A
Primer

on

Government Securities Market

RESERVE BANK OF INDIA

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C o n t e n t s

A Primer on Government Securities Market

1. What is the need for investment in Government securities?

1.1 Holding of cash in excess of the day-to-day needs of a bank does not give any return to it. Investment in gold has attendant problems in regard to appraising its purity, valuation, safe custody, etc. Investing in Government securities has the following advantages:

- Besides providing a return in the form of coupons (interest), Government securities offer the maximum safety as they carry the Sovereign's commitment for payment of interest and repayment of principal.
- They can be held in book entry, i.e., dematerialized/ scripless form, thus, obviating the need for safekeeping.
- Government securities are available in a wide range of maturities from 91 days to as long as 30 years to suit the duration of a bank's liabilities.
- Government securities can be sold easily in the secondary market to meet cash requirements.
- Government securities can also be used as collateral to borrow funds in the repo market.
- The settlement system for trading in Government securities, which is based on Delivery versus Payment (DvP), is a very simple, safe and efficient system of settlement. The DvP mechanism ensures transfer of securities by the seller of securities simultaneously with transfer of funds from the buyer of the securities, thereby mitigating the settlement risk.
- Government security prices are readily available due to a liquid and active secondary market and a transparent price dissemination mechanism.
- Besides banks, insurance companies and other large investors, smaller investors like Co-operative banks, Regional Rural Banks, Provident Funds are also required to hold Government securities as indicated below:

A. Primary (Urban) Co-operative Banks

1.2 Section 24 of the Banking Regulation Act 1949, (as applicable to co-operative societies) provides that every primary (urban) cooperative bank shall maintain liquid assets, which at the close of business on any day, should not be less than 25 percent of its demand and time liabilities in India (in addition to the minimum cash reserve requirement). Such liquid assets shall be in the form of cash, gold or unencumbered Government and other approved securities. This is commonly referred to as the Statutory Liquidity Ratio (SLR) requirement.

1.3 All primary (urban) co-operative banks (UCBs) are presently required to invest a certain minimum level of their SLR holdings in the form of Government and other approved securities as indicated below:

a. Scheduled UCBs have to hold 25 per cent of their SLR requirement in government and other approved securities.
b. Non-scheduled UCBs with Demand and Time Liabilities (DTL) more than Rs. 25 crore have to hold 15 per cent of their SLR requirement in government and other approved securities.
c. Non-scheduled UCBs with DTL less than Rs. 25 crore have to hold 10 per cent of their SLR requirements in government and other approved securities.

B. Rural Co-operative Banks

1.4 As per Section 24 of the Banking Regulation Act 1949, the State Co-operative Banks (SCBs) and the District Central Co-operative Banks (DCCBs) are required to maintain in cash, gold or unencumbered approved securities, valued at a price not exceeding the current market price, an amount which shall not, at the close of business on any day, be less than 25 per cent of its demand and time liabilities as part of the SLR requirement. DCCBs are allowed to meet their SLR requirement by maintaining cash balances with their respective State Co-operative Bank.

C. Regional Rural Banks (RRBs)

1.5 Since April 2002, all the RRBs are required to maintain their entire Statutory Liquidity Ratio (SLR) holdings in Government and other approved securities. The current SLR requirement for the RRBs is 25 percent of their Demand and Time Liabilities (DTL).

1.6 Presently, RRBs have been exempted from the 'mark to market' norms in respect of their SLR-securities. Accordingly, RRBs have been given freedom to classify their entire investment portfolio of SLR-securities under 'Held to Maturity' and value them at book value.

D. Provident funds and other entities

1.7 The non-Government provident funds, superannuation funds and gratuity funds are required by the Central Government, effective from January 24, 2005, to invest 40 per cent of their incremental accretions in Central and State government securities, and/or units of gilt funds regulated by the Securities and Exchange Board of India (SEBI) and any other negotiable security fully and unconditionally guaranteed by the Central/State Governments. The exposure of a trust to any individual gilt fund, however, should not exceed five per cent of its total portfolio at any point of time. The investment guidelines for non-government PFs have been recently revised in terms of which investments up to 55% of the investible funds are permitted in a basket of instruments consisting of Central Government securities, State Government securities and units of gilt funds, effective from April 2009.

2. What is a Government Security?

2.1 A Government security is a tradable security issued by the Central Government or the State Governments, acknowledging the Government's debt obligation. Such securities can be short term (usually called Treasury Bills, with original maturities of less than 1 year) or long term (usually called Government bonds or dated securities with original maturity of one year or more). In India, the

Central Government issues both Treasury Bills and bonds or dated securities while the State Governments issue only bonds or dated securities, which are called the State Development Loans (SDLs). Government securities carry practically no risk of default and, hence, are called risk-free instruments. Government of India also issue savings instruments (Savings Bonds, National Saving Certificates (NSCs), etc.) or special securities (Oil bonds, FCI bonds, fertiliser bonds, power bonds, etc.) but they are usually not fully tradable and are not eligible for meeting the SLR requirement.

a. Treasury Bills (T-Bills)

2.2 Treasury Bills, which are money market instruments, are short term debt instruments issued by the Government of India and are presently issued in three tenors, viz., 91 day, 182 day and 364 day. Treasury Bills are zero coupon securities and pay no coupon. They are issued at a discount and redeemed at the face value at maturity. For example, a 91 day Treasury Bill of Rs.100/- (face value) may be issued at a discount of say, Rs.1.80, that is Rs.98.20 and redeemed at the face value of Rs.100/-. The return to the investors is, therefore, the difference between the maturity value or face value (i.e., Rs.100) and the issue price (please see answer to Question No. 21 on calculation of yield on Treasury Bills). Treasury Bills are issued through auctions conducted by the Reserve Bank of India usually every Wednesday and payments for the Treasury Bills purchased have to be made on the following Friday. The Treasury Bills of 182 days and 364 days' tenure are issued on alternate Wednesdays, that is, Treasury Bills of 364 day tenure are issued on the Wednesday preceding the reporting Friday while Treasury Bills of 182 days tenure are issued on the Wednesday prior to a non-reporting Friday. Currently, the notified amount for issuance of 91 day and 182 day Treasury Bills is Rs.500 crore each whereas the notified amount for issuance of 364 day Bill is higher at Rs.1000 crore. Government, at its discretion, can also decide to issue additional amounts of the Treasury Bills by giving prior notice. An annual calendar of T-Bill issuances for the following financial year is released by the Reserve Bank

of India in the last week of March. The Reserve Bank of India also announces the issue details of Treasury bills by way of press release every week.

b. Dated Government Securities

2.3 Dated Government securities are longer term securities and carry a fixed or floating coupon (interest rate) paid on the face value, payable at fixed time periods (usually half-yearly). The tenor of dated securities can be up to 30 years. The Public Debt Office (PDO) of the RBI acts as the registry / depository of Government securities and deals with the issue, interest payment and repayment of principal at maturity. Most of the dated securities are fixed coupon securities. The nomenclature of a typical dated fixed coupon Government security has the following features - coupon, name of the issuer, maturity and face value. For example, 7.49% GOI 2017 would have the following features.

Date of Issue	: April 16, 2007
Date of Maturity	: April 16, 2017
Coupon	: 7.49% paid on face value
Coupon Payment Dates	: Half-yearly (October16 and April 16) every year
Minimum Amount of issue/ sale	: Rs.10,000

2.4 The details of all the dated securities issued by the Government of India are made available on the RBI website at http://rbi.org.in/ Scripts/ financialmarketswatch.aspx. Just as in the case of Treasury Bills, dated securities of both Government of India and State Governments are issued by RBI through auctions which are announced by the RBI a week in advance through Press Releases and paid advertisements in major dailies (for dated securities). The investors are thus given adequate time to plan for the purchase of government securities through such auctions.

A specimen of a dated security in physical form is given at **Annex 1.**

2.5 Dated securities may be of the following types:

i) Fixed Rate Bonds – These are bonds on which the coupon rate is fixed for the entire life of the bond. Most Government bonds are issued as fixed rate bonds.

For example – 8.24%GS2018 was issued on April 22, 2008 for a tenor of 10 years maturing on April 22, 2018. Coupon on this security will be paid half-yearly at 4.12% (half yearly payment being the half of the annual coupon 8.24%) of the face value on October 22 and April 22 of each year.

ii) Floating Rate Bonds – Floating Rate bonds are securities which do not have a fixed coupon rate and the coupon is re-set at pre-announced intervals based on a specified methodology. The coupon is re-set at pre-determined intervals (say, every six months or one year) by adding a spread over a base rate. In the case of most floating rate bonds issued by the Government of India, the base rate is the weighted average cut-off yields of the last three 364 day Treasury Bill auction preceding the coupon re-set date. Floating Rate Bonds were first issued in September 1995 in India.

For example, a Floating Rate Bond was issued on July 2, 2002 for a tenor of 15 years, maturing on July 2, 2017. The base rate on the bond for the coupon payments was fixed at 6.50% being the weighted average rate of implicit yield on 364 day Treasury Bills during the preceding six auctions. Further, in the bond auction, a cut-off spread (markup over the benchmark rate) of 34 basis points (0.34%) was decided. Hence the coupon for the first six months was fixed at 6.84%. At the next reset date after six months, assuming that the average cut-off yield in the preceding six auctions of 364 day Treasury Bill is 6.60%, coupon applicable for the next half year would be 6.94%.

iii) Zero Coupon Bonds – Zero coupon bonds are bonds with no coupon payments. Like Treasury Bills, they are issued at a discount to face value. Such securities were issued by the Government of India in the 1990s, but no issue was made thereafter.

iv) Capital Indexed Bonds – These are bonds, the principal of which is linked to an accepted index of inflation with a view to protecting the holder from inflation. A capital indexed bond, with the principal hedged against inflation, was issued in December 1997. These bonds matured in 2002. Steps are now being taken to revive the issuance of the Inflation Indexed Bonds wherein payment of both the coupon and principal payments on the bonds will be linked to an Inflation Index (Wholesale Price Index).

v) Bonds with Call/ Put Options – Bonds can also be issued with features of optionality wherein the issuer can have the option to buyback (call option) or the investor can have the option to sell the bond (put option) to the issuer during the currency of the bond. A bond (viz., 6.72%GS2012) with call / put option was issued in India in the year 2002 which will mature in 2012. 6.72%GS2012 was issued on July 18, 2002 for a maturity of 10 years maturing on July 18, 2012. The optionality on the bond could be exercised after completion of five years tenure from the date of issuance on any coupon date falling thereafter. The Government has the right to buyback the bond (call option) at par value (equal to the face value) while the investor has the right to sell the bond (put option) to the Government at par value at the time of any of the half-yearly coupon dates starting from July 18, 2007.

vi) Special Securities - In addition to Treasury Bills and dated securities issued by the Government of India under the market borrowing programme, the Government of India also issues, from time to time, special securities to entities like Oil Marketing Companies, Fertilizer Companies, the Food Corporation of India, etc. as compensation to these companies in lieu of cash subsidies. These securities are usually long dated securities carrying coupon with a spread of about 20-25 basis points over the yield of the dated securities of comparable maturity. These securities are, however, not eligible SLR securities but are approved securities and are eligible as collateral for market repo transactions. The beneficiary oil marketing companies may divest these

securities in the secondary market to banks, insurance companies / Primary Dealers, etc., for raising cash.

vii) Steps are being taken to introduce new types of instruments like STRIPS (Separate Trading of Registered Interest and Principal of Securities). STRIPS are instruments wherein each cash flow of the fixed coupon security is converted into a separate tradable Zero Coupon Bond and traded. For example, when Rs.100 of the 8.24%GS2018 is stripped, each cash flow of coupon (Rs.4.12 each half year) will become coupon STRIP and the principal payment (Rs.100 at maturity) will become a principal STRIP. These cash flows are traded separately as independent securities in the secondary market.

c. State Development Loans (SDLs)

2.6 State Governments also raise loans from the market. SDLs are dated securities issued through an auction similar to the auctions conducted for dated securities issued by the Central Government (see question 3 below). Interest is serviced at half-yearly intervals and the principal is repaid on the maturity date. Like dated securities issued by the Central Government, SDLs issued by the State Governments qualify for SLR. They are also eligible as collaterals for borrowing through market repo as well as borrowing by eligible entities from the RBI under the Liquidity Adjustment Facility (LAF).

3. How are the Government Securities issued?

3.1 Government securities are issued through auctions conducted by the RBI. Auctions are conducted on the electronic platform called the Public Debt Office – Negotiated Dealing System (PDO-NDS). Commercial banks, scheduled urban co-operative banks, Primary Dealers (a list of Primary Dealers with their contact details is given in **Annex 2**), insurance companies and provident funds, who maintain funds account (current account) and securities accounts (SGL account) with RBI, are members of this electronic platform. All members of PDO-NDS can place their bids in the auction through this electronic platform. All non-NDS

members including non-scheduled urban co-operative banks can participate in the primary auction through scheduled commercial banks or Primary Dealers. For this purpose, the urban co-operative banks need to open a securities account with a bank / Primary Dealer – such an account is called a Gilt Account. A Gilt Account is a dematerialized account maintained by a scheduled commercial bank or Primary Dealer for its constituent (e.g., a non-scheduled urban co-operative bank).

3.2 The RBI, in consultation with the Government of India, issues an indicative half-yearly auction calendar which contains information about the amount of borrowing, the tenor of security and the likely period during which auctions will be held. A Notification and a Press Communique giving exact particulars of the securities, viz., name, amount, type of issue and procedure of auction are issued by the Government of India about a week prior to the actual date of auction. RBI places the notification and a Press Release on its website (www.rbi.org.in) and also issues an advertisement in leading English and Hindi newspapers. Information about auctions is also available with the select branches of public and private sector banks and the Primary Dealers.

4. What are the different types of auctions used for issue of securities?

Prior to introduction of auctions as the method of issuance, the interest rates were administratively fixed by the Government. With the introduction of auctions, the rate of interest (coupon rate) gets fixed through a market based price discovery process.

4.1 An auction may either be yield based or price based.

i. **Yield Based Auction:** A yield based auction is generally conducted when a new Government security is issued. Investors bid in yield terms up to two decimal places (for example, 7.85 per cent, 7.87 per cent, etc.). Bids are arranged in ascending order and the cut-off yield is arrived at the yield corresponding to the notified amount of the auction. The cut-off yield is

taken as the coupon rate for the security. Successful bidders are those who have bid at or below the cut-off yield. Bids which are higher than the cut-off yield are rejected. An illustrative example of the yield based auction is given below:

Yield based auction of a new security

- Maturity Date: September 8, 2018
- Coupon: It is determined in the auction (8.22% as shown in the illustration below)
- Auction date: September 5, 2008
- Auction settlement date: September 8, 2008*
- Notified Amount: Rs.1000 crore

* September 6 and 7 being holidays, settlement is done on September 8, 2008 under T+1 cycle.

Details of bids received in the increasing order of bid yields

Bid No.	Bid Yield	Amount of bid (Rs. crore)	Cummulative amount (Rs.Crore)	Price* with coupon as 8.22%
1	8.19%	300	300	100.19
2	8.20%	200	500	100.14
3	8.20%	250	750	100.13
4	8.21%	150	900	100.09
5	8.22%	100	1000	100.00
6	8.22%	100	1100	100.00
7	8.23%	150	1250	99.93
8	8.24%	100	1350	99.87

The issuer would get the notified amount by accepting bids up to 5. Since the bid number 6 also is at the same yield, bid numbers 5 and 6 would get allotment pro-rata so that the notified amount is not exceeded. In the above case each would get Rs. 50 crore. Bid numbers 7 and 8 are rejected as the yields are higher than the cut-off yield.

*Price corresponding to the yield is determined as per the relationship given under YTM calculation in question 19.

ii. **Price Based Auction:** A price based auction is conducted when Government of India re-issues securities already issued earlier. Bidders quote in terms of price per Rs.100 of face value of the security (e.g., Rs.101.02, Rs.100.95, Rs.99.80, etc., per Rs.100/-). Bids are arranged in descending order and the successful bidders are those who have bid at or above the cut-off price. Bids which are below the cut-off price are rejected. An illustrative example of price based auction is given below:

Price based auction of an existing security 8.24% GS 2018

- Maturity Date: April 22, 2018
- Coupon: 8.24%
- Auction date: September 5, 2008
- Auction settlement date: September 8, 2008*
- Notified Amount: Rs.1000 crore

* September 6 and 7 being holidays, settlement is done on September 8, 2008 under T+1 cycle.

Details of bids received in the decreasing order of bid price				
Bid no.	**Price of bid**	**Amount of bid (Rs. Crore)**	**Implicit yield**	**Cumulative amount**
1	100.31	300	8.1912%	300
2	100.26	200	8.1987%	500
3	100.25	250	8.2002%	750
4	100.21	150	8.2062%	900
5	100.20	100	8.2077%	1000
6	100.20	100	8.2077%	1100
7	100.16	150	8.2136%	1250
8	100.15	100	8.2151%	1350
The issuer would get the notified amount by accepting bids up to 5. Since the bid number 6 also is at the same yield, bid numbers 5 and 6 would get allotment in proportion so that the notified amount is not exceeded. In the above case each would get Rs. 50 crore. Bid numbers 7 and 8 are rejected as the price quoted is less than the cut-off price.				

4.2 Depending upon the method of allocation to successful bidders, auction could be classified as **Uniform Price** based and **Multiple Price** based. In a Uniform Price auction, all the successful bidders are required to pay for the allotted quantity of securities at the same rate, i.e., at the auction cut-off rate, irrespective of the rate quoted by them. On the other hand, in a Multiple Price auction, the successful bidders are required to pay for the allotted quantity of securities at the respective price / yield at which they have bid. In the example under (ii) above, if the auction was Uniform Price based, all bidders would get allotment at the cut-off price, i.e., Rs.100.20. On the other hand, if the auction was Multiple Price based, each bidder would get the allotment at the price he/ she has bid, i.e., bidder 1 at Rs.100.31, bidder 2 at Rs.100.26 and so on.

4.3 An investor may bid in an auction under either of the following categories:

i. **Competitive Bidding:** In a competitive bidding, an investor bids at a specific price / yield and is allotted securities if the price / yield quoted is within the cut-off price / yield. Competitive bids are made by well informed investors such as banks, financial institutions, primary dealers, mutual funds, and insurance companies. The minimum bid amount is Rs.10,000 and in multiples of Rs.10,000 thereafter. Multiple bidding is also allowed, i.e., an investor may put in several bids at various price/ yield levels.

ii. **Non-Competitive Bidding:** With a view to providing retail investors an opportunity to participate in the auction process, the scheme of non-competitive bidding in dated securities was introduced in January 2002. Non-competitive bidding is open to individuals, HUFs, RRBs, co-operative banks, firms, companies, corporate bodies, institutions, provident funds, and trusts. Under the scheme, eligible investors apply for a certain amount of securities in an auction without mentioning a specific price / yield. Such bidders are allotted securities at the weighted average price / yield of the auction. In the illustration given under 4.1 (ii) above, the notified amount being Rs.1000 crore, the amount reserved for non-

competitive bidding will be Rs.50 crore (5% of the notified amount). Non-competitive bidders will be allotted at the weighted average price which is Rs.100.26 in the given illustration. The participants in non-competitive bidding are, however, required to hold a gilt account with a bank or PD. Regional Rural Banks and co-operative banks which hold SGL and Current Account with the RBI can, also, participate under the scheme of non-competitive bidding without holding a gilt account.

4.4 In every auction of dated securities, a maximum of 5 per cent of the notified amount is reserved for non-competitive bids. In the case of auction for Treasury Bills, the amount accepted for non-competitive bids is over and above the notified amount and there is no limit placed. However, non-competitive bidding in Treasury Bills is available only to State Governments and other select entities and is not available to the co-operative banks. Only one bid is allowed to be submitted by an investor either through a bank or Primary Dealer. For bidding under the scheme, an investor has to fill in an undertaking and send it along with the application for allotment of securities through a bank or a Primary Dealer. The minimum amount and the maximum amount for a single bid is Rs.10,000 and Rs.2 crore respectively in the case of an auction of dated securities. A bank or a Primary Dealer can charge an investor up to maximum of 6 paise per Rs.100 of application money as commission for rendering their services. In case the total applications received for non-competitive bids exceed the ceiling of 5 per cent of the notified amount of the auction for dated securities, the bidders are allotted securities on a pro-rata basis.

5. How and in what form can Government Securities be held?

5.1 The Public Debt Office (PDO) of the Reserve Bank of India, Mumbai acts as the registry and central depository for the Government securities. Government securities may be held by investors either as physical stock or in dematerialized form. From May 20, 2002, it is mandatory for all the RBI regulated entities to hold and transact in Government securities only in dematerialized (SGL) form. Accordingly, UCBs are required to hold all Government securities in demat form.

a. **Physical form:** Government securities may be held in the form of stock certificates. A stock certificate is registered in the books of PDO. Ownership in stock certificates can not be transferred by way of endorsement and delivery. They are transferred by executing a transfer form as the ownership and transfer details are recorded in the books of PDO. The transfer of a stock certificate is final and valid only when the same is registered in the books of PDO.

b. **Demat form:** Holding government securities in the dematerialized or scripless form is the safest and the most convenient alternative as it eliminates the problems relating to custody, viz., loss of security. Besides, transfers and servicing are electronic and hassle free. The holders can maintain their securities in dematerialsed form in either of the two ways:

   i. SGL Account: Reserve Bank of India offers Subsidiary General Ledger Account (SGL) facility to select entities who can maintain their securities in SGL accounts maintained with the Public Debt Offices, of the Reserve Bank of India.

   ii. Gilt Account: As the eligibility to open and maintain an SGL account with the RBI is restricted, an investor has the option of opening a Gilt Account with a bank or a Primary Dealer which is eligible to open a Constituents' Subsidiary General Ledger Account (CSGL) with the RBI. Under this arrangement, the bank or the Primary Dealer would maintain the holdings of its constituents in a CSGL account (which is also known as SGL II account) with the RBI as a custodian on behalf of the Gilt Account holders. The servicing of securities held in the Gilt Accounts is done electronically, facilitating hassle free trading and maintenance of the securities. Receipt of maturity proceeds and periodic interest is also faster as the proceeds are credited to the current account of the custodian bank / PD with the RBI and the custodian (CSGL account holder) immediately passes on the credit to the Gilt Account Holders (GAH).

5.2 Investors also have the option of holding Government securities in a dematerialized account with a depository (NSDL / CDSL, etc.). This facilitates trading of Government securities on the stock exchanges.

6. How does the trading in Government securities take place?

6.1 There is an active secondary market in Government securities. The securities can be bought / sold in the secondary market either (i) Over the Counter (OTC) or (ii) through the Negotiated Dealing System (NDS) or (iii) the Negotiated Dealing System-Order Matching (NDS-OM).

i. Over the Counter (OTC)/ Telephone Market

6.2 In this market, a participant, who wants to buy or sell a government security, may contact a bank / Primary Dealer / financial institution either directly or through a broker registered with SEBI and negotiate for a certain amount of a particular security at a certain price. Such negotiations are usually done on telephone and a deal may be struck if both counterparties agree on the amount and rate. In the case of a buyer, like an urban co-operative bank wishing to buy or sell a security, the bank's dealer (who is authorized by the bank to undertake transactions in Government Securities) may get in touch with other market participants over telephone and obtain quotes. Should a deal be struck, the bank should record the details of the trade in a deal slip (specimen given at **Annex 3**) and send a trade confirmation to the counterparty. The dealer must exercise due diligence with regard to the price quoted by verifying with available sources (See question number 12 for information on ascertaining the price of Government securities). All trades undertaken in OTC market are reported on the secondary market module of the NDS, the details of which are given under the question number 13.

ii. **Negotiated Dealing System**

6.3 The Negotiated Dealing System (NDS) for electronic dealing and reporting of transactions in government securities was introduced in February 2002. It facilitates the members to submit electronically, bids or applications for primary

issuance of Government Securities when auctions are conducted. NDS also provides an interface to the Securities Settlement System (SSS) of the Public Debt Office, RBI, Mumbai thereby facilitating settlement of transactions in Government Securities (both outright and repos) conducted in the secondary market. Membership to the NDS is restricted to members holding SGL and/or Current Account with the RBI, Mumbai.

6.4 In August, 2005, RBI introduced an anonymous screen based order matching module on NDS, called NDS-OM. This is an order driven electronic system, where the participants can trade anonymously by placing their orders on the system or accepting the orders already placed by other participants. NDS-OM is operated by the Clearing Corporation of India Ltd. (CCIL) on behalf of the RBI (Please see answer to the question no.15 about CCIL). Direct access to the NDS-OM system is currently available only to select financial institutions like Commercial Banks, Primary Dealers, Insurance Companies, Mutual Funds, etc. Other participants can access this system through their custodians, i.e., with whom they maintain Gilt Accounts. The custodians place the orders on behalf of their customers like the urban co-operative banks. The advantages of NDS-OM are price transparency and better price discovery.

6.5 Gilt Account holders have been given indirect access to NDS through custodian institutions. A member (who has the direct access) can report on the NDS the transaction of a Gilt Account holder in government securities. Similarly, Gilt Account holders have also been given indirect access to NDS-OM through the custodians. However, currently two gilt account holders of the same custodian are not permitted to undertake repo transactions between themselves.

iii. Stock Exchanges

6.6 Facilities are also available for trading in Government securities on stock exchanges (NSE, BSE) which cater to the needs of retail investors.

7. Who are the major players in the Government Securities market?

Major players in the Government securities market include commercial banks and primary dealers besides institutional investors like insurance companies. Primary Dealers play an important role in market making of securities. Other participants include co-operative banks, regional rural banks, mutual funds, provident and pension funds. Foreign Institutional Investors (FIIs) are allowed to participate in the Government securities market within the quantitative limits prescribed from time to time. Corporates also buy/ sell the government securities to manage their overall portfolio risk.

8. Whether RBI has prescribed Do's and Don'ts for Co-operative banks dealing in Government securities?

While undertaking transactions in securities, urban co-operative banks should adhere to the instructions issued by the RBI. The guidelines on transactions in government securities by the UCBs have been codified in the master circular UBD.BPD. (PCB). MC.No /16.20.000/2008-09 dated July 1, 2008 which is updated from time to time. This circular can also be accessed from the RBI website under the Notifications – Master circulars section (http://rbi.org.in/scripts/BS_CircularIndexDisplay.aspx?Id=3686). The important guidelines to be kept in view by the UCBs relate to formulation of an investment policy duly approved by their Board of Directors, defining objectives of the policy, authorities and procedures to put through deals, dealings through brokers, preparing panel of brokers and review thereof at annual intervals, and adherence to the prudential ceilings fixed for transacting through each of the brokers, etc.

The important Do's & Don'ts are summarized in the **Box I** below.

BOX I

Do's & Don'ts for Dealing in Government Securities

Do's

- Segregate dealing and back-up functions. Officials deciding about purchase and sale transactions should be separate from those responsible for settlement and accounting.
- Monitor all transactions to see that delivery takes place on settlement day. The funds account and investment account should be reconciled on the same day before close of business.
- Keep a proper record of the SGL forms received/issued to facilitate counter-checking by their internal control systems/RBI inspectors/other auditors.
- Seek a Scheduled Commercial Bank (SCB), a Primary Dealer (PD) or a Financial Institution (FI) as counterparty for transactions.
- Give preference for direct deals with counter parties.
- Use CSGL/ Gilt Accounts for holding the securities and maintain such accounts in the same bank with whom the cash account is maintained.
- Insist on Delivery versus Payment for all transactions.
- Take advantage of the non-competitive bidding facility for acquiring Government of India securities in the primary auctions conducted by the Reserve Bank of India.
- Restrict the role of the broker to that of bringing the two parties to the deal together, if a deal is put through with the help of broker.
- Have a list of approved brokers. Utilize only brokers registered with NSE or BSE or OTCEI for acting as intermediary.
- Place a limit of 5% of total transactions (both purchases and sales) entered into by a bank during a year as the aggregate upper contract limit for each of the approved brokers. A disproportionate part of the business should not be transacted with or through one or a few brokers.
- Maintain and transact in Government securities only in dematerialized form in SGL Account or Gilt Account maintained with the CSGL Account holder.
- Open and maintain only one Gilt or dematerialized account.
- Open a funds account for securities transactions with the same Scheduled Commercial bank or the State Cooperative bank with whom the Gilt Account is maintained.

- Ensure availability of clear funds in the designated funds accounts for purchases and sufficient securities in the Gilt Account for sales before putting through the transactions.
- Observe prudential limits for investment in permitted non-SLR securities (bonds of nationalized banks, unlisted securities, unlisted shares of all-India Financial Institutions and privately placed debt securities).
- The Board of Directors to peruse all investment transactions at least once a month

Don'ts

- Do not undertake any purchase/sale transactions with broking firms or other intermediaries on principal to principal basis.
- Do not use brokers in the settlement process at all, i.e., both funds settlement and delivery of securities should be done with the counter-parties directly.
- Do not give power of attorney or any other authorisation under any circumstances to brokers/intermediaries to deal on your behalf in the money and securities markets.
- Do not undertake Government Securities transaction in the physical form with any broker.
- Do not routinely make investments in non-SLR securities (e.g., corporate bonds, etc) issued by companies or bodies other than in the co-operative sector.

9. How are the dealing transactions recorded by the dealing desk?

9.1 For every transaction entered into by the trading desk, a deal slip should be generated which should contain data relating to nature of the deal, name of the counter-party, whether it is a direct deal or through a broker (if it is through a broker, name of the broker), details of security, amount, price, contract date and time and settlement date. The deal slips should be serially numbered and verified separately to ensure that each deal slip has been properly accounted for. Once the deal is concluded, the deal slip should be immediately passed on to the back office (it should be separate and distinct from the front office) for recording and processing. For each deal, there must be a system of issue of confirmation to the counter-party. The timely receipt of requisite written confirmation from the counter-

party, which must include all essential details of the contract, should be monitored by the back office. With respect to transactions matched on the NDS-OM module, the need for counterparty confirmation of deals matched on NDS-OM will not arise as NDS-OM is an automated order matching system wherein trades are automatically executed on matching buy/sell orders. However, in case of trades finalized in the OTC market and reported on NDS, confirmations have to be submitted by the counterparties in the system i.e., NDS. Also, please see Question 13.

9.2 Once a deal has been concluded through a broker, there should not be any substitution of the counter-party by the broker. Similarly, the security sold / purchased in a deal should not be substituted by another security under any circumstances. A maker-checker framework should be implemented to prevent any individual misdemeanor. It should be ensured that the same person is not carrying out the functions of maker (one who inputs the data) and checker (one who verifies and authorizes the data) on the system.

9.3 On the basis of vouchers passed by the back office (which should be done after verification of actual contract notes received from the broker / counter party and confirmation of the deal by the counter party), the books of account should be independently prepared.

10. What are the important considerations while undertaking security transactions?

The following steps should be followed in purchase of a security:

i) *Identify which security to invest in* – Typically this involves deciding on the maturity and coupon. Maturity is important because this determines the extent of risk an investor like an UCB is exposed to – higher the maturity, higher the interest rate risk or market risk. If the investment is largely to meet statutory requirements, it may be advisable to avoid taking undue

market risk and buy securities with shorter maturity. Within the shorter maturity range (say 5-10 years) it would be safer to buy securities which are liquid, that is, securities which trade in relatively larger volumes in the market. The information about such securities can be obtained from the website of the CCIL (http://www.ccilindia.com/OMMWCG.aspx), which gives real-time secondary market trade data on both NDS and NDS-OM. Since pricing is more transparent in liquid securities, prices for these securities are easily obtainable thereby reducing the chances of being misled/misinformed on the price in these cases. The coupon rate of the security is equally important for the investor as it affects the total return from the security. In order to determine which security to buy, the investor must look at the Yield to Maturity (YTM) of a security (please refer to Box III under para 19.4 for a detailed discussion on YTM). Thus, once the maturity and yield (YTM) is decided, the UCB may select a security by looking at the price/yield information of securities traded on NDS-OM or by negotiating with bank or PD or broker.

ii) *Where and Whom to buy from*- In terms of transparent pricing, the NDS-OM is the safest because it is a live and anonymous platform where the trades are disseminated as they are struck and where counterparties to the trades are not revealed. In case the trades are conducted on the telephone market, it would be safe to trade directly with a bank or a PD. In case one uses a broker, care must be exercised to ensure that the broker is registered on NSE or BSE or OTC Exchange of India. Normally, the active debt market brokers may not be interested in deal sizes which are smaller than the market lot (usually Rs.5 crore). So it is better to deal directly with bank / PD or on NDS-OM, which also has a screen for odd-lots. Wherever a broker is used, the settlement should not happen through the broker. Trades should not be directly executed with any counterparties other than a bank, PD or a financial institution, to minimize the risk of getting adverse prices.

iii) *How to ensure correct pricing* – Since investors like UCBs have very small requirements, they may get a quote/price, which is worse than the price for standard market lots. To be sure of prices, only liquid securities may be chosen for purchase. A safer alternative for investors with small requirements is to buy under the primary auctions conducted by RBI through the non-competitive route. Since there are bond auctions about twice every month, purchases can be considered to coincide with the auctions. Please see question 12 for details on ascertaining the prices of the Government securities.

11. Why does the price of Government security change?

The price of a Government security, like other financial instruments, keeps fluctuating in the secondary market. The price is determined by demand and supply of the securities. Specifically, the prices of Government securities are influenced by the level and changes in interest rates in the economy and other macro-economic factors, such as, expected rate of inflation, liquidity in the market, etc. Developments in other markets like money, foreign exchange, credit and capital markets also affect the price of the government securities. Further, developments in international bond markets, specifically the US Treasuries affect prices of Government securities in India. Policy actions by RBI (e.g. announcements regarding changes in policy interest rates like Repo Rate, Cash Reserve Ratio, Open Market Operations etc.) can also affect the prices of government securities.

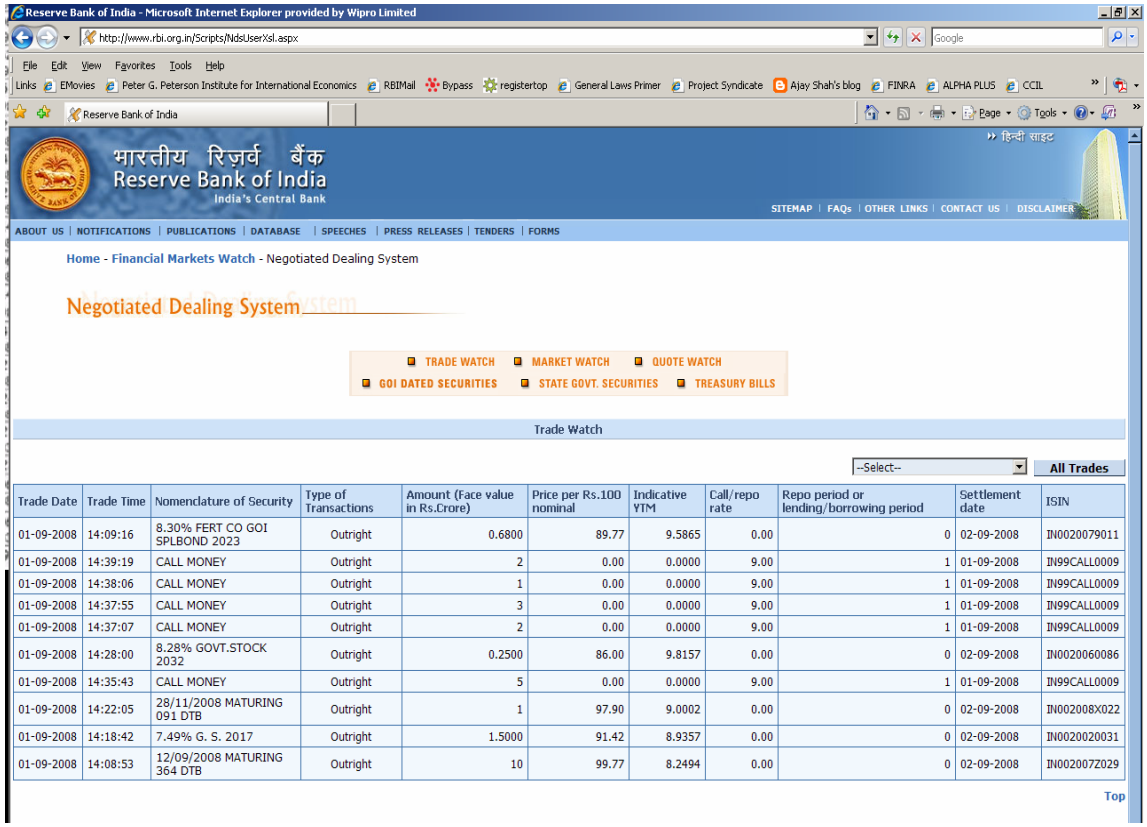
12. How does one ascertain the price of a Government security?

12.1 The return on a security is a combination of two elements (i) coupon income – that is, interest earned on the security and (ii) the gain / loss on the security due to price changes and reinvestment gains or losses.

12.2 Price information is vital to any investor intending to either buy or sell Government securities. Information on traded prices of securities is available on

the RBI website http://www.rbi.org.in under the path **Home → Financial Markets Watch → Government securities market → NDS**. This will show a table containing the details of the latest trades undertaken in the market along with the prices. Additionally, trade information can also be seen on CCIL website http://www.ccilindia.com/OMHome.aspx. This page can also be accessed from the RBI website through the link provided. In this page, the list of securities and the summary of trades is displayed. The total traded amount (TTA) on that day is shown against each security. Typically liquid securities are those with the largest amount of TTA. Pricing in these securities is efficient and hence UCBs can choose these securities for their transactions. Since the prices are available on the screen they can invest in these securities at the current prices through their custodians. Participants can thus get real-time information on traded prices and make informed decision while buying / selling government securities. The screenshots of the above website pages are given below:

NDS Market



Reserve Bank of India - Microsoft Internet Explorer provided by Wipro Limited

http://www.rbi.org.in/Scripts/NdsUserXsl.aspx

भारतीय रिज़र्व बैंक
Reserve Bank of India
India's Central Bank

ABOUT US | NOTIFICATIONS | PUBLICATIONS | DATABASE | SPEECHES | PRESS RELEASES | TENDERS | FORMS

Home - Financial Markets Watch - Negotiated Dealing System

Negotiated Dealing System

TRADE WATCH | MARKET WATCH | QUOTE WATCH
GOI DATED SECURITIES | STATE GOVT. SECURITIES | TREASURY BILLS

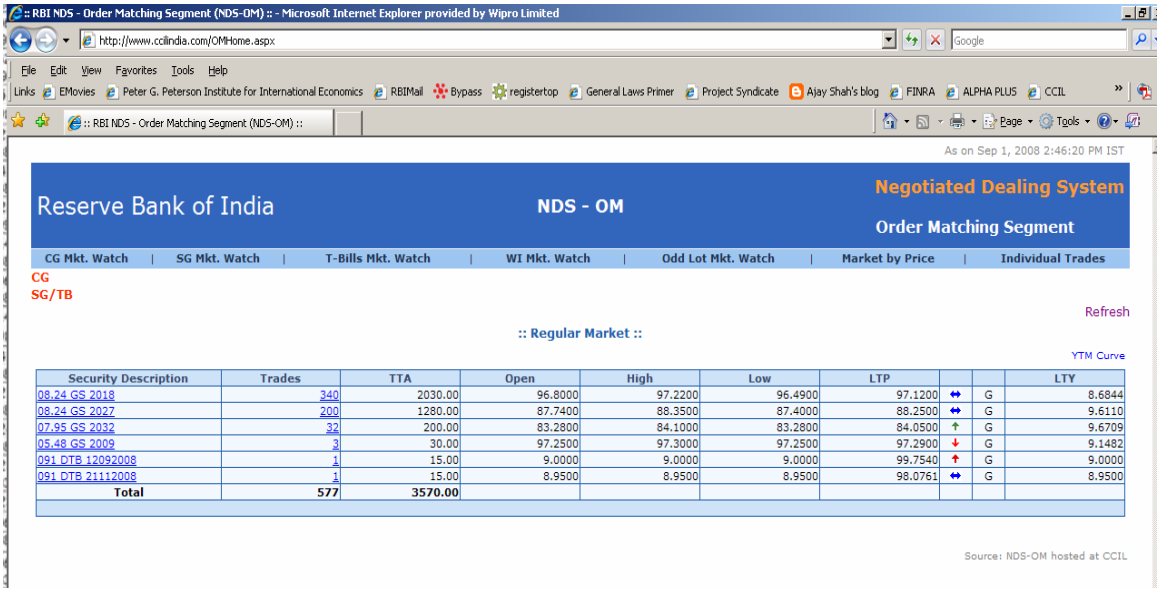
Trade Watch

--Select-- All Trades

Trade Date	Trade Time	Nomenclature of Security	Type of Transactions	Amount (Face value in Rs.Crore)	Price per Rs.100 nominal	Indicative YTM	Call/repo rate	Repo period or lending/borrowing period	Settlement date	ISIN
01-09-2008	14:09:16	8.30% FERT CO GOI SPLBOND 2023	Outright	0.6800	89.77	9.5865	0.00	0	02-09-2008	IN0020079011
01-09-2008	14:39:19	CALL MONEY	Outright	2	0.00	0.0000	9.00	1	01-09-2008	IN99CALL0009
01-09-2008	14:38:06	CALL MONEY	Outright	1	0.00	0.0000	9.00	1	01-09-2008	IN99CALL0009
01-09-2008	14:37:55	CALL MONEY	Outright	3	0.00	0.0000	9.00	1	01-09-2008	IN99CALL0009
01-09-2008	14:37:07	CALL MONEY	Outright	2	0.00	0.0000	9.00	1	01-09-2008	IN99CALL0009
01-09-2008	14:28:00	8.28% GOVT.STOCK 2032	Outright	0.2500	86.00	9.8157	0.00	0	02-09-2008	IN0020060086
01-09-2008	14:35:43	CALL MONEY	Outright	5	0.00	0.0000	9.00	1	01-09-2008	IN99CALL0009
01-09-2008	14:22:05	28/11/2008 MATURING 091 DTB	Outright	1	97.90	9.0002	0.00	0	02-09-2008	IN002008X022
01-09-2008	14:18:42	7.49% G. S. 2017	Outright	1.5000	91.42	8.9357	0.00	0	02-09-2008	IN0020020031
01-09-2008	14:08:53	12/09/2008 MATURING 364 DTB	Outright	10	99.77	8.2494	0.00	0	02-09-2008	IN002007Z029

Top

NDS-OM Market



:: RBI NDS - Order Matching Segment (NDS-OM) :: - Microsoft Internet Explorer provided by Wipro Limited

http://www.ccilindia.com/OMHome.aspx

As on Sep 1, 2008 2:46:20 PM IST

Reserve Bank of India — NDS - OM — Negotiated Dealing System — Order Matching Segment

CG Mkt. Watch | SG Mkt. Watch | T-Bills Mkt. Watch | WI Mkt. Watch | Odd Lot Mkt. Watch | Market by Price | Individual Trades

CG
SG/TB

Refresh

:: Regular Market ::

YTM Curve

Security Description	Trades	TTA	Open	High	Low	LTP			LTY
08.24 GS 2018	340	2030.00	96.8000	97.2200	96.4900	97.1200	↔	G	8.6844
08.24 GS 2027	200	1280.00	87.7400	88.3500	87.4000	88.2500	↔	G	9.6110
07.95 GS 2032	32	200.00	83.2800	84.1000	83.2800	84.0500	↑	G	9.6709
05.48 GS 2009	3	30.00	97.2500	97.3000	97.2500	97.2900	↓	G	9.1482
091 DTB 12092008	1	15.00	9.0000	9.0000	9.0000	99.7540	↑	G	9.0000
091 DTB 21112008	1	15.00	8.9500	8.9500	8.9500	98.0761	↔	G	8.9500
Total	577	3570.00							

Source: NDS-OM hosted at CCIL

The website of the Fixed Income, Money Market and Derivatives Association (FIMMDA), (www.fimmda.org) is also a source of price information especially on securities that are not traded frequently.

13. How are the Government securities transactions reported?

13.1 Transactions undertaken between market participants in the OTC/telephone market are expected to be reported on the NDS platform within 15 minutes after the deal is put through over telephone. All OTC trades are required to be mandatorily reported on the secondary market module of the NDS for settlement. Reporting on NDS is a four stage process wherein the seller of the security has to initiate the reporting followed by confirmation by the buyer. This is further followed by issue of confirmation by the seller's back office on the system and reporting is complete with the last stage wherein the buyer's back office confirms the deal. The system architecture incorporates maker-checker model to preempt individual mistakes as well as misdemeanor.

13.2 Reporting on behalf of entities maintaining gilt accounts with the custodians is done by the respective custodians in the same manner as they do in case of their own trades i.e., proprietary trades. The securities leg of these trades settle in the CSGL account of the custodian. Once the reporting is complete, the NDS system accepts the trade. Information on all such successfully reported trades flow to the clearing house i.e., the CCIL.

13.3 In the case of NDS-OM, participants place orders (price and quantity) on the system. Participants can modify / cancel their orders. Order could be a bid for purchase or offer for sale of securities. The system, in turn will match the orders based on price and time priority. That is, it matches bids and offers of the same prices with time priority. The NDS-OM system has separate screen for the Central Government, State Government and Treasury bill trading. In addition, there is a screen for odd lot trading for facilitating trading by small participants in smaller lots of less than Rs. 5 crore (i.e., the standard market lot). The NDS-OM platform is an

anonymous platform wherein the participants will not know the counterparty to the trade. Once an order is matched, the deal ticket gets generated automatically and the trade details flow to the CCIL. Due to anonymity offered by the system, the pricing is not influenced by the participants' size and standing.

14. How do the Government securities transactions settle?

Primary Market

14.1 Once the allotment process in the primary auction is finalized, the successful participants are advised of the consideration amounts that they need to pay to the Government on settlement day. The settlement cycle for dated security auction is T+1, whereas for that of Treasury bill auction is T+2. On the settlement date, the fund accounts of the participants are debited by their respective consideration amounts and their securities accounts (SGL accounts) are credited with the amount of securities that they were allotted. In case of retail participants/ individuals who do not maintain accounts with the RBI, they can tender a cheque, the proceeds of which will be collected through clearing process after which securities are issued to them.

Secondary Market

14.2 The transactions relating to government securities are settled through the member's securities / current accounts maintained with the RBI, with delivery of securities and payment of funds being done on a net basis. The Clearing Corporation of India (CCIL) guarantees settlement of trades on the settlement date by becoming a central counter-party to every trade through the process of novation, i.e., it becomes seller to the buyer and buyer to the seller..

14.3 All outright secondary market transactions in Government Securities are settled on T+1 basis. However, in case of repo transactions in government securities, the market participants will have the choice of settling the first leg on either T+0 basis or T+1 basis as per their requirement.

15. What is the role of the Clearing Corporation of India Limited (CCIL)?

The CCIL is the clearing agency for Government securities. It acts as a Central Counter Party (CCP) for all transactions in Government securities by interposing itself between the two counterparties. In effect, during settlement, the CCP becomes the seller to the buyer and buyer to the seller of the actual transaction. All outright trades undertaken in the OTC market and on the NDS-OM platform are cleared through the CCIL. Once CCIL receives the trade information, it works out participant-wise net obligations on both the securities and the funds leg. The payable / receivable position of the constituents (gilt account holders) is reflected against their respective custodians. CCIL forwards the settlement file containing net position of participants to the RBI where settlement takes place by simultaneous transfer of funds and securities under the 'Delivery versus Payment' system. CCIL also guarantees settlement of all trades in Government securities. That means, during the settlement process, if any participant fails to provide funds / securities, CCIL will make the same available from its own means. For this purpose, CCIL collects margins from all participants and maintains 'Settlement Guarantee Fund'.

16. What is the 'When Issued' market?

'When Issued', a short term of "when, as and if issued", indicates a conditional transaction in a security notified for issuance but not as yet actually issued. All "When Issued" transactions are on an "if" basis, to be settled if and when the actual security is issued. 'When Issued' transactions in the Central Government securities have been permitted to all NDS-OM members and have to be undertaken only on the NDS-OM platform. 'When Issued' market helps in price discovery of the securities being auctioned as well as better distribution of the auction stock. Detailed guidelines have been issued in the RBI master circular UBD.BPD. (PCB). MC.No /16.20.000/2008-09 dated July 01, 2008.

17. What are the basic mathematical concepts one should know for calculations involved in bond prices and yields?

The time value of money functions related to calculation of Present Value (PV), Future Value (FV), etc. are important mathematical concepts related to bond market. An outline of the same with illustrations is provided in the **Box II** below.

Box II

Time Value of Money

Money has time value as a Rupee today is more valuable and useful than a Rupee a year later.

The concept of **time value of money** is based on the premise that an investor prefers to receive a payment of a fixed amount of money today, rather than an equal amount in the future, all else being equal. In particular, if one receives the payment today, one can then earn interest on the money until that specified future date. Further, in an inflationary environment, a Rupee today will have greater purchasing power than after a year.

Present value of a future sum

The present value formula is the core formula for the time value of money

The present value (PV) formula has four variables, each of which can be solved for:

Present Value (PV) is the value at time=0
Future Value (FV) is the value at time=n
i is the rate at which the amount will be compounded each period
n is the number of periods

$$PV = \frac{FV}{(1+i)^n}$$

The cumulative present value of future cash flows can be calculated by adding the contributions of FV_t, the value of cash flow at time=t

$$PV = \sum_{t=0}^{n} \frac{FV_t}{(1+i)^t}$$

An illustration

Taking the cash flows as;

Period (in Yrs)	1	2	3
Amount	100	100	100

Assuming that the interest rate is at 10% per annum;

The PV of Rs.100 accruing after;

1 year is 100/(1+0.1) = Rs.99.01
2 years is $100/(1+0.1)^2$ = Rs.98.03
3 years is $100/(1+0.1)^3$= Rs.97.06

The cumulative present value = 99.01+98.03+97.06 = Rs.294.10

Net Present Value (NPV)

Net present value (**NPV**) or **net present worth** (**NPW**) is defined as the present value of net cash flows. It is a standard method for using the time value of money to appraise long-term projects. Used for capital budgeting, and widely throughout economics, it measures the excess or shortfall of cash flows, in present value (PV) terms, once financing charges are met. Use Advanced Financial Calculators.

Formula

Each cash inflow/outflow is discounted back to its present value (PV). Then they are summed. Therefore

$$\mathrm{NPV} = \sum_{t=0}^{N} \frac{C_t}{(1+r)^t}$$

Where

t - the time of the cash flow

N - the total time of the project

r - the discount rate (the rate of return that could be earned on an investment in the financial markets with similar risk.)

C_t - the net cash flow (the amount of cash) at time *t* (for educational purposes, C_0 is commonly placed to the left of the sum to emphasize its role as the initial investment.).

In the illustration given above under the Present value, if the three cash flows accrues on a deposit of Rs. 275, the NPV of the investment is equal to 294.10-275 = Rs.19.10

18. What is the relationship between Yield and Price of a bond?

If interest rates or market yields rise, the price of a bond falls. Conversely, if interest rates or market yields decline, the price of the bond rises. In other words,

the yield of a bond is inversely related to its price. The relationship between yield to maturity and coupon rate may be stated as follows:

- When the market price of the bond is less than the face value, i.e., the bond sells at a discount, YTM > current yield > coupon yield.
- When the market price of the bond is more than its face value, i.e., the bond sells at a premium, coupon yield > current yield > YTM.
- When the market price of the bond is equal to its face value, i.e., the bond sells at par, YTM = current yield = coupon yield.

19. How is the yield of a bond calculated?

19.1 An investor who purchases a bond can expect to receive a return from one or more of the following sources:

- The coupon interest payments made by the issuer;
- Any capital gain (or capital loss) when the bond matures or it is sold; and
- Income from reinvestment of the coupon interest payments or interest-on-interest.

The three yield measures commonly used by investors to measure the potential return from investing in a bond are briefly described below:

i) Coupon Yield

19.2 The coupon yield is simply the coupon payment as a percentage of the face value. Coupon yield refers to nominal interest payable on a fixed income security like Government security. This is the fixed return the Government (i.e., the issuer) commits to pay to the investor. Coupon yield thus does not reflect the impact of interest rate movement and inflation on the nominal interest that government pays.

Coupon Interest / Face Value

Illustration:

Coupon: 8.24%

Face Value: Rs.100

Market Value: Rs.103.00

Coupon yield = 8.24/100 = 8.24%

ii) Current Yield

19.3 The current yield is simply the coupon payment as a percentage of the bond's purchase price; in other words, it is the return a holder of the bond gets against its purchase price which may be more or less than the face value or the par value. The current yield does not take into account the reinvestment of the interest income received periodically.

Current yield = (Annual coupon rate / purchase price)*100

Illustration:

The current yield for a 10 year 8.24% coupon bond selling for Rs.103.00 per Rs.100 par value is calculated below:

Annual coupon interest = 8.24% x Rs.100 = Rs.8.24

Current yield = (8.24/Rs.103)*100 = 8.00%

The current yield considers only the coupon interest and ignores other sources of return that will affect an investor's return.

iii) Yield to Maturity

19.4 Yield to Maturity (YTM) is the expected rate of return on a bond if it is held until its maturity. The price of a bond is simply the sum of the present values of all its remaining cash flows. Present value is calculated by discounting each cash flow at a rate; this rate is the YTM. Thus YTM is the discount rate which equates the present value of the cash flows from a bond to its current market price. In other words, it is the internal rate of return on the bond. The calculation of YTM involves a trial-and-error procedure. A calculator or software can be used to obtain a bond's yield-to-maturity easily (please see the **Box III**).

Box III

YTM Calculation

YTM could be calculated manually as well as using functions in any standard spread sheet like MS Excel.

Manual (Trial and Error) Method

Manual method involves trial and error method and is complicated as generally government securities have many cash flows running into a few years in future. This is explained by taking an example below.

Taking the example of a two a year security bearing a coupon of 8% and a price of say Rs. 102 per face value of Rs. 100; the YTM could be calculated by solving for 'r' below. Typically it involves trial and error by taking a value for 'r' and solving the equation and if the right hand side is more than 102, take a higher value of 'r' and solve again. Linear interpolation technique may also be used to find out exact 'r' once we have two 'r' values so that the price value is more than 102 for one and less than 102 for the other value.

$$102 = 4/(1+r/2)^{1/2} + 4/(1+r/2)^{1} + 4/(1+r/2)^{3/2} + 104/(1+r/2)^{2}$$

Spread Sheet Method using MS Excel

In the MS Excel programme, the following function could be used for calculating the yield of a periodically coupon paying securities, given the price.

YIELD (settlement,maturity,rate,price,redemption,frequency,basis)

Wherein;

Settlement is the security's settlement date. The security settlement date is the date after the issue date when the security is traded to the buyer.

Maturity is the security's maturity date. The maturity date is the date when the security expires.

Rate is the security's annual coupon rate.

Price is the security's price per Rs.100 face value.

Redemption is the security's redemption value per Rs.100 face value.

Frequency is the number of coupon payments per year. (2 for Government bonds in India)

Basis is the type of day count basis to use. (4 for Government bonds in India which uses 30/360 basis)

20. What are the day count conventions used in calculating bond yields?

Day count convention refers to the method as to how the number of days are counted for calculation of prices and yields of bonds. As the use of different day count conventions can result in different prices/ yields, it is appropriate that all the participants in the market follow a uniform day count convention.

For example, the conventions followed in Indian market are given below.

Bond market: The day count convention followed is 30/360 which means that irrespective of the actual number of days in a month, the number of days is taken as 30 per month and the number of days in a year is taken as 360.

Money market: The day count convention followed is actual/365 which means that the actual number of days in a month is taken for months whereas the number of days in a year is taken as 365 days. Hence, in the case of Treasury bills which are essentially money market instruments, 365 day convention is followed.

21. How is the yield of a Treasury Bill calculated?

It is calculated as per the following formula

$$\text{Yield} = \left(\frac{100-P}{P}\right) X \left(\frac{365}{D}\right) X\ 100$$

Wherein;

P – Purchase price

D – Days to maturity

Day Count: For Treasury Bills, D = [actual number of days to maturity/365]

Illustration

Assuming that the price of a 91 day Treasury bill at issue is Rs.98.20, the yield on the same would be

Y = (100-98.20)*365*100/98.20*91 = 7.3521%

After say, 41 days, if the same Treasury bill is trading at a price of Rs. 99, the yield would then be

Y = (100-99)*365*100/99*50 = 7.3737%

Note that the remaining maturity of the treasury bill is 50 days (91-41).

22. What is Duration?

22.1 Duration of a bond is a measure of the time taken to recover the initial investment in present value terms. In simplest form, duration refers to the payback period of a bond to break even, i.e., the time taken for a bond to repay its own purchase price. Duration is expressed in number of years. A step by step approach for working out duration is given in the **Box IV** below.

Box: IV

Calculation for Duration

First, each of the future cash flows is discounted to its respective present value. For example, if the first coupon of the bond falls six months later, the amount of coupon is discounted for six months and second coupon is discounted for one year and so on.

Second, the present values of future cash flows are multiplied with their respective time periods (these are the weights). That is the PV of the first coupon is multiplied by 0.5 (six months), PV of second coupon by 1 and so on.

Third, the above weighted PVs of all cash flows is added and the sum is divided by the current price of the bond. The resultant value is the duration in years. This is the time period within which the bond is expected to pay back its own value if held till maturity.

Illustration:

Taking a bond having 2 years maturity, and 10% coupon, and current price of Rs.102, the cash flows will be; (Prevailing 2 year yield being 9%),

Time period (years)	0.5	1	1.5	2
Inflows (Rs.Cr)	5	5	5	105
PV at an yield of 9%	4.78	4.58	4.38	88.05
PV*time	2.39	4.58	6.57	176.10

Total time weighted Present Value = 189.64

Duration in years = 189.64/102 = 1.86 years

More formally, Duration refers to:

a) the weighted average term (time from now to payment) of a bond's cash flows or of any series of linked cash flows.
b) The higher the coupon rate of a bond, the shorter the duration (if the term of the bond is kept constant).
c) Duration is always less than or equal to the overall life (to maturity) of the bond.
d) Only a zero coupon bond (a bond with no coupons) will have duration equal to its maturity.
e) the sensitivity of a bond's price to interest rate (i.e., yield) movements.

Duration is useful primarily as a measure of the sensitivity of a bond's market price to interest rate (i.e., yield) movements. It is approximately equal to the percentage change in price for a given change in yield. For example, for small interest rate changes, the duration is the approximate percentage by which the value of the bond will fall for a 1% per annum increase in market interest rate. So a 15-year bond with a duration of 7 years would fall approximately 7% in value if the interest rate increased by 1% per annum. In other words, duration is the elasticity of the bond's price with respect to interest rates.

What is Modified Duration?

22.2 Modified duration refers to the change in value of the security to one per cent change in interest rates (Yield). The formula is

Modified Duration (MD) = Duration/(1+Market Yield/number of coupons in a year)

Illustration

In the above example MD = 1.86/(1+0.09/2) = 1.78

What is PV 01?

22.3 **PV01** describes the actual change in price of a bond if the yield changes by one basis point (one per cent is equal to 100 basis points). It is the present value impact of 1 basis point (0.01%) movement in interest rate. It is often used as a price alternative to duration (a time measure). Higher the PV01, the higher would be the volatility (sensitivity of price to change in yield).

Illustration

From the modified duration (given in the illustration under 22.2), we know that the security value will change by 1.78% for a change of 100 basis point (1%) change in the yield. In value terms that is equal to 1.78*(102/100) = Rs.1.81.

Hence the PV01 = 1.81/100 = Rs. 0.18, which is 18 paise. Thus, if the yield of a bond with a Modified Duration of 1.78% moves from say 9% to 9.05% (5 basis points), the price of the bond moves from Rs.102 to Rs.101.10 (90 paise i.e., 5x18 paise).

What is Convexity?

22.4 Calculation of change in price for change in yields based on duration works only for small changes in prices. This is because the relationship between bond price and yield is not strictly linear i.e., the unit change in price of the bond is not proportionate to unit change in yield. Over large variations in prices, the relationship is curvilinear i.e., the change in bond price is either less than or more than proportionate to the change in yields. This is measured by a concept called convexity, which is the change in duration of a bond per unit change in the price of the bond.

23. What are the risks involved in holding Government securities? What are the techniques for mitigating such risks?

Government securities are generally referred to as risk free instruments, in view of the fact that sovereigns are not expected to default on their payments. However,

as is the case with any financial instrument, there are risks associated with holding the Government securities. Hence, it is important to identify and understand such risks and take appropriate measures for mitigation of the same. The following are the major risks associated with holding Government securities.

23.1 ***Market risk*** – Market risk arises out of adverse movement of prices of the securities that are held by an investor due to change in interest rates. This will result in booking losses on marking to market or realizing a loss if the securities are sold at the adverse prices. Small investors, to some extent, can mitigate market risk by holding the bonds till maturity so that they can realize the yield at which the securities were actually bought.

23.2 ***Reinvestment risk*** – Cash flows on a Government security includes fixed coupon every half year and repayment of principal at maturity. These cash flows need to be reinvested whenever they are paid. Hence there is a risk that the investor may not be able to reinvest these proceeds at profitable rates due to changes in interest rate scenario.

23.3 ***Liquidity risk*** – Liquidity risk refers to the inability of an investor to liquidate (sell) his holdings due to non availability of buyers for the security, i.e., no trading activity in that particular security. Usually, when a liquid bond of fixed maturity is bought, its tenor gets reduced due to time decay. For example, a 10 year security will become 8 year security after 2 years due to which it may become illiquid. Due to illiquidity, the investor may need to sell at adverse prices in case of urgent funds requirement. However, in such cases, eligible investors can participate in market repo and borrow the money against the collateral of the securities.

Risk Mitigation

23.4 Holding securities till maturity could be a strategy through which one could avoid market risk. Rebalancing the portfolio wherein the securities once they become short term are sold and new securities of longer tenor are bought could be

followed to manage the portfolio risk. However, rebalancing involves transaction and other costs and hence needs to be used judiciously. Market risk and reinvestment risk could also be managed through Asset Liability Management (ALM) by matching the cash flows with liabilities. ALM could also be undertaken by matching the duration of the cash flows.

Advanced risk management techniques involve use of derivatives like Interest Rate Swaps (IRS) through which the nature of cash flows could be altered. However, these are complex instruments requiring advanced level of expertise for proper understanding. Adequate caution, therefore, need to be observed for undertaking the derivatives transactions and such transactions should be undertaken only after having complete understanding of the associated risks and complexities.

24. What is Money Market?

24.1 While the Government securities market generally caters to the investors with a long term investment horizon, the money market provides investment avenues of short term tenor. Money market transactions are generally used for funding the transactions in other markets including Government securities market and meeting short term liquidity mismatches. By definition, money market is for a maximum tenor of up to one year. Within the one year, depending upon the tenors, money market is classified into:

i. Overnight market - The tenor of transactions is one working day.

ii. Notice money market – The tenor of the transactions is from 2 days to 14 days.

Iii. Term money market – The tenor of the transactions is from 15 days to one year.

What are the different money market instruments?

24.2 Money market instruments include call money, repos, Treasury bills, Commercial Papers, Certificate of Deposits and Collateralized Borrowing and Lending Obligations (CBLO).

Call money market

24.3 Call money market is a market for uncollateralized lending and borrowing of funds. This market is predominantly overnight and is open for participation only to scheduled commercial banks and the primary dealers.

Repo market

24.4 Repo or ready forward contact is an instrument for borrowing funds by selling securities with an agreement to repurchase the said securities on a mutually agreed future date at an agreed price which includes interest for the funds borrowed.

24.5 The reverse of this transactions is called ‘reverse repo’ which is lending of funds against buying of securities with an agreement to resell the said securities on a mutually agreed future date at an agreed price which includes interest for the funds lent.

24.6 It can be seen from the definition above that there are two legs to the same transaction in a repo/ reverse repo. The duration between the two legs is called the ‘repo period’. Predominantly, repos are undertaken for one day period. Settlement of repo transactions happens along with the outright trades in government securities.

24.7 The money market is regulated by the Reserve Bank of India. All the above mentioned money market transactions should be reported on the electronic platform called the Negotiated Dealing System (NDS).

Collateralised Borrowing and Lending Obligation (CBLO)

24.8 CBLO is another money market instrument operated by the Clearing Corporation of India Ltd. (CCIL), for the benefit of the entities who have either no access to the inter bank call money market or have restricted access in terms of ceiling on call borrowing and lending transactions. CBLO is a discounted

instrument available in electronic book entry form for the maturity period ranging from one day to ninety days (up to one year as per RBI guidelines). In order to enable the market participants to borrow and lend funds, CCIL provides the Dealing System through Indian Financial Network (INFINET), a closed user group to the Members of the Negotiated Dealing System (NDS) who maintain Current account with RBI and through Internet for other entities who do not maintain Current account with RBI.

24.9 By participating in CBLO market, CCIL members can borrow or lend funds against the collateral of eligible securities. Eligible securities are Central Government securities including Treasury Bills, and such other securities as specified by CCIL from time to time. Borrowers in CBLO have to deposit the required amount of eligible securities with the CCIL based on which CCIL fixes the borrowing limits. CCIL matches the borrowing and lending orders submitted by the members and notifies them. While the securities held as collateral are in custody of the CCIL, the beneficial interest of the lender on the securities is recognized through proper documentation.

Commercial Papers (CPs)

24.10 Commercial Paper (CP) is an unsecured money market instrument issued in the form of a promissory note. Corporates, primary dealers (PDs) and the all-India financial institutions (FIs) that have been permitted to raise short-term resources under the umbrella limit fixed by the Reserve Bank of India are eligible to issue CP. CP can be issued for maturities between a minimum of 7 days and a maximum up to one year from the date of issue.

Certificate of Deposits (CDs)

24.11 Certificates of Deposit (CD) is a negotiable money market instrument and issued in dematerialised form or as a Usance Promissory Note, for funds deposited at a bank or other eligible financial institution for a specified time period.

Banks can issue CDs for maturities from 7 days to one a year whereas eligible FIs can issue for maturities 1 year to 3 years.

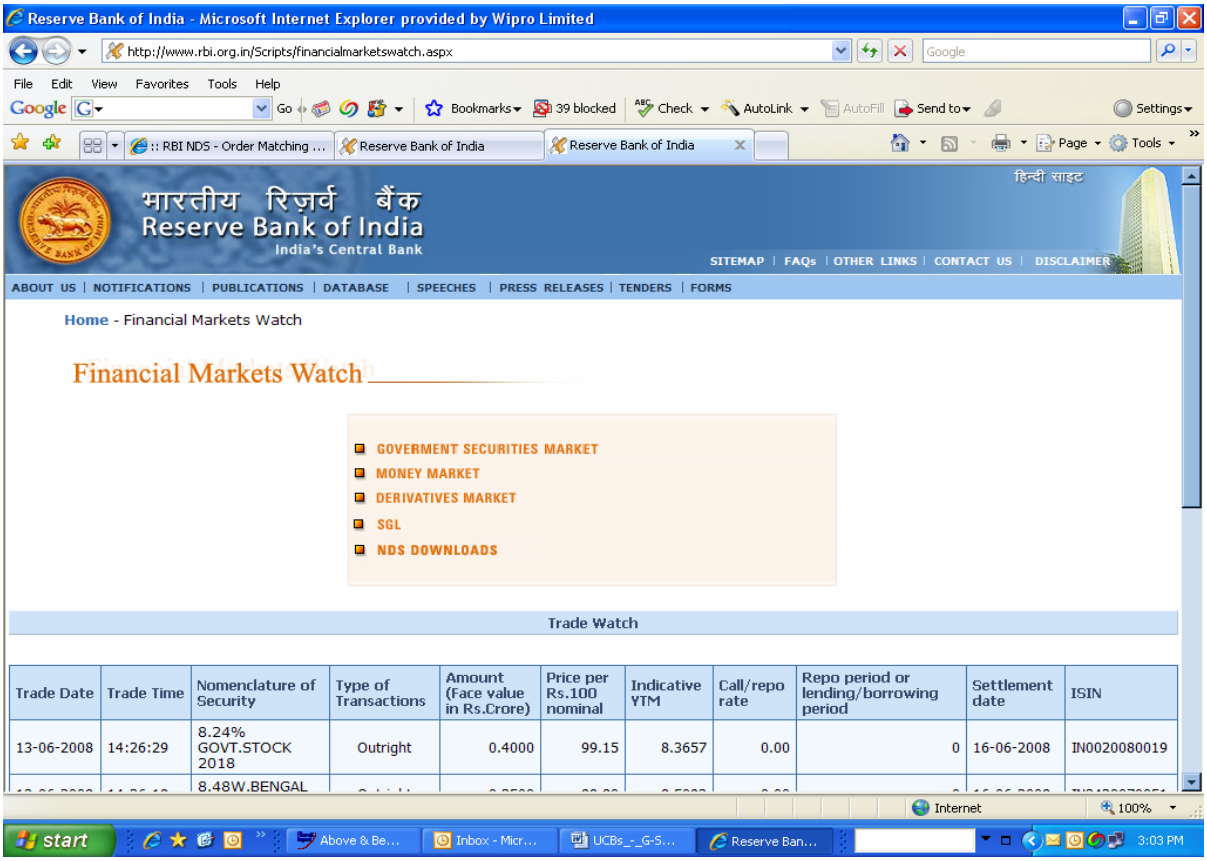
25. What is the role of FIMMDA?

The Fixed Income Money Market and Derivatives Association of India (FIMMDA), an association of Commercial Banks, Financial Institutions and Primary Dealers, was incorporated as a Company under section 25 of the Companies Act,1956. FIMMDA is a voluntary market body for the bond, money and derivatives markets. It represents market participants and aids the development of the bond, money and derivatives markets. It acts as an interface with the regulators on various issues that impact the functioning of these markets. It also undertakes developmental activities, such as, introduction of benchmark rates and new derivatives instruments, etc. FIMMDA releases rates of various Government securities that are used by market participants for valuation purposes. FIMMDA also plays a constructive role in the evolution of best market practices by its members so that the market as a whole operates transparently as well as efficiently.

26. What are various websites that give information on Government securities?

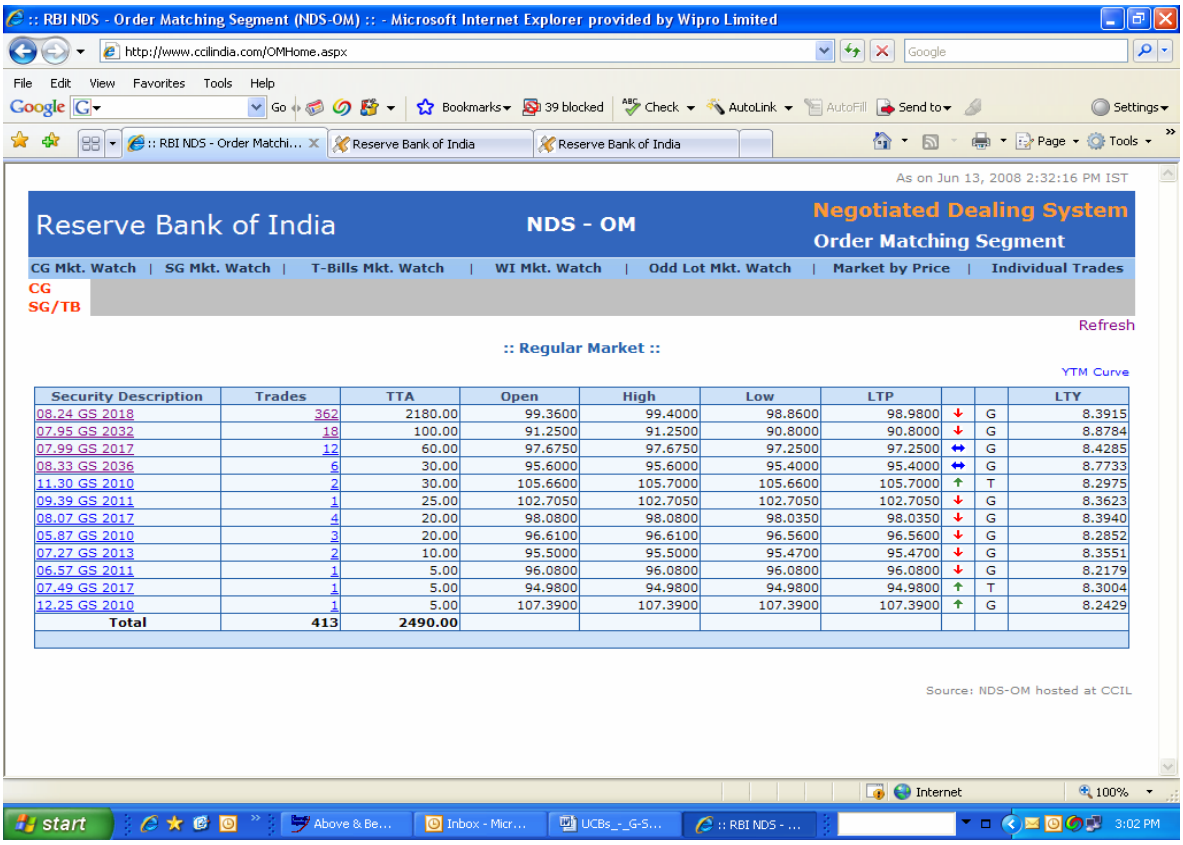
26.1. RBI financial market watch - http://www.rbi.org.in/Scripts/financialmarketswatch.aspx

This site provides links to information on prices of Government securities on NDS (OTC market), NDS-OM, money market and other information on Government securities like outstanding stock etc.



26.2. NDS-OM market watch http://www.ccilindia.com/OMHome.aspx

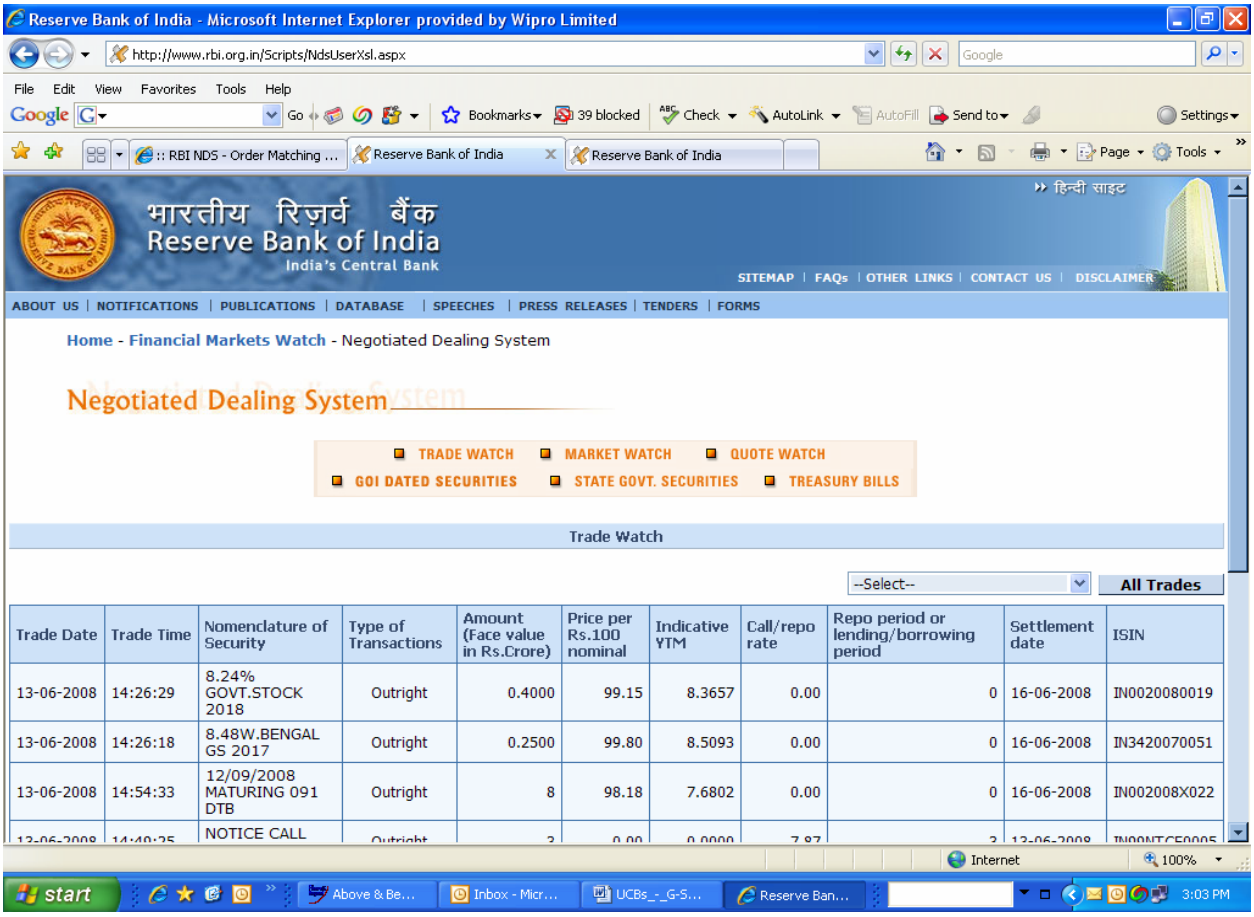
This site provides real-time information on traded as well as quoted prices of Government securities. In addition prices of When Issued (WI) (whenever trading takes place) segment are also provided.



Security Description	Trades	TTA	Open	High	Low	LTP			LTY
08.24 GS 2018	362	2180.00	99.3600	99.4000	98.8600	98.9800	↓	G	8.3915
07.95 GS 2032	18	100.00	91.2500	91.2500	90.8000	90.8000	↓	G	8.8784
07.99 GS 2017	12	60.00	97.6750	97.6750	97.2500	97.2500	↔	G	8.4285
08.33 GS 2036	6	30.00	95.6000	95.6000	95.4000	95.4000	↔	G	8.7733
11.30 GS 2010	2	30.00	105.6600	105.7000	105.6600	105.7000	↑	T	8.2975
09.39 GS 2011	1	25.00	102.7050	102.7050	102.7050	102.7050	↓	G	8.3623
08.07 GS 2017	4	20.00	98.0800	98.0800	98.0350	98.0350	↓	G	8.3940
05.87 GS 2010	3	20.00	96.6100	96.6100	96.5600	96.5600	↓	G	8.2852
07.27 GS 2013	2	10.00	95.5000	95.5000	95.4700	95.4700	↓	G	8.3551
06.57 GS 2011	1	5.00	96.0800	96.0800	96.0800	96.0800	↓	G	8.2179
07.49 GS 2017	1	5.00	94.9800	94.9800	94.9800	94.9800	↑	T	8.3004
12.25 GS 2010	1	5.00	107.3900	107.3900	107.3900	107.3900	↑	G	8.2429
Total	413	2490.00							

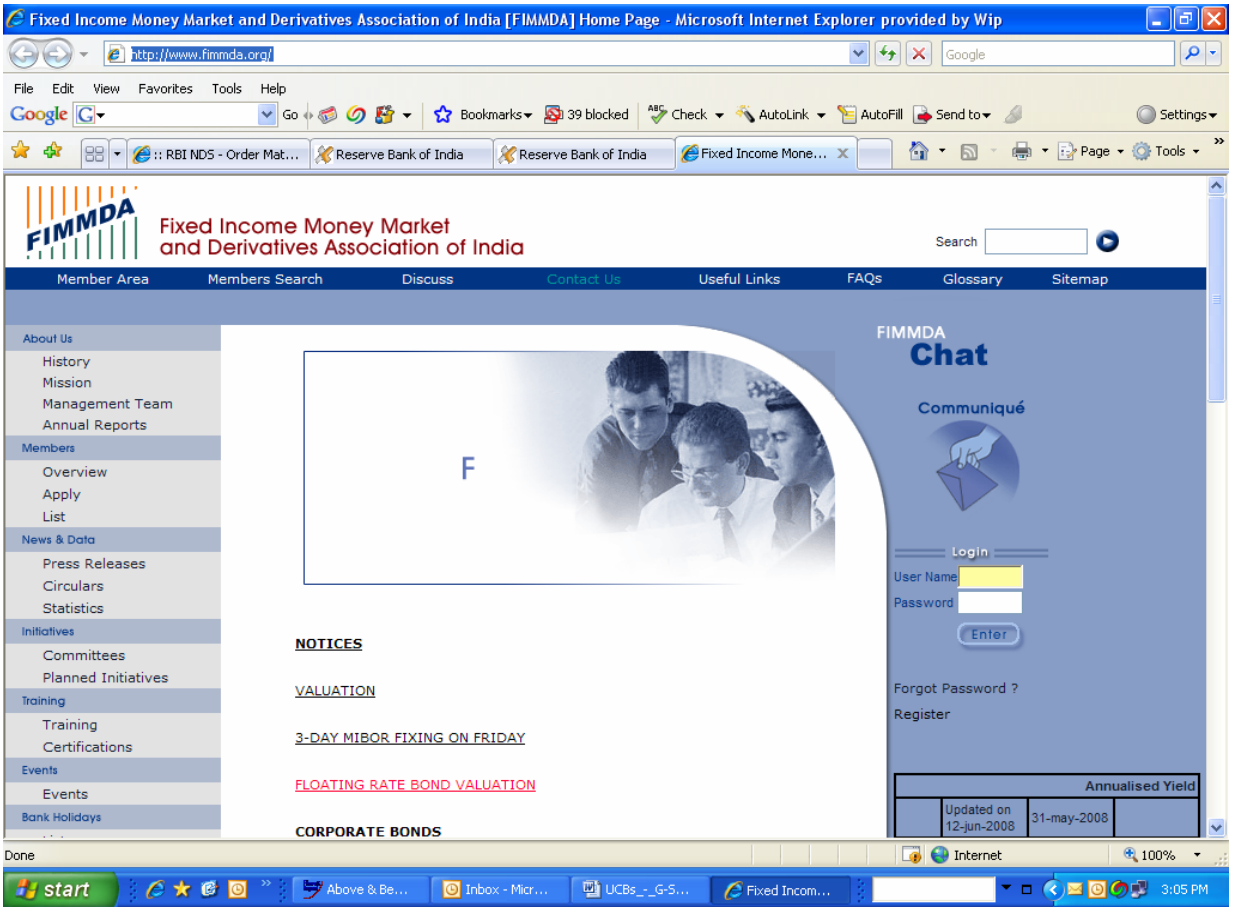
26.3. NDS market watch – http://www.rbi.org.in/Scripts/NdsUserXsl.aspx

This site provides information on prices of Government securities in OTC market. Facility is provided for searching the prices of particular securities in a date range.



26.4 FIMMDA - http://www.fimmda.org/

This site provides host of information on market practices for all the fixed income securities including Government securities. Details of various pricing models adopted by FIMMDA are provided in this site. In addition, the details of daily, monthly and yearly closing prices of Government securities, corporate bond spreads etc. are made available by FIMMDA through this site. Accessing information from this site requires a valid login and password which are provided by FIMMDA to the eligible entities.



Annex 1

Specimen of a Government security – Stock Certificate

(Enclosed)

Annex 2

List of Primary Dealers

A	Bank PDs*	Contact no. in Mumbai
1	Citibank N.A., Mumbai Branch	40015378
2	Standard Chartered Bank	22622303/22683695
3	Bank of America N.A.	22852882
4	J P Morgan Chase Bank, N.A.	6639 3084/66392944
5	HSBC Bank	22681033/34
6	Bank of Baroda	66363682/83
7	Canara Bank	22800101-105/22661348
8	Kotak Mahindra Bank Ltd.	6659 6454
9	Corporation Bank	56363683
10	HDFC Bank	66521372
B	**Stand alone PDs****	
1	IDBI Gilts	66177900
2	ICICI Sec P D Ltd.	22882460/70
3	PNB Gilts Ltd.	22693315/17
4	SBI DFHI Ltd	22610490/66364696
5	STCI PD Ltd	66202200
6	ABN AMRO Securities (India) Pvt Ltd	66386199/66386184
7	Deutsche Securities (India) Pvt Ltd	67063066/67063060
8	DSP Merrill Lynch Securities Trading Ltd	66328000/66328431
9	Lehman Brothers Fixed Income Securities Pvt.Ltd.	40374205/4037

*** Bank PDs are those which take up PD business departmentally as part of the bank itself.**

**** Stand alone PDs are Non Banking Financial Companies (NBFCs) that exclusively take up PD business.**

Annex 3

Specimen of Deal Slip

XYZ Urban Co-operative Bank Ltd

Address

Phone:

E-mail:

Deal slip No.:

Deal Confirmation

We agree to BUY / SELL:

1. OUTRIGHT / REPO
2. Transaction id :
3. Transaction date :
4. Value date:
5. Reversal date (in case of repo) :
6. Time of Transaction:
7. Transaction mode : Telephone / NDS-OM / Broker
8. Nomenclature of security :
9. Last coupon date :
10. Principal amount :
11. Accrued Interest :
12. Agreed price (per Rs.100) :
13. Total amount :
14. Name of Broker, if any :
15. It is agreed to DEBIT / CREDIT our Current account with _____Bank and CREDIT / DEBIT out SGL / Gilt Account / Demat account with _____Bank on value date.

Signed/- Signed/-

Authorised Signatory Authorised Signatory