.083	1.096	1.083
3 yr TBd FXT 2/2002 (Fxd at 13.75%)	1.146	1.146	1.146	1.146	1.146	1.146
FOUR YEAR BONDS						

0.737	0.737	0.737	0.737	0.737	0.737	10.326
0.735	0.724	0.785	0.735	0.65	0.735	9.919
0.737	0.737	0.737	0.748	0.737	0.737	10.276
0.719	0.719	0.719	0.719	0.719	0.719	9.651
0.608	0.719	0.747	0.719	0.719	0.719	9.724
0.719	0.734	0.719	0.719	0.719	0.719	9.891
0.719	0.719	0.719	0.719	0.719	0.719	9.651
0.719	0.719	0.719	0.719	0.719	0.719	9.651
0.719	0.719	0.734	0.608	0.747	0.719	9.783
0.719	0.719	0.719	0.719	0.719	0.719	9.72
0.747	0.747	0.719	0.734	0.719	0.719	9.878
0.719	0.719	0.719	0.719	0.719	0.719	9.642
0.719	0.734	0.719	0.719	0.734	0.719	9.456
0.719	0.734	0.719	0.608	0.719	0.719	9.624
0.719	0.719	0.734	0.719	0.719	0.719	9.868
0.719	0.719	0.734	0.719	0.608	0.719	9.486
0.719	0.719	0.719	0.719	0.719	0.719	9.651
0.782	0.782	0.782	0.782	0.782	0.782	10.494
0.79	0.79	0.8	0.79	0.848	0.79	10.558
0.79	0.79	0.863	0.79	0.79	0.79	10.834
0.724	0.724	0.724	0.724	0.779	0.724	9.913
0.72098276	**0.72308621**	**0.72748276**	**0.71658621**	**0.72281034**	**0.72**	**9.85377586**
1.208	1.237	1.208	1.208	1.208	1.208	14.564
1.083	1.083	1.083	1.083	1.083	1.083	13.46
1.208	1.208	1.208	1.208	1.208	1.208	14.569
1.208	1.208	1.208	1.218	1.208	1.208	14.517
1.208	1.208	1.255	1.208	1.208	1.208	14.746
1.229	1.229	1.229	1.229	1.255	1.229	14.801
1.083	1.083	1.083	1.083	1.083	1.083	13.052
1.188	1.157	1.188	1.22	1.188	1.188	14.357
1.208	1.208	1.208	1.208	1.208	1.208	14.487
1.083	1.128	1.083	1.083	1.083	1.083	13.067
1.064	1.083	1.083	1.083	1.083	1.083	13.04
1.188	1.188	1.188	1.188	1.188	1.188	14.256
1.208	-6.375	1.208	1.208	1.208	1.208	6.913
1.083	1.165	1.083	1.093	1.122	1.083	13.209
1.146	1.146	1.146	1.146	1.146	1.146	13.752

4 yr TBd FXT 1/2002 (Fxd at 14%)	1.167	1.167	1 186	1 167	1 167	1 167	1.167	1.167	1.167	1.185	1.167	1.167	14.041
FIVE YEAR BONDS													
5 yr TBd FXT 1/2002 (Fxd at 13%)	1.083	1.251	1 083	1 083	1 102	1 083	1 083	1.083	1.104	1.083	1 083	1.083	13.204
5 yr TBd FXT 1/2002 (Fxd at 14.5%)	1 167	1 167	1 167	1 167	1 167	1 167	1 167	1.167	1.167	1 167	1.167	1.167	14 004
SIX YEAR BONDS													

6 yr TBd FXD 1/2002 (Fixd at 13%)	1.083	1.083	1.144	1.083	0.904	1.083
Average Government Fixed Bond Returns	1.15336842	1.17547368	1.17321053	1.17147368	1.14157895	1.16947368
Average Government Bond Returns	1.03461	1.048555	1.039561	1.044727	1.0321515	1.0479355

BOND RETURN 2003

	JAN	FEB	MAR	APR	MAY	JUN
ONE YEAR BONDS						
1 yr TBdFR 6/2001 (91 Day MA TB +0.25%)	0.705	0.705	0.731	0.705	0.705	0.705
1 yr TBdZC 1/2003	0.698	0.698	0.656	0.763	0.698	0.717
1 yr TBdZC 2/2003	0.698	0.717	0.698	0.698	0.656	0.698
1 yr TBd/s/1/2002 (91 Day TB)	0.698	0.68	0.698	0.633	0.767	0.698
1 yr TBd/s/2/2002 (91 Day TB)	0.698	0.698	0.698	0.71	0.698	0.698
1 yr TBd/s/2/2002 (91 Day TB)	0.698	0.767	0.698	0.68	0.698	0.698
1 yr TBd/s/3/2001 (91 Day TB)	0.698	0.767	0.698	0.698	0.698	0.633
1 yr TBd/s/4/2001 (91 Day TB)	0.698	0.698	0.698	0.767	0.698	0.68
1 yr TBd/s/7/2001 (91 Day TB)	0.698	0.68	0.698	0.698	0.71	0.698
TWO YEAR BONDS						
2 yr TBd FR 1/2001 (91 Day MA. TB +0.50%)	0.663	0.663	0.673	0.663	0.663	0.663
2 yr TBd FR 2/2001 (91 Day MA. TB +0.50%)	0.663	0.663	0.663	0.663	0.653	0.663
2 yr TBd FR7/2000 (91 Day MA. TB +0.50%)	0.663	0.625	0.663	0.637	0.673	0.663
2 yr TBd/s/1/2002 (91 Day TB)	0.717	0.656	0.698	0.763	0.698	0.698
2 yr TBd/s/2/2002 (91 Day TB)	0.698	0.698	0.746	0.698	0.698	0.698
2 yr TBd/s/3/2001 (91 Day TB)	0.698	0.698	0.656	0.763	0.698	0.717
2 yr TBd/s/4/2001 (91 Day TB)	0.698	0.717	0.698	0.698	0.656	0.698
2 yr TBd/s/5/2001 (91 Day TB)	0.698	0.698	0.698	0.717	0.698	0.763
2 yr TBd/s/6/2001 (91 Day TB)	0.698	0.698	0.656	0.698	0.698	0.717
2 yr TBd/s/7/2000 (91 Day TB)	0.698	0.717	0.698	0.698	0.656	0.698
2 yr TBd/s/9/2001 (91 Day TB)	0.698	0.656	0.763	0.698	0.698	0.698
THREE YEAR BONDS						
3 yr TBd 1/2001 (91 Day MA TB + 0.625%)	0.674	0.72	0.674	0.63	0.674	0.674
3 yr TBd 2/1999 (91 Day MA TB + 0.625%)	0.674	0.674	0.674	0.72	0.674	0.63
3 yr TBd 2/2000 (91 Day MA TB + 0.625%)	0.674	0.735	0.63	0.674	0.735	0.674
3 yr TBd 2/2001 (91 Day MA TB + 0.625%)	0.674	0.72	0.674	0.674	0.674	0.674
3 yr TBd 3/2000 (91 Day MA TB + 0.65%)	0.676	0.676	0.676	0.676	0.676	0.676
3 yr TBd 3/2001 (91 Day MA TB + 0.625%)	0.674	0.674	0.63	0.674	0.72	0.735
3 yr TBd 4/2000 (91 Day MA TB + 0.65%)	0.676	0.676	0.676	0.676	0.676	0.676
3 yr TBd 5/2000 (91 Day MA TB + 0.65%)	0.676	0.676	0.676	0.676	0.676	0.676
3 yr TBd FR 1/2001 (91 Day MA. TB + 0.50%)	0.663	0.663	0.663	0.663	0.663	0.663
3 yr TBd FR 1/2001 (91 Day MA. TB + 0.625%)	0.674	0.674	0.72	0.674	0.674	0.63
3 yr TBd FR 2/2001 (91 Day MA. TB + 0.50%)	0.663	0.663	0.663	0.663	0.663	0.663
3 yr TBd FR 2/2001 (91 Day MA. TB + 0.625%)	0.674	0.674	0.63	0.674	0.72	0.674
3 yr TBd FR 3/2001 (91 Day MA. TB + 0.50%)	0.663	0.663	0.663	0.663	0.663	0.663
3 yr TBd FR 3/2001 (91 Day MA. TB + 0.625%)	0.674	0.72	0.674	0.735	0.63	0.674
3 yr TBd/s/1/2002 (91 Day TB)	0.698	0.768	0.698	0.682	0.759	0.698
3 yr TBd/s/10/2001 (91 Day TB)	0.698	0.698	0.625	0.698	0.698	0.698
3 yr TBd/s/11/2001 (91 Day TB)	0.698	0.698	0.759	0.698	0.698	0.674
3 yr TBd/s/2/2002 (91 Day TB)	0.698	0.768	0.698	0.674	0.759	0.698

1.083	1 083	1.041	1 083	1 103	1 083	12.856
1.15236842	0.76084211	1.15473684	1.15705263	1.15784211	1.15336842	13.5207895
0.937727	0.741964	0.941847	0.9375035	0.9419315	0.936684	11.685197

JUL	AUG	SEP	OCT	NOV	DEC	Return per annum(%)
0 182	0 195	0 182	0 348	0 182	0 705	6 05
						4.23
						4 165
0 128	0 105	0 128	0 16	0 128	0.105	4.928
0 128	0 128	0 128	0 128	0.16	0 128	5
0 128	0 128	0.16	0 128	0 128	0.128	5.039
0 145	0 105	0.128	0 16	0 128	0 128	4.986
0 128	0 128	0 145	0 128	0 16	0.128	5 056
0 128	0.16	0.128	0 145	0 105	0 128	4 976
0 14	0.171	0.169	0 125	0.14	0 14	4 873
0 14	0.14	0.124	0 127	0 14	0.14	4 779
0 14	0 14	0 112	0 14	0 16	0 14	4 756
0 113	0 128	0 118	0 128	0.159	0.128	5 004
0 128	0 138	0 128	0 128	0.113	0 128	4 999
0 128	0 118	0 128	0 128	0 128	0 159	5.019
0 128	0 113	0 128	0 118	0 128	0 128	4 908
0.113	0 128	0.113	0 138	0 113	0 128	5.005
0 128	0.159	0 113	0.128	0 118	0 113	4.924
0.113	0 128	0.128	0.159	0 128	0.128	4 949
0 128	0 128	0 113	0 138	0 128	0.128	4 974
0 15	0 216	0.216	0.167	0.15	0 15	5.095
0 15	0 166	0.15	0 247	0.15	0.15	5.059
0 15	0 15	0 15	0 15	0 15	1 012	5.884
0 15	0 167	0 216	0 15	0 15	0 15	5 073
0 153	0.153	0.183	0 153	0 216	0.676	5.59
0.216	0 15	0.166	0 167	0 15	0.674	5.63
0.153	0 153	0.153	0.153	0.153	0 676	5.497
0.153	0.167	0.216	0.168	0.153	0 676	5.589
0 14	0.109	0.181	0.14	0 14	0.14	4.828
0.15	0.15	0.216	0.15	0.15	0.15	5.012
0.171	0.171	0.168	0 157	0.166	0.14	4.951
0.15	0 15	0.15	0.15	0.216	0.216	5.078
0.14	0 14	0.14	0 14	0.14	0.14	4 818
0 15	0 15	0 15	0.15	0.15	0 15	5.007
0 128	0.159	0.157	0.128	0.191	0.128	5.194
0 157	0 128	0 161	0 128	0 128	0.128	4 945
0 128	0 191	0 128	0 157	0 161	0.128	5 118
0 128	0.157	0.128	0 128	0.128	0.128	5 092

3 yr TBd/s/3/2001 (91 Day TB)	0 698	0 698	0 698	0 698	0.768	0.698
3 yr TBd/s/3/2002 (91 Day TB)	0 698	0 698	0 682	0 674	0 698	0 698
3 yr TBd/s/3/99 (91 Day TB)	0 698	0 759	0 768	0 698	0 698	0 698
3 yr TBd/s/4/2000 (91 Day TB)	0 698	0 698	0 674	0 682	0 698	0.768
3 yr TBd/s/4/2001 (91 Day TB)	0 698	0 682	0 698	0.674	0 682	0 698
3 yr TBd/s/5/2000 (91 Day TB)	0.698	0 698	0.698	0 759	0.768	0 698
3 yr TBd/s/5/2001 (91 Day TB)	0.698	0 768	0.698	0.698	0 768	0.698
3 yr TBd/s/6/2000 (91 Day TB)	0.698	0 768	0.698	0.682	0.698	0.698
3 yr TBd/s/6/2001 (91 Day TB)	0.698	0.698	0 759	0.674	0 698	0.768
3 yr TBd/s/6/2001 (91 Day TB)	0.698	0.698	0.698	0.698	0.768	0.698
3 yr TBd/s/7/2000 (91 Day TB)	0.698	0.698	0.698	0.759	0.698	0 698
3 yr TBd/s/7/2001 (91 Day TB)	0.698	0.768	0.698	0.682	0.674	0 698
3 yr TBd/s/8/2001 (91 Day TB)	0 698	0 698	0 698	0.698	0 698	0 698
3 yr TBd/s/9/2001 (91 Day TB)	0.698	0 682	0 759	0 698	0 698	0 698
FOUR YEAR BONDS						
4 yr TBd FR 1/2001 (91 Day TB + 0 70%)	0 757	0.711	0 735	0 757	0 781	0 757
FIVE YEAR BONDS						
5 yr TBd FR 1/2001 (91 Day TB + 0 75%)	0 761	0.761	0 691	0 761	0 793	0.761
5 yr TBd/s/1/2002 (91 Day TB)	0.698	0.698	0.668	0.698	0 668	0.698
SIX YEAR BONDS						
6 yr TBd/1/2001 (91 Day TB +0.80%)	0.765	0.765	0.765	0.765	0.765	0.765
6 yr TBd/1/2002 (91 Day TB +0.80%)	0.765	0.765	0.765	0.765	0.765	0.765
6 yr TBd FR 1/2001 (91 Day MA. TB + 0.50%)	0.663	0.663	0.663	0 663	0.663	0.663
6 yr TBd FR 1/2001 (91 Day MA TB + 0.80%)	0.668	0 668	0 668	0 668	0 668	0 668
Average Government Floating Bond Returns	0.69374576	0.7030678	0 69266102	0.697	0 70108475	0.69559322
ONE YEAR BONDS						
1 yr TBdFXD 1/2002 (Fxd at 10 75%)	0.896	0.896	0.896	0.932	0 932	0 943
1 yr TBdFXD 1/2002 (Fxd at 11.75%)	0.979	0.979	0.979	1.04	0 979	1 016
1 yr TBdFXD 1/2002 (Fxd at 13%)	1.083	1 072	1.072	1 072	1.072	1 072
1 yr TBdFXD 2/2002 (Fxd at 10 75%)	0 896	0.896	0.896	0.896	0.896	0.896
18 months TBd FXT 1/2001 (Fxd at 14 5%)	1.208	1.311	1.208	1.137	1 208	1.253
18 months TBd FXT 2/2001 (Fxd at 14 5%)	1.208	1 208	1.273	1.208	1 131	1.208
TWO YEAR BONDS						
2 yr TBd FXD 1/2002 (Fxd at 12%)	1	1	1	0.953	0 982	1.047
2 yr TBd FXD 1/2002 (Fxd at 13%)	1.083	1 122	1.083	1.074	1 083	1.083
2 yr TBd FXD 1/2003 (Fxd at 11.25%)	0.958	0.958	0.958	0.958	0.958	0.958
2 yr TBd FXD 2/2002 (Fxd at 11 25%)	0.938	0 899	0 938	0 885	0.938	0 938
2 yr TBd FXD 3/2002 (Fxd at 11 5%)	0 938	0 938	0 938	0 965	0 99	0.938
2 yr TBd FXD 1/2001 (Fxd at 14 75%)	1.229	1.229	1 229	1.229	1.229	1.229
2 yr TBd FXD 2/2001 (Fxd at 14 25%)	1 188	1 188	1.226	1 178	1.188	1 188
2 yr TBd FXD 2/2001 (Fxd at 14.25%)	1 188	1 188	1.135	1.226	1 188	1.188
2 yr TBd FXD 2/2001 (Fxd at 13%)	1 083	1 083	1.083	1.093	1 083	1.112
THREE YEAR BONDS						

0.206	0.128	0.157	0.154	0.128	0.128	5.159
0.095	0.189	0.128	0.128	0.161	0.191	5.04
0.128	0.128	0.128	0.128	0.128	0.128	5.087
0.128	0.157	0.157	0.157	0.161	0.128	5.106
0.195	0.128	0.128	0.191	0.128	0.191	5.093
						4.319
0.128	0.968	0.128	0.195	0.128	0.128	6.003
						4.242
0.128	0.128	0.068	0.128	0.128	0.128	5.003
0.128	0.128	0.191	0.195	0.128	0.128	5.156
						4.249
0.191	0.128	0.128	0.128	0.068	0.128	4.989
0.128	0.068	0.128	0.128	0.128	0.128	4.896
0.128	0.128	0.094	0.128	0.191	0.195	5.097
0.218	0.187	0.301	0.219	0.187	0.187	5.797
0.22	0.191	0.252	0.191	0.242	0.191	5.815
0.128	0.128	0.154	0.128	0.159	0.128	4.953
0.765	0.765	0.765	0.765	0.765	0.765	9.18
0.765	0.765	0.765	0.765	0.765	0.765	9.18
0.663	0.663	0.663	0.663	0.663	0.663	7.956
0.668	0.668	0.668	0.668	0.668	0.668	8.016
0.18690741	0.20207407	0.19268519	0.19437037	0.18914815	0.24981481	5.39815254
0.896	0.896	0.896	0.896	0.896	0.896	10.871
0.979	0.979	1.005	0.979	0.979	0.979	11.872
1.072	1.072	1.072	1.072	1.072	1.072	12.875
0.896	0.896	0.896	0.896	0.896	0.896	10.752
1.208	1.208	1.238	1.208	1.208	1.208	14.603
1.208	1.208	1.208	1.208	1.238	1.208	14.514
1	1.028	1.028	1	1.029	1.031	12.098
1.083	1.114	1.083	1.083	1.083	1.083	13.057
0.958	0.958	0.958	0.928	0.958	0.958	11.466
0.938	0.907	0.938	0.938	0.912	0.938	11.107
0.938	0.923	0.938	0.966	0.938	0.938	11.348
1.229	1.229	1.229	1.229	1.229	1.229	14.748
1.188	1.188	1.172	1.188	1.224	1.188	14.304
1.188	1.188	1.157	1.188	1.188	1.188	14.21
1.083	1.055	1.083	1.083	1.055	1.083	12.979

3 yr TBd FXD 1/2002 (Fxd at 13%)	1.083	1.083	1.083	1.083	1.083	1.083
3 yr TBd FXD 1/2003 (Fxd at 12%)	1	1	1.046	1.043	1.018	1.018
3 yr TBd FXD 2/2002 (Fxd at 13%)	1.083	1.083	1.111	1.083	1.083	1.083
3 yr TBd FXD 2/2002 (Fxd at 12.25%)	1.021	1.021	1.089	1.021	1.052	1.021
3 yr TBd FXD 2/2003 (Fxd at 5.25%)	0.438	0.438	0.453	0.462	0.438	0.438
3 yr TBd FXD 3/2002 (Fxd at 12.25%)	1.021	0.974	1.021	0.998	1.021	1.089
3 yr TBd FXD 3/2002 (Fxd at 13%)	1.083	1.083	1.161	1.083	1.114	1.083
3 yr TBd FXD 3/2003 (Fxd at 4%)	0.333	0.333	0.348	0.333	0.343	0.333
3 yr TBd FXD 1/2002 (Fxd at 14.25%)	1.188	1.188	1.107	1.188	1.188	1.188
3 yr TBd FXD 2/2001 (Fxd at 13%)	1.083	1.083	1.083	1.122	1.083	1.083
3 yr TBd FXD 2/2002 (Fxd at 13%)	1.083	1.083	1.122	1.122	1.122	1.122
3 yr TBd FXD 2/2002 (Fxd at 13.75%)	1.146	1.146	1.207	1.146	1.205	1.146
FOUR YEAR BONDS						
4 yr TBd FXD 1/2002 (Fxd at 13%)	1.083	1.083	1.113	1.083	1.083	1.083
4 yr TBd FXD 1/2002 (Fxd at 13.75%)	1.146	1.146	1.183	1.169	1.146	1.146
4 yr TBd FXD 1/2003 (Fxd at 12.5%)	1.042	1.066	1.042	1.074	1.042	1.074
4 yr TBd FXD 2/2002 (Fxd at 13.25%)	1.104	1.18	1.104	1.081	1.104	1.104
4 yr TBd FXD 2/2003 (Fxd at 9.5%)	0.792	0.792	0.792	0.792	0.759	0.792
4 yr TBd FXD 3/2003 (Fxd at 9.5%)	0.792	0.824	0.792	0.792	0.761	0.823
4 yr TBd FXD 1/2002 (Fxd at 14%)	1.167	1.167	1.167	1.137	1.089	1.167
FIVE YEAR BONDS						
5 yr TBd FXD 1/2002 (Fxd at 13%)	1.083	1.083	1.103	1.083	1.113	1.083
5 yr TBd FXD 1/2002 (Fxd at 14%)	1.167	1.167	1.199	1.167	11.699	1.167
5 yr TBd FXD 1/2003 (Fxd at 13.50%)	1.125	1.158	1.125	1.156	1.125	1.125
5 yr TBd FXD 2/2002 (Fxd at 14%)	1.167	1.167	1.199	1.167	1.198	1.167
5 yr TBd FXD 2/2003 (Fxd at 11.50%)	0.958	0.958	0.958	0.958	0.958	0.958
5 yr TBd FXD 3/2002 (Fxd at 13.50%)	1.125	1.125	1.153	1.125	1.113	1.125
5 yr TBd FXD 3/2003 (Fxd at 5.50%)	0.458	0.458	0.465	0.498	0.489	0.458
5 yr TBd FXD 1/2002 (Fxd at 14.50%)	1.208	1.208	1.239	1.208	1.198	1.208
SIX YEAR BONDS						
6 yr TBd 1/2002 (Fxd at 13%)	1.083	1.083	1.144	1.083	1.083	1.083
6 yr TBd 1/2002 (Fxd at 14.25%)	1.188	1.188	1.188	1.188	1.213	1.188
SEVEN YEAR BONDS						
7 yr TBd FXD 1/2003 (Fxd at 13.75%)	1.146	1.146	1.177	1.146	1.146	1.146
7 yr TBd FXD 2/2003 (Fxd at 13.75%)	1.146	1.146	1.146	1.177	1.146	1.146
EIGHT YEAR BONDS						
8 yr TBd FXD 2/2003 (Fxd at 7%)	0.583	0.583	0.553	0.583	0.558	0.583
8 yr TBd FXD 1/2003 (Fxd at 12.50%)	1.042	1.042	1.073	1.042	1.073	1.042
NINE YEAR BONDS						
9 yr TBd FXD 2/2003 (Fxd at 12.75%)	1.063	1.063	1.093	1.063	1.063	1.063
9 yr TBd FXD 1/2003 (Fxd at 12.75%)	1.063	1.063	1.124	1.063	1.003	1.063
TEN YEAR BONDS						
10 yr TBd FXD 2/2003 (Fxd at 8.50%)	0.708	0.708	0.784	0.708	0.79	0.708

1.083	1.083	1.115	1.083	1.083	1.083	13.028
1.12	1.033	38.417	1.031	1.031	1	49.757
1.083	1.119	1.083	1.115	1.083	1.083	13.092
1.087	1.021	1.047	1.021	1.021	1.021	12.443
0.438	0.438	0.438	0.438	0.498	0.438	5.355
1.021	1.021	1.08	1.021	1.021	1.021	12.309
1.083	1.123	1.083	1.083	1.083	1.083	13.145
0.333	0.414	0.333	0.364	0.333	0.333	4.133
1.188	1.188	1.188	1.218	1.188	1.188	14.205
1.122	1.083	1.083	1.083	1.083	1.082	13.073
1.122	1.122	1.122	1.122	1.122	1.122	13.386
1.146	1.177	1.146	1.22	1.146	1.146	13.977

1.083	1.099	1.083	1.083	1.083	1.083	13.042
1.146	1.177	1.146	1.146	1.146	1.146	13.843
1.042	1.042	0.933	1.068	1.042	1.042	12.509
1.09	1.104	1.104	1.104	1.104	1.104	13.287
0.828	0.792	0.756	0.792	0.792	0.792	9.471
0.792	0.792	0.807	0.775	0.792	0.792	9.534
1.198	1.167	1.195	1.167	1.226	1.167	14.014

1.083	1.114	1.083	1.052	1.083	1.083	13.046
1.167	1.156	1.167	1.23	1.167	1.167	24.62
1.125	1.156	1.125	1.125	1.141	1.125	13.611
1.167	1.198	1.167	1.167	1.167	1.167	14.098
0.958	0.958	0.958	0.958	0.958	0.958	0.958
1.125	1.169	1.125	1.185	1.131	1.125	13.626
0.458	0.487	0.49	0.492	0.458	0.458	5.669
1.208	1.208	1.27	1.208	1.208	1.208	14.579

1.083	1.099	1.083	1.083	1.083	1.083	13.073
1.188	1.183	1.188	1.213	1.188	1.188	14.301

1.146	1.177	1.146	1.177	1.146	1.146	13.845
1.146	1.146	1.146	1.146	1.175	1.146	13.812

0.583	0.612	0.583	0.598	5.874	0.583	12.276
1.042	1.042	1.068	1.042	1.042	1.042	12.592

1.063	1.094	1.063	1.063	1.063	1.063	12.817
1.063	1.063	1.063	1.094	1.063	1.063	12.788

0.708	0.74	0.708	0.735	0.708	0.708	8.713

10 yr TBd FXD 1/2003 (Fxd at 13.25%)	1 104	1 104	1 104	1 13

1.104	1.104	1.104	1.113	1.104	1.104	1.136	1.104	13.315

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Return per annum(%)
Average Government Fixed Bond Returns	1.01884615	1.02288462	1.03394231	1.02313462	1.22428846	1.02619231	1.02473077	1.02998077	1.74225	1.02823077	1.12640385	1.01996154	13.3208462
Average Government Bond Returns	0.8563	0.863345	0.864827	0.86075	0.963747	0.8604505	0.585494	0.596445	0.947143	0.59211	0.6381915	0.6242485	9.2530515

BOND RETURNS 2004

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Return per annum(%)
1 yr TBd FXD 1/2002 (Fxd at 10.75%)	0.895	0.895	0.895	0.895	0.895	0.895	0.895	0.895	0.895	0.895	0.895	0.895	10.74
1yr TBd FXD 2/2002 (Fxd at 10.75%)	0.895	0.895	0.895	0.895	0.895	0.895	0.895	0.895	0.895	0.895	0.895	0.895	10.74
TWO YEAR BONDS													
2 yr TBd FXT 1/2001 (Fxd at 14.75%)	1.227	1.227	1.227	1.227	1.227	1.227	1.227	1.227	1.227	1.227	1.227	1.227	14.724
2 yr TBd FXT 1/2002 (Fxd at 13%)	1.083	1.083	1.083	1.083	1.083	1.083	1.083	1.083	1.083	1.083	1.083	1.083	12.996
2 yr TBd FXT 2/2001 (Fxd at 13%)	1.083	1.083	1.083	1.083	1.083	1.083	1.083	1.083	1.083	1.083	1.083	1.083	12.996
2 yr TBd FXT 2/2002 (Fxd at 13%)	1.083	1.083	1.083	1.083	1.083	1.083	1.083	1.083	1.083	1.083	1.083	1.083	12.996
2 yr TBd FXD 1/2003 (Fxd at 11.25%)	0.9375	0.9375	0.9375	0.9375	0.9375	0.9375	0.9375	0.9375	0.9375	0.9375	0.9375	0.9375	11.25
2 yr TBd FXD 1/2002 (Fxd at 12%)	1	1	1	1	1	1	1	1	1	1	1	1	12
2 yr TBd FXD 2/2002 (Fxd at 11.25%)	0.9375	0.9375	0.9375	0.9375	0.9375	0.9375	0.9375	0.9375	0.9375	0.9375	0.9375	0.9375	11.25
2 yr TBd FXD 3/2002 (Fxd at 11.50%)	0.958	0.958	0.958	0.958	0.958	0.958	0.958	0.958	0.958	0.958	0.958	0.958	11.496
2 yr TBd FXD 2/2004 (Fxd at 4.25%)	0.354	0.354	0.354	0.354	0.354	0.354	0.354	0.354	0.354	0.354	0.354	0.354	4.248
2 yr TBd FXD 1/2004 (Fxd at 4.0%)	0.333	0.333	0.333	0.333	0.333	0.333	0.333	0.333	0.333	0.333	0.333	0.333	3.996
THREE YEAR BONDS													
3 yr TBd FXD 1/2003 (Fxd at 12.00%)	1	1	1	1	1	1	1	1	1	1	1	1	12
3 yr TBd FXD 2/2003 (Fxd at 5.25%)	0.4375	0.4375	0.4375	0.4375	0.4375	0.4375	0.4375	0.4375	0.4375	0.4375	0.4375	0.4375	5.25
3 yr TBd FXD 2/2002 (Fxd at 12.25%)	1.021	1.021	1.021	1.021	1.021	1.021	1.021	1.021	1.021	1.021	1.021	1.021	12.252
3 yr TBd FXD 1/2002 (Fxd at 13%)	1.083	1.083	1.083	1.083	1.083	1.083	1.083	1.083	1.083	1.083	1.083	1.083	12.996
3 yr TBd FXD 3/2002 (Fxd at 12.25%)	1.021	1.021	1.021	1.021	1.021	1.021	1.021	1.021	1.021	1.021	1.021	1.021	12.252
3 yr TBd FXD 3/2003 (Fxd at 4%)	0.333	0.333	0.333	0.333	0.333	0.333	0.333	0.333	0.333	0.333	0.333	0.333	3.996
3 yr TBd FXT 1/2002 (Fxd at 14.25%)	1.1875	1.1875	1.1875	1.1875	1.1875	1.1875	1.1875	1.1875	1.1875	1.1875	1.1875	1.1875	14.25
3 yr TBd FXT 2/2002 (Fxd at 13.75%)	1.146	1.146	1.146	1.146	1.146	1.146	1.146	1.146	1.146	1.146	1.146	1.146	13.752
3 yr TBd FXD 4/2003 (Fxd at 4.00%)	0.333	0.333	0.333	0.333	0.333	0.333	0.333	0.333	0.333	0.333	0.333	0.333	3.996
FOUR YEAR BONDS													
4 yr TBd FXD 1/2002 (Fxd at 13.75%)	1.146	1.146	1.146	1.146	1.146	1.146	1.146	1.146	1.146	1.146	1.146	1.146	13.752
4 yr TBd FXt 1/2002 (Fxd at 14%)	1.167	1.167	1.167	1.167	1.167	1.167	1.167	1.167	1.167	1.167	1.167	1.167	14.004
4 yr TBd FXD 2/2002 (Fxd at 13.25%)	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	13.248
4 yr TBd FXD 3/2003 (Fxd at 9.5%)	0.792	0.792	0.792	0.792	0.792	0.792	0.792	0.792	0.792	0.792	0.792	0.792	9.504
4 yr TBd FXD 2/2003 (Fxd at 9.5%)	0.792	0.792	0.792	0.792	0.792	0.792	0.792	0.792	0.792	0.792	0.792	0.792	9.504
4 yr TBd FXD 1/2003 (Fxd at 12.5%)	1.042	1.042	1.042	1.042	1.042	1.042	1.042	1.042	1.042	1.042	1.042	1.042	12.504
4 yr TBd FXD 1/2004 (Fxd at 5.00%)	0.417	0.417	0.417	0.417	0.417	0.417	0.417	0.417	0.417	0.417	0.417	0.417	5.004
FIVE YEAR BONDS													
5 yr TBd FXD 2/2002 (Fxd at 14%)	1.167	1.167	1.167	1.167	1.167	1.167	1.167	1.167	1.167	1.167	1.167	1.167	14.004
5 yr TBd FXD 1/2002 (Fxd at 14%)	1.167	1.167	1.167	1.167	1.167	1.167	1.167	1.167	1.167	1.167	1.167	1.167	14.004
5 yr TBd FXD 3/2003 (Fxd at 5.50%)	0.458	0.458	0.458	0.458	0.458	0.458	0.458	0.458	0.458	0.458	0.458	0.458	5.496
5 yr TBd FXD 3/2002 (Fxd at 13.50%)	1.125	1.125	1.125	1.125	1.125	1.125	1.125	1.125	1.125	1.125	1.125	1.125	13.5
5 yr TBd FXT 1/2002 (Fxd at 14.50%)	1.208	1.208	1.208	1.208	1.208	1.208	1.208	1.208	1.208	1.208	1.208	1.208	14.496
5 yr TBd FXD 2/2003 (Fxd at 11.50%)	0.958	0.958	0.958	0.958	0.958	0.958	0.958	0.958	0.958	0.958	0.958	0.958	11.496
5 yr TBd FXD 1/2003 (Fxd at 13.50%)	1.125	1.125	1.125	1.125	1.125	1.125	1.125	1.125	1.125	1.125	1.125	1.125	13.5

SIX YEAR BONDS					
6 yr TBd FXD 1/2002 (Fxd at 14.25%)	1 1875	1.1875	1 1875	1 1875	1 1875
6 yr TBd FXD 1/2003 (Fxd at 14.00%)	1 167	1.167	1 167	1.167	1 167
6 yr TBd FXD 2/2003 (Fxd at 11.50%)	0.958	0 958	0 958	0 958	0.958
6 yr TBd FXD 3/2003 (Fxd at 6.00%)	0 5	0 5	0 5	0 5	0 5
6 yr TBd FXD 1/2004 (Fxd at 6.50%)	0 542	0 542	0 542	0 542	0 542
SEVEN YEAR BONDS					
7 yr TBd FXD 2/2003 (Fxd at 13.75%)	1.146	1 146	1 146	1 146	1 146
7 yr TBd FXD 1/2003 (Fxd at 13.75%)	1 146	1 146	1.146	1 146	1.146
7 yr TBd FXD 1/2004 (Fxd at 6.75%)	0 5625	0.5625	0 5625	0 5625	0 5625
EIGHT YEAR BONDS					
8 yr TBd FXD 2/2003 (Fxd at 7.00%)	0.583	0 583	0 583	0 583	0 583
8 yr TBd FXD 1/2003 (Fxd at 12.50%)	1 042	1 042	1 042	1 042	1 042
8 yr TBd FXD 1/2004 (Fxd at 7 50%)	0 625	0 625	0 625	0 625	0 625
NINE YEAR BONDS					
9 yr TBd FXD 2/2003 (Fxd at 12.75%)	1 0625	1 0625	1 0625	1 0625	1 0625
9 yr TBd FXD 1/2003 (Fxd at 12.75%)	1 0625	1 0625	1 0625	1 0625	1 0625
TEN YEAR BONDS					
10 yr TBd FXD 2/2003 (Fxd at 8.50%)	0 708	0 708	0 708	0 708	0 708

1.1875	1.1875	1.1875	1.1875	1.1875	1.1875	1.1875	14.25
1.167	1.167	1.167	1.167	1.167	1.167	1.167	14.004
0.958	0.958	0.958	0.958	0.958	0.958	0.958	11.496
0.5	0.5	0.5	0.5	0.5	0.5	0.5	6
0.542	0.542	0.542	0.542	0.542	0.542	0.542	6.504
1.146	1.146	1.146	1.146	1.146	1.146	1.146	13.752
1.146	1.146	1.146	1.146	1.146	1.146	1.146	13.752
0.5625	0.5625	0.5625	0.5625	0.5625	0.5625	0.5625	6.75
0.583	0.583	0.583	0.583	0.583	0.583	0.583	6.996
1.042	1.042	1.042	1.042	1.042	1.042	1.042	12.504
0.625	0.625	0.625	0.625	0.625	0.625	0.625	7.5
1.0625	1.0625	1.0625	1.0625	1.0625	1.0625	1.0625	12.75
1.0625	1.0625	1.0625	1.0625	1.0625	1.0625	1.0625	12.75
0.708	0.708	0.708	0.708	0.708	0.708	0.708	8.496

10 yr TBd FXD 1/2003 (Fxd at 13.25%)	1.104	1 104	1 104	1 104
Average Government Fixed Bond Returns	**0.90824**	**0.90824**	**0.90824**	**0.90824**
	JAN	FEB	MAR	APR
ONE YEAR BONDS				
1 yr TBd FXD 1/2004 (Fxd at 3.75%)	0 3125	0 3125	0 3125	0.3125
1yr TBd FXD 2/2002 (Fxd at 10.75%)	0 896	0 896	0 934	0 896
TWO YEAR BONDS				
2 yr TBd FXT 1/2002 (Fxd at 13%)	1 083	1 083	1 083	1 083
2 yr TBd FXT 2/2002 (Fxd at 13%)	083	1 083	1 083	1 083
2 yr TBd FXT 1/2004 (Fxd at 5.25%)	0 4375	0 4375	0 4375	0 4375
2 yr TBd FXD 1/2003 (Fxd at 11.25%)	0.9375	0 9375	0 9375	0 9375
2 yr TBd FXD 1/2002 (Fxd at 12%)	1	[illegible]	[illegible]	1
2 yr TBd FXD 2/2002 (Fxd at 11.25%)	0 9375	0 9375	0 9375	0 9375
2 yr TBd FXD 3/2002 (Fxd at 11 25%)	0 9375	0 9375	0 9375	0 9375
2 yr TBd FXD 2/2004 (Fxd at 4.00%)	0.333	0 333	0 333	0.333
2 yr TBd FXD 1/2004 (Fxd at 4.25%)	0 354	0 354	0 354	0 354
2 yr TBd FXD 4/2004 (Fxd at 4.50%)	0.375	0 375	0 375	0 375
2 yr TBd FXD 3/2004 (Fxd at 4.25%)	0 354	0 354	0 354	0 354
2 yr TBd FXD 1/2005 (Fxd at 10.875%)	0 906	0 906	0.906	0 906
THREE YEAR BONDS				
3 yr TBd FXD 1/2003 (Fxd at 12.00%)	1	1		1
3 yr TBd FXD 2/2003 (Fxd at 5.25%)	0 4375	0 4375	0 4375	0 4375
3 yr TBd FXD 2/2002 (Fxd at 12.25%)	1 021	1 021	1 021	1 021
3 yr TBd FXD 2/2004 (Fxd at 4.00%)	0 333	0 333	0 333	0 333
3 yr TBd FXD 3/2003 (Fxd at 4.00%)	0 333	0 333	0.333	0 333
3 yr TBd FXT 1/2002 (Fxd at 14 25%)	1 1875	1 1875	1.1875	1 1875
3 yr TBd FXT 2/2002 (Fxd at 13.75%)	1 146	1 146	1.146	1 146
3 yr TBd FXD 1/2002 (Fxd at 13.00%)	1 083	1 083	1.083	1 083
3 yr TBd FXD 3/2002 (Fxd at 12.25%)	1.021	1.021	1.021	1 021
3 yr TBd FXD 4/2003 (Fxd at 4.00%)	0 333	0 333	0 333	0.333
3 yr TBd FXD 1/2004 (Fxd at 4.00%)	0 333	0.333	0.333	0 333
3 yr TBd FXD 1/2005 (Fxd at 4.00%)	0 333	0 333	0 333	0 333
FOUR YEAR BONDS				
4 yr TBd FXD 1/2002 (Fxd at 13.75%)	1 146	1 146	1 146	1 146
4 yr TBd FXt 1/2002 (Fxd at 4.25%)	0 354	0 354	0 354	0 354
4 yr TBd FXD 2/2002 (Fxd at 13.25%)	1 104	1 104	1 104	1 104
4 yr TBd FXD 3/2003 (Fxd at 4.50%)	0 375	0.375	0.375	0.375
4 yr TBd FXD 2/2003 (Fxd at 9 50%)	0 792	0 792	0 792	0 792
4 yr TBd FXD 1/2003 (Fxd at 12.50%)	1 042	1 042	1 042	1 042
4 yr TBd FXD 2/2004 (Fxd at 4.00%)	0 333	0 333	0 333	0 333
4 yr TBd FXD 1/2004 (Fxd at 5 00%)	0 417	0 417	0 417	0 417
FIVE YEAR BONDS				
5 yr TBd FXD 2/2002 (Fxd at 14%)	1 167	1 167	1 167	1 167
5 yr TBd FXD 1/2002 (Fxd at 14%)	1 167	1 167	1 167	1 167

1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	13.248
0.90824	**0.90824**	**0.90824**	**0.90824**	**0.90824**	**0.90824**	**0.90824**	**0.90824**	**10.89888**

BOND RETURNS 2005

MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Return per annum(%)
0.3125	0.3125	0.345	0.345	0.345	0.345	0.345	0.345	3.945
0.896	0.896	0.878	0.896	0.896	0.896	0.91	0.896	10.786
1.083	1.083	1.083	1.083	1.083	1.083	1.083	1.083	12.996
1.083	1.083	1.083	1.083	1.083	1.083	1.083	1.083	12.996
0.4375	0.4375	0.4375	0.4375	0.4375	0.4375	0.4375	0.4375	5.25
0.9375	0.9375	0.9375	0.9375	0.9375	0.9375	0.9375	0.9375	11.25
1	1		1	1	1	1	1	12
0.9375	0.9375	0.9375	0.9375	0.9375	0.9375	0.9375	0.9375	11.25
0.9375	0.9375	0.9375	0.9375	0.9375	0.9375	0.9375	0.9375	11.25
0.333	0.333	0.333	0.333	0.333	0.333	0.333	0.333	3.996
0.354	0.354	0.354	0.354	0.354	0.354	0.354	0.354	4.248
0.375	0.375	0.375	0.375	0.375	0.375	0.375	0.375	4.5
0.354	0.354	0.354	0.354	0.354	0.354	0.354	0.354	4.248
0.906	0.906	0.906	0.906	0.906	0.906	0.906	0.906	10.872
1	1	1	1	1	1	1	1	12
0.4375	0.4375	0.4375	0.4375	0.4375	0.4375	0.4375	0.4375	5.25
1.021	1.021	1.021	1.021	1.021	1.021	1.021	1.021	12.252
0.333	0.333	0.333	0.333	0.333	0.333	0.333	0.333	3.996
0.333	0.333	0.333	0.333	0.333	0.333	0.333	0.333	3.996
1.1875	1.1875	1.1875	1.1875	1.1875	1.1875	1.1875	1.1875	14.25
1.146	1.146	1.146	1.146	1.146	1.146	1.146	1.146	13.752
1.083	1.083	1.083	1.083	1.083	1.083	1.083	1.083	12.996
1.021	1.021	1.021	1.021	1.021	1.021	1.021	1.021	12.252
0.333	0.333	0.333	0.333	0.333	0.333	0.333	0.333	3.996
0.333	0.333	0.333	0.333	0.333	0.333	0.333	0.333	3.996
0.333	0.333	0.333	0.333	0.333	0.333	0.333	0.333	3.996
1.146	1.146	1.146	1.146	1.146	1.146	1.146	1.146	13.752
0.354	0.354	0.354	0.354	0.354	0.354	0.354	0.354	4.248
1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	13.248
0.375	0.375	0.375	0.375	0.375	0.375	0.375	0.375	4.5
0.792	0.792	0.792	0.792	0.792	0.792	0.792	0.792	9.504
1.042	1.042	1.042	1.042	1.042	1.042	1.042	1.042	12.504
0.333	0.333	0.333	0.333	0.333	0.333	0.333	0.333	3.996
0.417	0.417	0.417	0.417	0.417	0.417	0.417	0.417	5.004
1.167	1.167	1.167	1.167	1.167	1.167	1.167	1.167	14.004
1.167	1.167	1.167	1.167	1.167	1.167	1.167	1.167	14.004

5 yr TBd FXD 3/2003 (Fxd at 5.50%)	0 458	0.458	0 458	0 458	0.458
5 yr TBd FXD 3/2002 (Fxd at 13.50%)	1.125	1.125	1 125	1 125	1.125
5 yr TBd FXT 1/2002 (Fxd at 14.50%)	1.208	1 208	1 208	1 208	1.208
5 yr TBd FXD 2/2003 (Fxd at 11.50%)	0 958	0.958	0 958	0 958	0.958
5 yr TBd FXD 1/2003 (Fxd at 13.50%)	1 125	1 125	1 125	1 125	1 125
5 yr TBd FXD 1/2004 (Fxd at 6.00%)	0 5	0 5	0 5	0 5	0 5
5 yr TBd FXD 1/2005 (Fxd at 6.00%)	0 5	0 5	0 5	0 5	0.5
SIX YEAR BONDS					
6 yr TBd FXD 1/2002 (Fxd at 14.25%)	1 1875	1 1875	1 1875	1 1875	1 1875
6 yr TBd FXD 1/2003 (Fxd at 14.00%)	1.167	1 167	1 167	1 167	1 167
6 yr TBd FXD 2/2003 (Fxd at 11.50%)	0 958	0 958	0 958	0 958	0 958
6 yr TBd FXD 3/2003 (Fxd at 6 00%)	0 5	0.5	0 5	0 5	0.5
6 yr TBd FXD 2/2004 (Fxd at 6 75%)	0 5625	0 5625	0 5625	0 5625	0 5625
6 yr TBd FXD 1/2004 (Fxd at 6 50%)	0 542	0 542	0 542	0 542	0 542
SEVEN YEAR BONDS					
7 yr TBd FXD 2/2003 (Fxd at 6.50%)	0 542	0 542	0.542	0 542	0.542
7 yr TBd FXD 1/2003 (Fxd at 13.75%)	1.146	1 146	1 146	1 146	1.146
7 yr TBd FXD 2/2004 (Fxd at 7.00%)	0 583	0 583	0.583	0.583	0.583
7 yr TBd FXD 1/2004 (Fxd at 6.75%)	0 5625	0 5625	0 5625	0 5625	0 5625
EIGHT YEAR BONDS					
8 yr TBd FXD 2/2003 (Fxd at 7%)	0 583	0.583	0.583	0 583	0.583
8 yr TBd FXD 1/2003 (Fxd at 12.50%)	1.042	1.042	1.042	1.042	1 042
8 yr TBd FXD 1/2004 (Fxd at 7 50%)	0 625	0 625	0 625	0 625	0 625
NINE YEAR BONDS					
9 yr TBd FXD 2/2003 (Fxd at 12.75%)	1 0625	1 0625	1 0625	1 0625	1 0625
9 yr TBd FXD 1/2003 (Fxd at 12.75%)	1 0625	1.0625	1 0625	1 0625	1.0625
TEN YEAR BONDS					
10 yr TBd FXD 2/2003 (Fxd at 8.50%)	0 708	0.708	0 708	0 708	0 708
10 yr TBd FXD 1/2003 (Fxd at 13.25%)	1 104	1 104	1 104	1 104	1 104

0.458	0.458	0.458	0.458	0.458	0.458	0.458	5.496
1.125	1.125	1.125	1.125	1.125	1.125	1.125	13.5
1.208	1.208	1.208	1.208	1.208	1.208	1.208	14.496
0.958	0.958	0.958	0.958	0.958	0.958	0.958	11.496
1.125	1.125	1.125	1.125	1.125	1.125	1.125	13.5
0.5	0.5	0.5	0.5	0.5	0.5	0.5	6
0.5	0.5	[illegible]	0.5	0.5	0.5	0.5	6

1.1875	1.1875	1.1875	1.1875	1.1875	1.1875	1.1875	14.25
1.167	1.167	1.167	1.167	1.167	1.167	1.167	14.004
0.958	0.958	0.958	0.958	0.958	0.958	0.958	11.496
0.5	0.5	0.5	0.5	0.5	0.5	0.5	6
0.5625	0.5625	0.5625	0.5625	0.5625	0.5625	0.5625	6.75
0.542	0.542	0.542	0.542	0.542	0.542	0.542	6.504

0.542	0.542	0.542	0.542	0.542	0.542	0.542	6.504
1.146	1.146	1.146	1.146	1.146	1.146	1.146	13.752
0.583	0.583	0.583	0.583	0.583	0.583	0.583	6.996
0.5625	0.5625	0.5625	0.5625	0.5625	0.5625	0.5625	6.75

0.583	0.583	0.583	0.583	0.583	0.583	0.583	6.996
1.042	1.042	1.042	1.042	1.042	1.042	1.042	12.504
0.625	0.625	0.625	0.625	0.625	0.625	0.625	7.5

1.0625	1.0625	1.0625	1.0625	1.0625	1.0625	1.0625	12.75
1.0625	1.0625	1.0625	1.0625	1.0625	1.0625	1.0625	12.75

0.708	0.708	0.708	0.708	0.708	0.708	0.708	8.496
1.104	1.104	1.104	1.104	1.104	1.104	1.104	13.248

Average Government Fixed Bond Returns	0.77026667	0.77026667	0.7709	0.77026667	0.77026667	0.770
					BOND RETURNS 20	
	JAN	FEB	MAR	APR	MAY	JUN
ONE YEAR BONDS						
1 yr TBd FXD 1/2004 (Fxd at 3 75%)	0.3125	0.3125	0.3125	0.3125	0.3125	
TWO YEAR BONDS						
2 yr TBd FXT 1/2004 (Fxd at 5 25%)	0.4375	0.4375	0.4375	0.4375	0.4375	
2 yr TBd FXD 2/2004 (Fxd at 4 00%)	0.333	0.333	0.333	0.333	0.333	
2 yr TBd FXD 4/2004 (Fxd at 4.50%)	0.375	0.375	0.375	0.375	0.375	
2 yr TBd FXD 3/2004 (Fxd at 4.25%)	0.354	0.354	0.354	0.354	0.354	
2 yr TBd FXD 1/2005 (Fxd at 10.875%)	0.906	0.906	0.906	0.906	0.906	
2 yr TBd FXD 1/2004 (Fxd at 4.00%)	0.333	0.333	0.333	0.333	0.333	
2 yr TBd FXD 2/2005 (Fxd at 10.875%)	0.906	0.906	0.906	0.906	0.906	
THREE YEAR BONDS						
3 yr TBd FXD 1/2003 (Fxd at 12.00%)	1	1	1	1	1	
3 yr TBd FXD 2/2003 (Fxd at 12.25%)	1.021	1.021	1.021	1.021	1.021	
3 yr TBd FXD 2/2002 (Fxd at 12.25%)	1.021	1.021	1.021	1.021	1.021	
3 yr TBd FXD 2/2004 (Fxd at 5.25%)	0.4375	0.4375	0.4375	0.4375	0.4375	
3 yr TBd FXD 3/2003 (Fxd at 4.00%)	0.333	0.333	0.333	0.333	0.333	
3 yr TBd FXD 1/2002 (Fxd at 13.00%)	1.083	1.083	1.083	1.083	1.083	
3 yr TBd FXD 3/2002 (Fxd at 12.25%)	1.021	1.021	1.021	1.021	1.021	
3 yr TBd FXD 4/2003 (Fxd at 4.00%)	0.333	0.333	0.333	0.333	0.333	
3 yr TBd FXD 1/2004 (Fxd at 4.75%)	0.396	0.396	0.396	0.396	0.396	
3 yr TBd FXD 1/2005 (Fxd at11.625%)	0.969	0.969	0.969	0.969	0.969	
3 yr TBd FXD 2/2005 (Fxd at11.625%)	0.969	0.969	0.969	0.969	0.969	
FOUR YEAR BONDS						
4 yr TBd FXD 1/2002 (Fxd at 13.75%)	1.146	1.146	1.146	1.146	1.146	
4 yr TBd FXT 1/2002 (Fxd at 14 00%)	1.167	1.167	1.167	1.167	1.167	
4 yr TBd FXD 2/2002 (Fxd at 13.75%)	1.146	1.146	1.146	1.146	1.146	
4 yr TBd FXD 3/2003 (Fxd at 4.50%)	0.375	0.375	0.375	0.375	0.375	
4 yr TBd FXD 2/2003 (Fxd at 9.50%)	0.792	0.792	0.792	0.792	0.792	
4 yr TBd FXD 1/2003 (Fxd at 12 50%)	1.042	1.042	1.042	1.042	1.042	
4 yr TBd FXD 2/2004 (Fxd at 6.00%)	0.5	0.5	0.5	0.5	0.5	
4 yr TBd FXD 1/2004 (Fxd at 5.00%)	0.417	0.417	0.417	0.417	0.417	
4 yr TBd FXD 1/2005 (Fxd at 12.25%)	1.021	1.021	1.021	1.021	1.021	
FIVE YEAR BONDS						
5 yr TBd FXD 2/2002 (Fxd at 14.00%)	1.167	1.167	1.167	1.167	1.167	
5 yr TBd FXD 1/2002 (Fxd at 14 00%)	1.167	1.167	1.167	1.167	1.167	
5 yr TBd FXD 3/2003 (Fxd at 5.50%)	0.458	0.458	0.458	0.458	0.458	
5 yr TBd FXD 3/2002 (Fxd at 13 50%)	1.125	1.125	1.125	1.125	1.125	
5 yr TBd FXT 1/2002 (Fxd at 14.50%)	1.208	1.208	1.208	1.208	1.208	
5 yr TBd FXD 2/2003 (Fxd at 11.50%)	0.958	0.958	0.958	0.958	0.958	
5 yr TBd FXD 1/2003 (Fxd at 13.50%)	1.125	1.125	1.125	1.125	1.125	
5 yr TBd FXD 1/2004 (Fxd at 6 00%)	0.5	0.5	0.5	0.5	0.5	
5 yr TBd FXD 1/2005 (Fxd at 13.50%)	1.125	1.125	1.125	1.125	1.125	

26667 0.77060833 0.77080833 0.77080833 0.77080833 0.77104167 0.77080833 9.24701667

06

	JUL	AUG	SEP	OCT	NOV	DEC	Return per annum(%)
0.3125	0.3125	0.3125	0.3125	0.3125	0.3125	0.3125	3.75
0.4375	0.4375	0.4375	0.4375	0.4375	0.4375	0.4375	5.25
0.333	0.333	0.333	0.333	0.333	0.333	0.333	3.996
0.375	0.375	0.375	0.375	0.375	0.375	0.375	4.5
0.354	0.354	0.354	0.354	0.354	0.354	0.354	4.248
0.906	0.906	0.906	0.906	0.906	0.906	0.906	10.872
0.333	0.333	0.333	0.333	0.333	0.333	0.333	3.996
0.906	0.906	0.906	0.906	0.906	0.906	0.906	10.872
1	1	1	1	1	1	1	12
1.021	1.021	1.021	1.021	1.021	1.021	1.021	12.252
1.021	1.021	1.021	1.021	1.021	1.021	1.021	12.252
0.4375	0.4375	0.4375	0.4375	0.4375	0.4375	0.4375	5.25
0.333	0.333	0.333	0.333	0.333	0.333	0.333	3.996
1.083	1.083	1.083	1.083	1.083	1.083	1.083	12.996
1.021	1.021	1.021	1.021	1.021	1.021	1.021	12.252
0.333	0.333	0.333	0.333	0.333	0.333	0.333	3.996
0.396	0.396	0.396	0.396	0.396	0.396	0.396	4.752
0.969	0.969	0.969	0.969	0.969	0.969	0.969	11.628
0.969	0.969	0.969	0.969	0.969	0.969	0.969	11.628
1.146	1.146	1.146	1.146	1.146	1.146	1.146	13.752
1.167	1.167	1.167	1.167	1.167	1.167	1.167	14.004
1.146	1.146	1.146	1.146	1.146	1.146	1.146	13.752
0.375	0.375	0.375	0.375	0.375	0.375	0.375	4.5
0.792	0.792	0.792	0.792	0.792	0.792	0.792	9.504
1.042	1.042	1.042	1.042	1.042	1.042	1.042	12.504
0.5	0.5	0.5	0.5	0.5	0.5	0.5	6
0.417	0.417	0.417	0.417	0.417	0.417	0.417	5.004
1.021	1.021	1.021	1.021	1.021	1.021	1.021	12.252
1.167	1.167	1.167	1.167	1.167	1.167	1.167	14.004
1.167	1.167	1.167	1.167	1.167	1.167	1.167	14.004
0.458	0.458	0.458	0.458	0.458	0.458	0.458	5.496
1.125	1.125	1.125	1.125	1.125	1.125	1.125	13.5
1.208	1.208	1.208	1.208	1.208	1.208	1.208	14.496
0.958	0.958	0.958	0.958	0.958	0.958	0.958	11.496
1.125	1.125	1.125	1.125	1.125	1.125	1.125	13.5
0.5	0.5	0.5	0.5	0.5	0.5	0.5	6
1.125	1.125	1.125	1.125	1.125	1.125	1.125	13.5

SIX YEAR BONDS				
6 yr TBd FXD 1/2002 (Fxd at 14.25%)	1.1875	1.1875	1.1875	1.1875
6 yr TBd FXD 1/2003 (Fxd at 14.00%)	1.167	1.167	1.167	1.167
6 yr TBd FXD 2/2003 (Fxd at 11.50%)	0.958	0.958	0.958	0.958
6 yr TBd FXD 3/2003 (Fxd at 6.00%)	0.5	0.5	0.5	0.5
6 yr TBd FXD 2/2004 (Fxd at 6.75%)	0.5625	0.5625	0.5625	0.5625
6 yr TBd FXD 1/2004 (Fxd at 6.50%)	0.542	0.542	0.542	0.542
SEVEN YEAR BONDS				
7 yr TBd FXD 2/2003 (Fxd at 6.50%)	0.542	0.542	0.542	0.542
7 yr TBd FXD 1/2003 (Fxd at 13.75%)	1.146	1.146	1.146	1.146
7 yr TBd FXD 2/2004 (Fxd at 7.00%)	0.583	0.583	0.583	0.583
7 yr TBd FXD 1/2004 (Fxd at 6.75%)	0.5625	0.5625	0.5625	0.5625
EIGHT YEAR BONDS				
8 yr TBd FXD 2/2003 (Fxd at 7.00%)	0.583	0.583	0.583	0.583
8 yr TBd FXD 1/2003 (Fxd at 12.50%)	1.042	1.042	1.042	1.042
8 yr TBd FXD 1/2004 (Fxd at 7.50%)	0.583	0.583	0.583	0.583
NINE YEAR BONDS				
9 yr TBd FXD 2/2003 (Fxd at 9.50%)	0.792	0.792	0.792	0.792
9 yr TBd FXD 1/2003 (Fxd at 12.75%)	1.0625	1.0625	1.0625	1.0625
TEN YEAR BONDS				
10 yr TBd FXD 2/2003 (Fxd at 8.50%)	0.708	0.708	0.708	0.708
10 yr TBd FXD 1/2003 (Fxd at 13.25%)	1.104	1.104	1.104	1.104
Average Government Fixed Bond Returns	0.78897222	0.78897222	0.78897222	0.78897222

1.1875	1.1875	1.1875	1.1875	1.1875	1.1875	1.1875	1.1875	14.25
1.167	1.167	1.167	1.167	1.167	1.167	1.167	1.167	14.004
0.958	0.958	0.958	0.958	0.958	0.958	0.958	0.958	11.496
0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	6
0.5625	0.5625	0.5625	0.5625	0.5625	0.5625	0.5625	0.5625	6.75
0.542	0.542	0.542	0.542	0.542	0.542	0.542	0.542	6.504
0.542	0.542	0.542	0.542	0.542	0.542	0.542	0.542	6.504
1.146	1.146	1.146	1.146	1.146	1.146	1.146	1.146	13.752
0.583	0.583	0.583	0.583	0.583	0.583	0.583	0.583	6.996
0.5625	0.5625	0.5625	0.5625	0.5625	0.5625	0.5625	0.5625	6.75
0.583	0.583	0.583	0.583	0.583	0.583	0.583	0.583	6.996
1.042	1.042	1.042	1.042	1.042	1.042	1.042	1.042	12.504
0.583	0.583	0.583	0.583	0.583	0.583	0.583	0.583	6.996
0.792	0.792	0.792	0.792	0.792	0.792	0.792	0.792	9.504
1.0625	1.0625	1.0625	1.0625	1.0625	1.0625	1.0625	1.0625	12.75
0.708	0.708	0.708	0.708	0.708	0.708	0.708	0.708	8.496
1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	13.248
0.78897222	0.78897222	0.78897222	0.78897222	0.78897222	0.78897222	0.78897222	0.78897222	9.46766667