Debt Market

Introduction

The debt market in India comprises of two main segments, *viz.*, the government securities market and the corporate securities market*, besides the emerging market for interest rate derivatives. The market for government securities is the most dominant part of the debt market in terms of outstanding securities, market capitalisation, trading volume and number of participants. It sets benchmark for the rest of the market. The outstanding volume in marketable government securities (of central as well as state government) is estimated at around Rs. 536,325 crore at the end of March 2002. The short-term instruments in this segment are used by RBI as instrument of monetary policy. The main instruments in the government securities market are dated securities (floating rate bonds, zero coupon bonds and inflation index bonds, partly paid securities, securities with embedded derivatives), treasury bills and the state government bonds. The corporate debt segment includes private corporate debt, bonds issued by public sector units (PSUs) and bonds issued by development financial institutions (DFIs). This segment is not very deep and liquid. The market for debt derivatives have not yet developed appreciably.

The year 2001-02 has been most eventful for debt markets in India, with implementation of several important decisions like setting up of a clearing corporation for government securities, a negotiated dealing system to facilitate transparent electronic bidding in auctions and secondary market transactions on a real time basis and dematerialisation of debt instruments. The year also witnessed unprecedented volumes both in primary market and secondary market. The trading volumes of the WDM segment of the NSE far exceeded combined trading volumes in equity segments of all the exchanges in the country during 2001-02.

During 2001-02, the government and corporate sector collectively mobilised Rs. 204,069 crore from primary debt market, 10.3% higher than the resources mobilised in the preceding year (Table 6-1). About 75% of these were raised by the government (Central and State Governments), while the balance amount was mobilised by the corporate sector through public and private placement issues. (The details of corporate debt issues are discussed in detail in Chapter 2). The turnover in secondary debt market during 2001-02 aggregated to Rs. 1,593,621 crore, 124% higher than that in the previous year. The share of NSE in total turnover in debt securities remained at about 60% during 2001-02.

* This chapter discusses the market design and outcome in the government securities market, both primary and secondary segment. Data availability for secondary market for corporate debt securities is limited. Wherever possible, the developments in the secondary market for corporate debt are also covered in this chapter. The developments in primary corporate debt market are presented in Chapter 2 of this publication.

Market Segments

The various segments in debt market in India are discussed below:

- Government securities form the oldest and most dominant part of the debt market in India. The market for government securities comprises the securities issued by the central government, state governments and state-sponsored entities. In the recent past, local bodies such as municipal corporations have also begun to tap the debt market for funds. The Central Government mobilises funds mainly through issue of dated securities and T-bills, while State Governments rely solely on State Development Loans. The major investors in sovereign papers are banks, insurance companies and financial institutions, which generally do so to meet statutory requirements.
- Bonds issued by government-sponsored institutions like DFIs, infrastructure-related institutions and the PSUs, also constitute a major part of the debt market. The gradual withdrawal of budgetary support to PSUs by the government since 1991 has increased their reliance on the bond market for mobilising resources. The preferred mode of raising capital by these institutions has been private placement, barring an occasional public issue. Banks, financial institutions and other corporates have been the major subscribers to these issues.
- The Indian corporate sector relies, to a great extent, on raising capital through debt issues, which comprise of bonds and CPs. Of late, most of the bond issues are being placed through the private placement route. These bonds are structured to suit the requirements of investors and the issuers, and include a variety of tailor-made features with respect to interest payments and redemption. Corporate bond market has seen a lot of innovations, including securitised products, corporate bond strips, and a variety of floating rate instruments with floors and caps. In the recent years, there has been an increase in issuance of corporate bonds with embedded put and call options. While some of these securities are traded on the stock exchanges, the secondary market for corporate debt securities is yet to fully develop.
- In addition to above, there is another segment, which comprises of short-term paper issued by banks, mostly in the form of certificates of deposit (CDs). This segment is, however, comparatively less dominant.
- The Indian debt market also has a large non-securitised, transactions-based segment, where players are able to lend and borrow amongst themselves. This segment comprises of call and notice money markets, inter-bank market for term money, market for inter-corporate loans, and market for ready forward deals (repos). Typically, short-term instruments are traded in this segment.
- The market for interest rate derivatives like FRAs, IRSs is emerging to enable banks, PDs and FIs to hedge interest rate risks.

Table 6-1: Debt Market: Selected Indicators

(Rs. crore)

Issuer / Securities	Amount raised from Primary Market		Turnover in Secondary Market	
	2000-01	2001-02	2000-01	2001-02
Government	128,483	152,508	698,121	1,573,893
Corporate/Non Government	56,578	51,561	14,541	19,728
Total	**185,061**	**204,069**	**712,662**	**1,593,621**

Source : Primedatabase, RBI, BSE and NSE.

Market Participants

Debt markets are pre-dominantly wholesale markets, with institutional investors being major participants. Banks, financial institutions, mutual funds, provident funds, insurance companies and corporates are the main investors in debt markets. Many of these participants are also issuers of debt instruments. The small number of large players has resulted in the debt markets being fairly concentrated, and evolving into a wholesale negotiated dealings market. Most debt issues are privately placed or auctioned to the participants. Secondary market dealings are mostly done on telephone, through negotiations. In some segments, such as the government securities market, market makers in the form of primary dealers have emerged, which enable a broader holding of treasury securities. Debt funds of the mutual fund industry, comprising of liquid funds, bond funds and gilt funds, represent a recent mode of intermediation of retail investments into the debt markets.

The market participants in the debt market are described below:

i. Central Government raises money through bond and T-bill issues to fund budgetary deficits and other short and long-term funding requirements.

ii. RBI, as investment banker to the government, raises funds for the government through dated securities and T-bill issues, and also participates in the market through open-market operations in the course of conduct of monetary policy. RBI also conducts daily repo and reverse repo to moderate money supply in the economy. RBI also regulates the bank rates and repo rates, and uses these rates as tools of its monetary policy. Changes in these benchmark rates directly impact debt markets and all participants in the market as other interest rates realign themselves with these changes.

iii. PDs, who are market intermediaries appointed by RBI, underwrite and make market in government securities by providing two-way quotes, and have access to the call and repo markets for funds. Their performance is assessed by RBI on the basis of their bidding commitments and the success ratio achieved at primary auctions. In the secondary market, their outright turnover has to be three times their holdings in dated securities and five times their holdings in treasury bills. Satellite dealers constituted the second tier of market makers till May 2002.

iv. State governments, municipal and local bodies issue securities in the debt markets to fund their developmental projects as well as to finance their budgetary deficits.

v. PSUs and their finance corporations are large issuers of debt securities. They raise funds to meet the long term and working capital needs. These corporations are also investors in bonds issued in the debt markets.

vi. Corporates issue short and long-term paper to meet their financial requirements. They are also investors in debt securities issued in the market.

vii. DFIs regularly issue bonds for funding their financing requirements and working capital needs. They also invest in bonds issued by other entities in the debt markets. Most FIs hold government securities in their investment and trading portfolios.

viii. Banks are the largest investors in the debt markets, particularly the government securities market due to SLR requirements. They are also the main participants in the call money and overnight markets. Banks arrange CP issues of corporates and are active in the inter-bank term markets and repo markets for their short term funding requirements. Banks also issue CDs and bonds in the debt markets. They also issue bonds to raise funds for their Tier-II capital requirement.

ix. The investment norms for insurance companies make them large participants in government securities market.

x. Mutual funds have emerged as important players in the debt market, owing to the growing number of debt funds that have mobilised significant amounts from the investors. Most mutual funds also have specialised debt funds such as gilt funds and liquid funds. Mutual funds are not permitted to borrow funds, except for meeting very short-term liquidity requirements. Therefore, they participate in the debt markets pre-dominantly as investors, and trade on their portfolios quite regularly.

xi. Foreign Institutional Investors (FIIs) are permitted to invest in treasury and corporate bonds, within certain limits.

xii. Provident and pension funds are large investors in the debt markets. The prudential regulations governing the deployment of the funds mobilised by them mandate investments pre-dominantly in treasury and PSU bonds. They are, however, not very active traders in their portfolio, as they are not permitted to sell their holdings, unless they have a funding requirement that cannot be met through regular accruals and contributions.

xiii. Charitable institutions, trusts and societies are also large investors in the debt markets. They are, however, governed by their rules and bye-laws with respect to the kind of bonds they can buy and the manner in which they can trade on their debt portfolios.

xiv. Since January 2002, retail investors have been permitted to submit non-competitive bids at primary auction through any bank or PD. They submit bids for amounts of Rs. 10,000 and multiples thereof, subject to the condition that a single bid does not exceed Rs. 1 crore. The non-competitive bids upto a maximum of 5% of the notified amount are accepted at the weighted average cut off price / yield.

xv. NDS, CCIL and WDM are other participants which are discussed in greater detail in subsequent sections.

The matrix of issuers, investors, instruments in the debt market and their maturities are presented in Table 6-2.

Table 6-2: Participants and Products in Debt Market

Issuer	Instruments	Maturity	Investors
Central Government	Dated Securities	2 - 25 years	RBI, Banks, Insurance Companies, Provident Funds, Mutual Funds, PDs, Individuals, FIIs
Central Government	T-Bills	91/364 days	RBI, Banks, Insurance Companies, Provident Funds, PDs, Mutual Funds, Individuals, FIIs
State Government	State Development Loans	5 -10 years	Banks, Insurance Companies, Provident Funds, Individuals
PSUs	Bonds, Structured Obligations	5 -10 years	Banks, Insurance Companies, Provident Funds, Mutual Funds, Individuals, Corporates, FIIs
Corporates	Debentures, Bonds	1 - 12 years	Banks, Mutual Funds, Corporates, Individuals, FIIs
Corporates, PDs	Commercial Papers	15 days to 1 year	Banks, Mutual Funds, Financial Institutions, Corporates, Individuals, FIIs
Banks	Certificates of Deposits	3 months to 1 year	Banks, Corporates, Individuals, FIIs

Policy Developments

With a view to develop and deepen debt market, particularly government securities market, and optimising cost-maturity structure of government borrowings, a number of significant policy measures were initiated and implemented since April 2001. These include:-

Union Budget, 2001-02

In order to further develop a transparent and active debt market in general, and the government securities market, in particular, following measures were proposed in the Union Budget for 2001-02:

- A Clearing Corporation would be set up under the active encouragement of RBI, with State Bank of India as the chief promoter. This is expected to be in place by June 2001.
- Trading of government securities through order driven screen-based system will be implemented.
- An electronic Negotiated Dealing System will be set up by the RBI by June 2001 to facilitate transparent electronic bidding in auctions and dealings in government securities on a real time basis.
- In order to ensure smooth and quick movement of funds, the Electronic Fund Transfer (EFT) and Real Time Gross Settlement Systems (RTGS's) are being put in place by the RBI within the next year.
- Clarifications are being issued by CBDT to promote the issuance of Separate Trading of Registered Interest and Principal of Securities (STRIPS), zero coupon bonds, deep discount bonds, and similar products.
- The old Public Debt Act would be replaced by the Government Securities Act.
- Comprehensive legislation will be introduced on securitisation.

A small group comprising the RBI, SEBI, Stock Exchanges and the Ministry of Finance would be set up to monitor and implement these developments so that the debt market becomes active next year.

Union Budget, 2002-03

The Union Budget for 2002-03 proposed the following measures to strengthen government securities market further:

(i) A new Government Securities Bill would be introduced within the budget session to replace the old Public Debt Act, 1949.

(ii) To help investors plan their investments better and to add transparency and stability in the market, RBI would announce an issuance calendar for dated government securities.

(iii) Administered Interest rates would be adjusted annually on a non-discretionary automatic basis. These would be benchmarked to the average annual yields of government securities of equivalent maturities in secondary market. Accordingly most interest rates would be reduced by 50 basis points from March 1, 2002.

(iv) A pilot Asset Reconstruction Company would be set up by June 30, 2002 with participation of public and private sector banks, financial institutions and multilateral agencies. This company would take over non-performing assets in the banking sector and also develop a market for securitised loan.

Securitisation Ordinance, 2002

The Securitisation and Reconstruction of Financial Assets and Enforcement of Security Interest Ordinance, 2002 was promulgated on 21st June 2002. It empowers banks and financial institutions to enforce their securities without intervention of court or tribunal. In the event of default by a borrower, a secured creditor shall have recourse to (a) take possession, sell or lease the secured assets, (b) take over the management of the secured asset of the borrower, (c) take possession of the secured asset and appoint a manager to manage the same, or (d) recover any money payable by third parties to the borrower. In cases of joint financing under consortium or multiple lending arrangement, if 75% of the secured creditors in value agree to initiate recovery action the same shall be binding on all secured creditors.

The Ordinance also provides a legal framework for securitiation of financial assets and asset reconstruction. The securitisation companies or reconstruction companies shall be regulated by RBI. The security receipts issued by these companies will be securities within the meaning of the Securities Contract (Regulation) Act, 1956. These companies would have powers to acquire assets by issuing a debenture or bond or any other security in the nature of debenture in lieu thereof. Once an asset has been acquired by the asset reconstruction company, such company would have the same powers for enforcement of securities as the original lender.

Issue of Government Securities

Government of India issued a revised general notification on May 6, 2002 specifying the general terms and conditions applicable to all issues of government securities. The revised notification incorporates the following additional features:

a. The auctions for issue of securities (on either yield basis or price basis) would be held either on 'Uniform price' method or on 'Multiple price' method or any other method as may be decided. Under 'Uniform price' method, competitive bids offered with rates up to and including the maximum rate of yield or the prices up to and including the minimum offer price, as determined by RBI, would be accepted at the maximum rate of yield or minimum offer price so determined. Bids quoted higher than the maximum rate of yield or lower than the minimum price as determined by RBI would be rejected. Under 'Multiple price' method, the competitive bids offered at the maximum rate of yield or the minimum offer price as determined by RBI would be accepted. Other bids tendered at lower than the maximum rate of yield or higher than the minimum offer price determined by RBI would be accepted at the rate of yield or price as quoted in the respected bid.

b. Individuals and institutions can participate in the auctions on 'non-competitive' basis, indirectly through a scheduled bank or a primary dealer offering such services or any other agency permitted by RBI for this purpose. Allocation of securities to non-competitive bidders would be at the discretion of RBI and at a price not higher than the weighted average price arrived at on the basis of the competitive bids accepted at the auction or any other price announced in the specific notification. The nominal amount of securities allocated on such basis would be restricted to a maximum percentage of the aggregate nominal amount of the issue, within or outside the nominal amount, as specified by GOI/RBI.

c. Government securities can also be issued by credit to investor's bond ledger account maintained with RBI or any institution authorised by RBI.

d. Offer for purchase of government securities can be submitted in electronic form. Payment for the government securities can be made by successful participants through EFT in a secured environment.

e. Government may issue securities with embedded derivatives. Such securities may be repaid, at the option of Government of India or at the option of the holder of the security, before the specified redemption date, where a "call option"/ "put option" is specified in the specific notification relating to the issue of a government security. Where neither a call option nor a put option is specified / exercised, the government security would be repaid on the date of redemption specified in the specific notification.

f. RBI would have discretion to retain the excess subscription to the extent specified in the specific notification when securities are issued through pre-announced coupon rates.

g. RBI can participate in auction as a 'non competitor' and will be allocated securities at cut-off price/yield in the auctions or at any other price/yield decided by Government.

Deep Discount Bonds and STRIPS

Government issued a circular clarifying the tax treatment of income from deep discount bonds (DDB) and STRIPS as follows:

(i) Every person holding a DDB will make a market valuation of the bond as on the 31st March of each financial year. The difference between the market valuations as on two successive valuation dates will represent the accretion to the value of the bond during the relevant financial year and will be taxable as interest income (where the bonds are held as investments) or business income (where the bonds are held as trading assets). In case the bond is acquired during the year by an intermediate purchaser (a person who has acquired the bond by purchase during the term of the bond and not as original subscription), the difference between the market value as on the valuation date and the cost for which he acquired the bond, will be taxed as interest income or business income, as the case may be, and no capital gains will arise as there would be no transfer of the bond on the valuation date.

(ii) Where the bond is transferred at any time before the maturity date, the difference between the sale price and the cost of the bond will be taxable as capital gains in the hands of an investor or as business income in the hands of a trader. Since the income chargeable in this case is only the accretion to the value of the bond over a specific period, for the purpose of computing capital gains, the period of holding in such cases will be reckoned from the date of purchase/subscription, or the last valuation date in respect of which the transferor has offered income to tax, whichever is later. Since such period would always be less than one year, the capital gains will be chargeable to tax as short-term capital gains.

(iii) Where the bond is redeemed by the original subscriber, the difference between the redemption price and the value as on the last valuation date immediately preceding the maturity date will be taxed as interest income in the case of investors, or business income in the case of traders. Where the bond is redeemed by an intermediate purchaser, the difference between the redemption price and the cost of the bond to such purchaser will be taxable as interest or business income, as the case may be.

(iv) STRIPS (Separate Trading of Registered Interest and Principal of Securities) creates instruments which are in the nature of Deep Discount or Zero Coupon Bonds from out of the normal interest bearing bonds. Accordingly, the tax treatment of the different components of principal and interest created by such stripping will be on the same lines as in respect of DDBs.

(v) The process of stripping of a normal interest-bearing bond into its various components will not amount to a transfer within the meaning of the Income-tax Act as it merely

involves the conversion of the unstripped bond into the corresponding series of STRIPS. Similarly, the reconstitution of STRIPS to form a coupon bearing bond will not amount to a transfer.

Monetary and Credit Policy, 2001-02

The monetary and Credit policy for 2001-02 proposed the following measures:

- Following the announcement made in the Union Budget for 2001-02, a Clearing Corporation and an electronic Negotiated Dealing System (NDS) are expected to be made operational and the Public Debt Act is proposed to be replaced by the Government Securities Act.
- The 14 day Treasury Bill and 182 day Treasury Bill auctions would be discontinued and 91 day and 364 day bills would become fungible floating stocks to activate secondary market. Accordingly RBI discontinued auctions in the 14-day and 182-day T-bills since May 14, 2001 while the notified amount for 91-day was raised to Rs. 250 crore from May 16, 2001 and for 364-day T-Bills, the amount was raised to Rs. 1000 crore from April 3, 2002.
- In order to prepare market participants for the proposed Negotiated Dealing System (NDS), with effect from June 2, 2001, all transactions settled through the Delivery *versus* Payment (D*v*P) system of RBI would be on T plus 1 basis.
- To promote retailing, individuals and provident funds would be allowed to participate in the government securities market on non-competitive basis through PDs. RBI announced a scheme on December 7, 2001 for non-competitive bidding in primary market auction of Gilts upto 5% of the notified amount.
- With effect from October 31, 2001 banks, FIs, PDs and SDs will be permitted to make fresh investments and hold bonds and debentures, privately placed or otherwise, only in dematerialised form and outstanding investments should be converted into demat by June, 2002.
- RBI would introduce uniform price auction format for auctions of dated securities, on a selective and experimental basis.

The mid-term review of monetary and credit policy, 2001-02 further stated that:

- A negotiated dealing system was being introduced with a view to facilitate electronic bidding in auctions and secondary market transactions in government securities market and dissemination of information on trades on a real time basis.
- The operationalisation of Clearing Corporation of India Limited was expected to commence with a test run in November 2001.
- A new uniform price auction format would be introduced on an experimental basis.
- A scheme of retail participation for government securities on non-competitive basis had been finalised.
- A consultative paper drawing a roadmap for developing STRIPS had been prepared.
- The bank rate was cut by 0.5 % from 7% to 6.5% w.e.f. close of business of October 22, 2001.
- Banks and FIs would be permitted to make fresh investments and hold bonds and debentures, privately placed or otherwise, only in dematerialised form w.e.f. October 31, 2001.

Monetary and Credit Policy, 2002-03

The Monetary and Credit Policy for 2002-03 proposed the following measures having bearing on the debt market:

- RBI would continue to take recourse to uniform price auctions on an experimental and selective basis during the calendar year.
- All entities having SGL accounts with RBI would become members of NDS by May 31, 2002.
- The Government Securities Act, which would replace the Public Debt Act, 1944 would be introduced in parliament. This would simplify the procedure for transactions in government securities, and allow lien making/pledging of securities as also electronic transfer in dematerialised form.
- The banks would promote schemes for sale/purchase of government securities over their counters to retail investors through demat accounts with depositories or with CSGL account holders. PDs and banks may also provide both sale and purchase facility to ensure that the retail investors are assured of liquidity of such investments.
- The issue of further Floating Rate Bonds in the current year would be considered.
- In order to operationalise the scheme of STRIPS, a working group would be constituted comprising of banks and market participants to suggest operational and prudential guidelines.
- Based on the views of the Primary Dealers Association of India (PDAI) and the Technical Advisory Committee on Money and Government Securities, no new Satellite Dealers (SDs) would be licensed. Existing SDs would be required to make action plans for termination of their operations as SDs by May 31, 2002.
- RBI would continue its policy of issuing long term bonds to meet requirements of investors like insurance companies, provident funds and pension funds.

Other Developments

Non-Competitive Bidding: With a view to encourage wider participation and retail holding of government securities, a scheme for non-competitive bidding was introduced with the auction of a 15 year stock in January 2002. Under the scheme, the investors who do not maintain current account or SGL account with RBI are eligible to bid; the minimum amount of bid is Rs.10,000 and thereafter in multiples of Rs.10,000 and the maximum amount of each bid is Rs. 1 crore; bids are placed through a bank or PD; the total amount under the scheme does not exceed 5% of the notified amount; and allotment to non-competitive bidders are made at the weighted average rate of successful competitive bidders.

Market Infrastructure: As part of the ongoing efforts to build debt market infrastructure, two new systems, the Negotiated Dealing System (NDS) and the Clearing Corporation of India Limited (CCIL) commenced operations on February 15, 2002. NDS, interalia, facilitates screen based negotiated dealing for secondary market transactions in government securities and money market instruments, online reporting of transactions in the instruments available on the NDS and dissemination of trade information to the market. Government Securities (including T-bills), call money, notice/term money, repos in eligible securities, Commercial Papers and Certificate of Deposits are available for negotiated dealing through NDS among the members. The CCIL facilitates settlement of transactions in government securities (both outright and repo) on Delivery *versus* Payment (D*v*P-II) basis which provides for settlement of securities on gross basis and settlement of funds on net basis simultaneously. It acts as a

central counterparty for clearing and settlement of government securities transactions done on NDS.

Floating Rate Bonds: In order to provide hedge against interest rate risk by offering returns linked to short term yield, Government commenced issue of Floating Rate Bonds on auction basis for the first time in November 2001. The auctions were conducted on a uniform pricing basis and the bids were submitted in terms of mark up over the base rate. The mark up arrived at on the basis of bids would remain unchanged during the currency of the bond. The bonds would carry an interest rate which would be calculated by adding the 'markup' to a 'variable base rate'. The 'variable base rate' would be the average rate of the implicit yields at cut-off prices emerging in the immediate previous six auctions of 'Government of India 364-day Treasury Bills' held prior to the relative half-year coupon period. There would not be any floor or cap on the interest rate on the Floating Rate Bonds. The interest on the bonds would be paid half yearly.

Issuance Calendar: RBI issued on March 27, 2002 an indicative calendar for issuance of marketable dated government securities for first half of the fiscal year 2002-03. This would enable institutional and retail investors to plan their investment in a better manner and provide transparency and stability in the government securities market. RBI would, however, have the flexibility for additional issuance of government securities as per emerging requirement of the Government and market conditions.

Transactions in Government Securities: In light of the recent fraudulent transactions in the guise of government securities transactions in physical format, RBI issued a circular on June 7, 2002 to accelerate the measures for further reducing the scope for trading in physical form. The measures were as follows:

(i) For banks which do not have SGL account with RBI, only one CSGL account can be opened.

(ii) In case the CSGL accounts are opened with a scheduled commercial bank, the account holder has to open a designated funds account (for all CSGL related transactions) with the same bank.

(iii) The entities maintaining the CSGL/designated funds accounts will be required to ensure availability of clear funds in the designated funds accounts for purchases and of sufficient securities in the CSGL account for sales before putting through the transactions.

(iv) No further transactions by the bank should be undertaken in physical form with any broker with immediate effect.

(v) Banks should ensure that brokers approved for transacting in government securities are registered with the debt market segment of NSE/BSE/OTCEI.

(vi) It should also be ensured that users of NDS deal directly on the system and use the system for transactions on behalf of their clients.

Banks were advised to ensure that the above instructions are complied with by June 30, 2002.

Screen-Based Trading: RBI decided, in principle, to move over in due course to order driven screen based trading in government securities on the stock exchange. RBI would specify the date of switchover to order-driven screen-based trading system in consultation with SEBI. In order to provide another platform for trading in government securities, RBI permitted trading in government securities at BSE in October 2000. The trading, however, commenced on June, 2001.

Consolidation of Securities: RBI has been attempting passive consolidation by reissuing the existing stocks through price based auctions which resulted in limiting the number of outstanding stock. As of March 2002, there were 111 government securities with outstanding amount of Rs. 5,36,325 crore, of which 23 securities, each with minimum outstanding amount of Rs.10,000 crore, accounted for more than 50%.

Market Design

Primary Issuance Process

Government Securities

The issue of government securities is governed by the terms and conditions specified in the general notification of the government and also the terms and conditions specified in the specific notification issued in respect of issue of each security. The terms and conditions specified in the general notification are discussed in this section.

Any person including firm, company, corporate body, institution, state government, provident fund, trust, NRI, OCB predominantly owned by NRIs and FII registered with SEBI and approved by RBI can submit offers, including in electronic form, for purchase of government securities. Payment for the securities are made by the applicants on such dates as mentioned in the specific notification, by means of cash or cheque drawn on RBI or Banker's pay order or by authority to debit their current account with RBI or by Electronic Fund Transfer in a secured environment. Government securities are issued for a minimum amount of Rs.10,000 (face value) and in multiples of Rs.10,000 thereafter. These are issued to the investors by credit to their SGL account or to a Constituents' SGL account of the institution as specified by them, maintained with RBI or by credit to their Bond Ledger Account maintained with RBI or with any institution authorised by RBI, or in the form of stock certificate. These are repaid at Public Debt Offices of RBI or any other institution at which they are registered at the time of repayment. If specified in the specific notification, the payment for securities and the repayment thereof can be made in specified installments.

Government issues securities through the following modes:

Issue of securities through auction: The securities are issued through auction either on price basis or on yield basis. Where the issue is on price basis, the coupon is pre-determined and the bidders quote price per Rs.100 face value of the security, at which they desire to purchase the security. Where the issue is on yield basis, the coupon of the security is decided in an auction and the security carries the same coupon till maturity. On the basis of the bids received, RBI determines the maximum rate of yield or the minimum offer price as the case may be at which offers for purchase of securities would be accepted at the auction.

The auctions for issue of securities (on either yield basis or price basis) are held either on 'Uniform price' method or on 'Multiple price' method. Where an auction is held on 'Uniform price' method, competitive bids offered with rates up to and including the maximum rate of yield or the prices up to and including the minimum offer price, as determined by RBI, are accepted at the maximum rate of yield or minimum offer price so determined. Bids quoted higher than the maximum rate of yield or lower than the minimum price are rejected. Where an auction is held on 'Multiple price' method, competitive bids offered at the maximum rate of yield or the minimum offer price, as determined by RBI,

are accepted. Other bids tendered at lower than the maximum rate of yield or higher than the minimum offer price are accepted at the rate of yield or price as quoted in the respective bid. Bids quoted higher than the maximum rate of yield or lower than the minimum price are rejected.

Individuals and specified institutions (read 'retail investors') can participate in the auctions on 'non-competitive' basis. Allocation of the securities to non-competitive bidders are made at the discretion of RBI and at a price not higher than the weighted average price arrived at on the basis of the competitive bids accepted at the auction or any other price announced in the specific notification. The nominal amount of securities that would be allocated to retail investors on non-competitive basis is restricted to a maximum percentage of the aggregate nominal amount of the issue, within or outside the nominal amount.

Issue of securities with pre-announced coupon rates: The coupon on such securities is announced before the date of floatation and the securities are issued at par. In case the total subscription exceeds the aggregate amount offered for sale, RBI may make partial allotment to all the applicants.

Issue of securities through tap sale: No aggregate amount is indicated in the notification in respect of the securities sold on tap. Sale of such securities may be extended to more than one day and the sale may be closed at any time on any day.

Issue of securities in conversion of maturing treasury bills/dated securities: The holders of treasury bills of certain specified maturities and holders of specified dated securities are provided an option to convert their holding at specified prices into new securities offered for sale. The new securities could be issued on an auction/pre-announced coupon basis.

RBI may participate in auctions as a "non-competitor" or subscribe to the government securities in other issues. Allotment of securities to RBI are made at the cut off price/yield emerging in the auction or at any other price/yield decided by the government. In order to maintain a stable interest rate environment, RBI accepts private placement of government securities. Such privately placed securities and securities that devolve on RBI are subsequently offloaded through RBI's open market operations.

Government issues the following types of Government securities:

Securities with fixed coupon rates: These securities carry a specific coupon rate remaining fixed during the term of the security and payable periodically. These may be issued at a discount, at par or at a premium to the face value and are redeemed at par.

Floating Rate Bonds: These securities carry a coupon rate which varies according to the change in the base rate to which it is related. The description of the base rate and the manner in which the coupon rate is linked to it is announced in the specific notification. The coupon rate may be subject to a floor or cap.

Zero Coupon Bonds: These are issued at a discount and redeemed at par. No interest payment is made on such bonds at periodic intervals before maturity. On the basis of the bids received through tenders, RBI determines the cut-off price at which tenders for purchase such bonds would be accepted at the auction.

Securities with Embedded Derivatives: These securities are repaid at the option of government/holder of the security, before the specified redemption date, where a "call option"/"put option" is specified in the specific notification and repaid on the date of

redemption specified in the specific notification, where neither a 'call option' nor a 'put option' is specified/exercised.

Treasury Bills

Treasury bills (T-bills) are short-term debt instruments issued by the Central government. Until recently, 4 types of T-bills were issued: 14-day, 91-day, 182-day and 364-day, representing the 4 types of tenors for which these instruments are issued. RBI did away with 14-day and 182-day T-bills from May 2001.

T-bills are sold through an auction process announced by the RBI at a discount to its face value. RBI issues a calendar of T-bill auctions. It also announces the exact dates of auction, the amount to be auctioned and payment dates. T-bills are available for a minimum amount of Rs. 25,000 and in multiples of Rs. 25,000. Banks and PDs are major bidders in the T-bill market. Both discriminatory and uniform price auction methods are used in issuance of T-bills. The auctions of 91-day T-bills are uniform price auctions, where all successful bidders are allotted amounts at the cut-off prices. In the case of 364-day bills, discriminatory price auction is followed, where the successful bidders have to pay the prices they have actually bid for. Non-competitive bids, where bidders need not quote the rate of yield at which they desire to buy these T-bills, are also allowed from provident funds and other investors. RBI allots bids to the non-competitive bidders at the weighted average yield arrived at on the basis of the yields quoted by accepted competitive bids at the auction. Allocations to non-competitive bidders are outside the amount notified for sale. Non-competitive bidders therefore do not face any uncertainty in purchasing the desired amount of T-bills from the auctions.

Since May 1999, devolvement in T-bill auctions on PDs has been done away with. Thus, devolvement, if any, takes place on RBI alone. This enables RBI to manage T-bill yields as a tool of interest rate policy. Each PD is required to make a minimum bidding commitment for auctions of T-bills so that together they absorb 100% of notified amount.

Primary and Satellite Dealers

Primary dealers (PDs) are important intermediaries in the government securities markets. There were 18 PDs operating in the market at the end of March 2002. They act as underwriters in the primary market for government securities, and as market makers in the secondary market. PDs underwrite a portion of the issue of government security that is floated for a pre-determined amount. Normally, PDs are collectively offered to underwrite up to 100% of the notified amount in respect of all issues where amounts are notified. The underwriting commitment of each PD is broadly decided on the basis of its size in terms of its net owned funds, its holding strength, the committed amount of bids and the volume of turnover in securities.

Several facilities have been extended to PDs given their special role in the government debt market. RBI provides liquidity support to the PDs through LAF against collateral of government securities and through repo operations/refinance. PDs are also given favoured access to the RBI's open market operations. PDs are permitted to borrow and lend in the money market, including call money market. PDs can also raise funds through CPs and have access to finance from commercial banks as any other corporate borrower.

Satellite dealers (SDs) formed the second tier of trading and distribution of government securities. They were expected to further strengthen the infrastructure of distribution, enhance liquidity, provide a retail outlet and encourage holding among

a wider investor base. They were given the facility of SGL, CSGL, current accounts, liquidity support through reverse repo, issue of CPs, etc. However, it has now been decided that no new SD would be licensed and the existing SDs would be required to make action plans for termination of their operations by 31st May, 2002.

State Government Securities

The states have the choice of raising 5% to 35% of their allocation through auctions. A few states resorted to auction method during 2001-02. Balance allocations are raised through tap issuances.

Secondary Market

Most of the secondary market trades in government securities are negotiated between participants (Banks, FIs, PDs, MFs) having SGL accounts with RBI. These may be negotiated directly between counter parties or negotiated through brokers. NDS of RBI provides an electronic platform for negotiating trades in government securities. If a broker is involved, the trade is reported to the concerned exchange. Trades are also executed on electronic platform of the WDM segment of NSE. WDM segment of NSE provides trading and reporting facilities for government securities.

Negotiated Dealing System

NDS, interalia, facilitates screen based negotiated dealing for secondary market transactions in government securities and money market instruments, online reporting of transactions in the instruments available on the NDS and dissemination of trade information to the market. Government Securities (including T-bills), call money, notice/term money, repos in eligible securities, Commercial Papers and Certificate of Deposits are available for negotiated dealing through NDS among the members. NDS members concluding deals outside NDS system, in instruments available on NDS, are required to report the deal on NDS system within 15 minutes of concluding the deal. NDS interfaces with CCIL for settlement of government securities transactions for both outright and repo trades done/reported by NDS members. Other instruments viz, call money, notice/term money, commercial paper and certificate of deposits settle as per existing settlement procedure.

With the objective creating a broad-based and transparent market in government securities and thereby enhancing liquidity in the system, the NDS is designed to provide:

- Electronic bidding in primary market auctions (T-Bills, dated securities, state government securities) by members,
- Electronic bidding for OMO of RBI including repo auctions under LAF,
- Screen based negotiated dealing system for secondary market operations,
- Reporting of deals in government securities done among NDS members outside the system (over telephone or using brokers of exchanges) for settlement,
- Dissemination of trade information to NDS members,
- Countrywide access of NDS through INFINET,
- Electronic connectivity for settlement of trades in secondary market both for outright and repos either through CCIL or directly through RBI, and
- Creation and maintenance of basic data of instruments and members.

The above functionalities are being developed in phases. The functional scope of the NDS relating to trading includes:

- Giving/receiving a Quote.
- Placing a call and negotiation (with or without a reference to the quote).
- Entering the deals successfully negotiated.
- Setting up preferred counterparty list and exposure limits to the counterparties.
- Dissemination of on-line market information such as the last traded prices of securities, volume of transactions, yield curve and information on live quotes.
- Interface with Securities Settlement System for facilitating settlement of deals done in government securities and treasury bills.
- Facility for reporting on trades executed through the exchanges for information dissemination and settlement in addition to deals done through NDS.

The system is designed to maintain anonymity of buyers and sellers but only the vital information of a transaction viz., ISIN of the security, nomenclature, amount (face value), price/rate and/ or indicative yield, in case applicable, are disseminated to the market, through Market and Trade Watch.

The benefits of NDS include:

- Transparency of trades in money and government securities market,
- Electronic connectivity with securities settlement systems, thus, eliminating submission of physical SGL form,
- Settlement through electronic SGL transfer,
- Elimination of errors and discrepancies and delay inherent in manual processing system, and
- Electronic audit trail for better monitoring and control.

Wholesale Debt Market of NSE

The wholesale debt market (WDM) segment of NSE has been providing a platform for trading / reporting of a wide range of debt securities. Initially, government securities, T-bills and bonds issued by PSUs were made available in this segment. This range has been widened to include non-traditional instruments like floating rate bonds, zero coupon bonds, index bonds, CPs, CDs, corporate debentures, state government loans, SLR and non-SLR bonds issued by financial institutions, units of mutual funds and securitised debt. The WDM trading system, known as NEAT (National Exchange for Automated Trading), is a fully automated screen based trading system, which enables members across the country to trade simultaneously with enormous ease and efficiency. The trading system is an order driven system, which matches best buy and sell orders on a price/time priority.

Trading system provides two market sub-types: continuous market and negotiated market. In continuous market, the buyer and seller do not know each other and they put their best buy/sell orders, which are stored in order book with price/time priority. If orders match, it results into a trade. The trades in WDM segment are settled directly between the participants, who take an exposure to the settlement risk attached to any unknown counter-party. In the NEAT-WDM system, all participants can set up their counter-party exposure limits against all probable counter-parties. This enables the trading

member/participant to reduce/minimise the counter-party risk associated with the counter-party to trade. A trade does not take place if both the buy/sell participants do not invoke the counter-party exposure limit in the trading system.

In the negotiated market, the trades are normally decided by the seller and the buyer outside the exchange, and reported to the Exchange through the broker. Thus, deals negotiated or structured outside the exchange are disclosed to the market through NEAT-WDM system. In negotiated market, as buyers and sellers know each other and have agreed to trade, no counter-party exposure limit needs to be invoked.

The trades on the WDM segment could be either outright trades or repo transactions with flexibility for varying days of settlement (T+0 to T+5) and repo periods (1 to 14 days). For every trade, it is necessary to specify the number of settlement days and the trade type (repo or non-repo), and in the event of a repo trade, the repo term.

The Exchange facilitates trading members to report off-market deals in securities in cases where the repo period is more than the permissible days in the trading system (14 days) or where the securities cannot be listed on the Exchange as they do not meet the listing requirements. These trades are required to be reported to the Exchange within 24 hours of the issuance of contract note.

All government securities are 'deemed' listed as and when they are issued. The other debt securities are traded either under the 'permitted to trade' or 'listed' category. All eligible securities, whether publicly issued or privately placed, can be made available for trading in the WDM segment. Amongst other requirements, privately placed debt paper of banks, institutions and corporates requires an investment grade credit rating to be eligible for listing. The listing requirements for securities on the WDM segment are presented in Table 6-3.

Table 6-3: Listing Criteria for Securities on WDM Segment

Issuer	Listing Criteria	
	Public Issue	**Private Placement**
a. Central/State Government	Deemed listed	
b. Public Sector Undertakings / Statutory Corporations		
- Minimum 51% holding by Govt.	Eligible	
- Less than 51% holding by Govt.	As applicable to corporates	
c. Financial Institutions	- Eligible	- Investment Grade Credit Rating
d. Scheduled Commercial Banks	- Net worth of Rs. 50 crore or above	- Net worth of Rs. 50 crore or above - Investment Grade Credit Rating
e. Infrastructure Companies	Investment Grade Credit Rating	
f. Corporates	- Minimum paid-up capital of Rs.10 crore, OR - Market capitalisation of Rs. 25 crore (Net worth in case of unlisted companies)	- Minimum paid-up capital of Rs. 10 crore, OR - Market capitalisation of Rs. 25 crore (Net worth in case of unlisted companies) - Investment Grade Credit Rating
g. Mutual Funds	SEBI registered Mutual Fund/Scheme having an investment objective to invest predominantly in debt instruments.	
h. Securitised Debt	Minimum tranche of Rs. 20 crore Investment Grade Credit Rating	

Source: NSE.

Charges

NSE has specified the maximum rates of brokerage that can be levied by trading members for trades on WDM. The rate depends on the type of security and value of transactions. The rate for central government securities ranges from 5 paise to 25 paise for every Rs. 100 of transactions. Similarly, it ranges from 10 paise to 50 paise for state government securities. It is 1% of the order value for debentures, securitised debt and commercial paper.

A trading member is required to pay transaction charges @ Rs. 0.25 per lakh of turnover subject to maximum of Rs. 1 lakh per year.

Corporate Debt Market

Corporate debt instruments are traded either as bilateral agreements between two counterparties or on a stock exchange through brokers. In the latter category, these are traded on BSE and on the CM and WDM segments of NSE. The difference between trading of government securities and corporate debt securities is that the latter are traded on the electronic limit order book. This is in view of SEBI mandate which prohibits negotiated deals in respect of corporate listed debt securities and prescribes that all such trades would be executed on the basis of price and order matching mechanism of stock exchanges as in case of equities. The trades on BSE are settled through the clearing house. The trades on CM segment are settled through National Securities Clearing Corporation which provides novation for all trades. Trades on WDM segment of NSE are settled on a trade-by-trade basis on the settlement day.

Dematerialisation of Debt Instruments

Dematerialised trading was earlier restricted only to the equity shares and units of mutual funds. With the passage of Finance Act 2000, stamp duty payable on transfer of debt instruments was waived, if the transfer takes place in the depository mode. In order to promote dematerialization, RBI specified that repos in PSU bonds would be permitted only in demat form. For encouraging dematerialised holding of debt instruments, it was decided that with effect from June 30, 2001, financial institutions (FIs), PDs and SDs would be permitted to make fresh investments and hold commercial paper (CP) only in dematerialised form. The outstanding investments in scrip form would be converted into demat form by October 2001. With effect from June 30, 2002, banks and FIs would issue CDs only in demat form. The existing outstanding CDs would be converted into demat form by October 2002. From October 31, 2001, banks, FIs and PDs and SDs would be permitted to make fresh investments and hold bonds and debentures, privately placed or otherwise, only in dematerialised form. The outstanding investments in these instruments should also be converted into demat by June 2002. With these developments, NSDL and CDSL commenced admitting debt instruments such as debentures, bonds, CPs, CDs etc., irrespective of whether these debt instruments are listed, unlisted or privately placed.

Holding and trading in dematerialised form provides a number of benefits to the investors. The dematerialisation of debt securities also opens up further opportunities. As securities in demat form can be held and transferred in any denomination, it is possible for the participant banks to sell securities to corporate clients, provident funds, trusts in smaller lots. This was not possible in the physical environment, as splitting of securities involved considerable amount of time. In the demat form, it is possible for the participant banks to STRIP these securities and create a retail market for the same. It may be possible to create a special purpose vehicle and issue cosmetic securities (PTCs) to retail holders. This can be another avenue for the banks to augment their retailing activity.

Available data point towards growing interest by issues and investors in debt dematerialisation. By March 2002, the number of investor accounts for debt dematerialisation with NSDL stood at around 1,41,785. On the same date, debt securities for Rs. 1,09,464 crore were available in demat form. 262 issuers have issued 3,443 debentures/bonds worth Rs. 77,531 crore in demat form. 253 issuers have issued 1,709 commercial papers worth Rs. 28,355 crore in demat form. Pass through certificates (PTCs) are also being issued in demat form; PTCs worth Rs. 3,576 crore have been issued in demat form.

Constituent SGL Accounts

Subsidiary General Ledger (SGL) account is a facility provided by RBI to large banks and financial institutions to hold their investments in government securities and T-bills in the electronic book entry form. Such institutions can settle their trades for securities held in SGL through a D*v*P mechanism, which ensures movement of funds and securities simultaneously. As all investors in government securities do not have an access to the SGL accounting system, RBI has permitted such investors to hold their securities in physical form. They are also permitted to open a constituent SGL account with any entity authorised by RBI for this purpose, and thus avail of the D*v*P settlement. Such client accounts are referred to as constituent SGL accounts or SGL II accounts. RBI has permitted NSCCL, NSDL, CDSL, SCHIL, banks, and PDs to offer constituent SGL account facility to an investor who is interested in participating in the government securities market. The facilities offered by the constituent SGL accounts are dematerialisation, re-materialisation, buying and selling of transactions, corporate actions, and subscription to primary market issues. All entities regulated by RBI [including FIs, PDs, cooperative banks, RRBs, local area banks, NBFCs] should necessarily hold their investments in government securities in either SGL (with RBI) or CSGL account.

Clearing and Settlement

All trades in government securities are reported to RBI-SGL for settlement. The trades are settled on gross basis through the D*v*P system, where funds and securities are transferred simultaneously. Central government securities and T-bills are held as dematerialised entries in the SGL of RBI. The PDO, which oversees the settlement of transactions through the SGL, enables the transfer of securities from one participant to another. Transfer of funds is effected by crediting/debiting the current account of the seller/buyer, maintained with the RBI. Securities are transferred through credits/debits in the SGL account. In order to do this, the SGL Form is filled by the seller, countersigned by the buyer, and sent to the RBI. The buyer transfers funds towards payment. The SGL form contains transfer instruction for funds and securities, signed by both counter-parties, and has to be submitted to RBI within one working day after the date of signing the form. The SGL form provides details of the buyer and the seller, the security, the clean price, accrued interest and details of credit in the current account.

Most transactions in government securities are placed through brokers. Buyers and sellers confirm transactions through phone and fax, after the deal is made. Brokers are usually paid a commission of 0.50 paise per market lot (of Rs. 5 crore), for deals upto Rs. 20 crore. Larger deals attract fixed commissions.

Gross settlement occasionally leads to gridlock in the D*v*P system due to shortfall of funds on a gross basis in the current accounts of one or more SGL account holders, though sufficient balance are available to settle on net basis. To take care of such unusual occurrences, the scheme of special fund facility provides intra-day funds to banks and

primary dealers against undrawn collateralised lending facility and liquidity support facility from RBI.

Clearing Corporation of India Limited

The Clearing Corporation of India Limited (CCIL), promoted by the banks and financial institutions, was incorporated in April 2001 to support and facilitate clearing and settlement of trades in government securities (and also trades in forex and money markets). It facilitates settlement of transactions in government securities (both outright and repo) on Delivery *versus* Payment (D*v*P-II) basis which provides for settlement of securities on gross basis and settlement of funds on net basis simultaneously. It acts as a central counterparty for clearing and settlement of government securities transactions done on NDS. It provides guaranteed settlement for transactions in government securities including repos through improved risk management practices viz, daily mark to market margin and maintenance of settlement guarantee fund.

Only a Bank/Financial Institution/Primary Dealer/Mutual Fund or a Statutory Corporation or body corporate that is a member of NDS and has opened an SGL Account and a Current Account with RBI can apply for CCIL's membership for the Securities segment. The members pay a one-time membership fees of Rs. 1 lakh. In addition, they pay the fees for different services as under:

Fees for services of CCIL

Service	Fees
Settlement of Outright Trades	Rs.150 per crore of face value, Minimum Rs. 25 Maximum Rs. 5,000 per Trade
Settlement of Repo Trades	Rs.20 per crore of face value, Minimum Rs. 20 Maximum Rs. 1,000 to be charged separately for each leg of Trade
Delayed deposit of margin	5 basis point per day on the amount of shortfall
Default (except on first leg of Repo deal)	5 basis point per day on the amount of default till the default is fully met
Default (on first leg of Repo deal)	5 basis point per day on the amount of default for the repo period

Members conclude trades, on-line, on the NDS platform, via the INFINET network, a secure closed-user group (CUG) hybrid network consisting of VSATs and leased lines. After trades have been concluded on the NDS, details are forwarded to the CCIL system, via INFINET, for settlement. All Repo deals by NDS members irrespective of amount are settled through CCIL. All outright deals in government securities done/reported on NDS by members up to Rs. 20 crore (face value) are compulsorily settled through CCIL. For deals above Rs. 20 crore, the NDS members have the option to settle through CCIL or directly at PDO, RBI. CCIL generates pay-in and pay-out file for securities and funds and transmits the same to RBI for settlement.

CCIL has in place a comprehensive risk management system. It encompasses strict admission norms, measures for risk mitigation (in the form of exposure limit, settlement Guarantee Fund, liquidity arrangements, continuous position monitoring and loss allocation procedure) penalties in case of default etc. Each member contributes collaterals (partly in cash and partly in acceptable securities) to a Settlement Guarantee Fund (SGF),

against which CCIL avails of a line of credit from a bank(s) so as to be able to complete settlement in case a situation of shortage resulting from a member's default is experienced. The price risk (on account of securities held by CCIL pending settlement of trades and transfer of ownership to the respective members) is mitigated by stipulating that members contribute additional collaterals in the form of Initial and Mark-to-Market (MTM) Margins. Securities contributed by, and standing to the credit of, members (their "SGF Contribution") are marked to market at fortnightly intervals, and calls for additional collateral made if needed. In case of funds shortages, CCIL completes settlement by utilizing the cash component of the concerned member's contribution to SGF and/or the lines of credit available to CCIL from banks and/or by entering into a reverse repo transaction with market participants. In case of securities shortages, CCIL arranges to complete settlement by transferring the security/ securities to the member concerned, either from its Settlement Guarantee Fund SGL Account or from its own Proprietary SGL Account at RBI, or by paying a cash compensation in lieu thereof, to the member to whom the security was to be delivered. The rupee funds payable to the defaulting member are withheld, and the securities utilised in completing settlement replenished the next day. The defaulting member has to pay a penalty for defaulting on its obligations and bear any other costs incurred by CCIL in meeting the default situation.

The details of trades settled by CCIL during 2001-02 are given below:

Settlement of Trades in Government Securities, 2001-02

(Amount in Rs. crore)

Month	Outright Transactions		Repo Transactions		Total	
	No. of Trades	Amount (Face Value)	No. of Trades	Amount (Face Value)	No. of Trades	Amount (Face Value)
Feb 2002	1,936	10,827	171	5,259	2,107	16,086
Mar 2002	5,195	28,091	353	10,671	5,548	38,762
Total	**7,131**	**38,919**	**524**	**15,930**	**7,655**	**54,848**

Interest Rate Derivatives

Deregulation of interest rate exposed market participants to a wide variety of risks. To manage and control these risks and to deepen money market, scheduled commercial banks, primary dealers and all India financial institutions have been permitted to undertake forward rate agreements (FRAs) and interest rate swaps (IRSs).

A FRA is a financial contract between two parties to exchange interest payments for a 'notional principal' amount on settlement date, for a specified period from start date to maturity date. Accordingly, on the settlement date, cash payments based on contract (fixed) and the settlement rate, are made by the parties to one another. The settlement rate is the agreed bench-mark/ reference rate prevailing on the settlement date. An IRSs is a financial contract between two parties exchanging or swapping a stream of interest payments for a 'notional principal' amount on multiple occasions during a specified period. Such contracts generally involve exchange of a 'fixed to floating' rates of interest. Accordingly, on each payment date – that occurs during the swap period – cash payments based on fixed/floating and floating rates, are made by the parties to one another. FRAs/IRSs provide

means for hedging the interest rate risk arising on account of lendings or borrowings made at fixed/ variable interest rates.

Scheduled commercial banks (excluding Regional Rural Banks), primary dealers (PDs) and all-India financial institutions (FIs) undertake FRAs/ IRSs as a product for their own balance sheet management or for market making. They also offer these products to corporates for hedging their (corporates) own balance sheet exposures.

Banks/PDS/FIs can undertake different types of plain vanilla FRAs/IRSs. Swaps having explicit/implicit option features such as caps/floors/collars are not permitted. The parties are free to use any domestic money or debt market rate as benchmark rate for entering into FRAs/IRSs, provided methodology of computing the rate is objective, transparent and mutually acceptable to counterparties. The interest rates implied in the foreign exchange forward market can also used as a benchmark for undertaking FRAs/IRSs. There are no restrictions on the minimum or maximum size of 'notional principal' amounts of FRAs/IRSs. There are also no restrictions on the minimum or maximum tenor of the FRAs/IRSs.

Market Outcome

Primary Market

Resource Mobilisation

During 2001-02, the central government and state governments borrowed Rs. 133,801 crore and Rs. 18,707 crore respectively through primary issuance. The gross borrowings of the central and state governments taken together increased by 18.7 from Rs.128,483 crore to Rs. 152,508 crore during 2001-02 (Table 6-4), while their net borrowings increased by 26.4% from Rs. 86,667 crore to Rs. 109,563 crore. The gross and net market borrowings of central government are budgeted to increase further to Rs. 1,42,867 crore and Rs. 95,859 crore, respectively during 2002-03, while those of the state governments are to increase Rs. 13,814 crore and Rs. 12,025 crore.

Table 6-4: Market Borrowings of Governments

(Rs. crore)

Security	Gross			Repayment			Net		
	2000-01	2001-02	2002-03*	2000-01	2001-02	2002-03*	2000-01	2001-02	2002-03*
1 Central Government (a+b)	115,183	133,801	142,867	41,396	41,499	47,008	73,787	92,302	95,859
a) Dated Securities	100,183	114,213	116,867	28,396	26,499	27,420	71,787	87,714	89,447
b) 364-day T-bills	15,000	19,588	26,000	13,000	15,000	19,588	2,000	4,588	6,412
2 State Government	13,300	18,707	13,814	420	1,446	1,789	12,880	17,261	12,025
Total (1+2)	**128,483**	**152,508**	**156,681**	**41,816**	**42,945**	**48,797**	**86,667**	**109,563**	**107,884**

* Budget Estimates.

Source: RBI Annual Report, 2001-02

The Central Government mobilised Rs. 114,213 crore through issue of dated securities and Rs. 19,588 crore through issue of T-bills. After meeting repayment liabilities of Rs. 26,499 crore for dated securities, and redemption of T-bills of Rs. 15,000 crore, net market borrowing of Central Government amounted to Rs. 92,302 crore for the year 2001-02. Net borrowings financed 69.4% of gross fiscal deficit of central government in 2001-02 as against 61.4% in the preceding year. The state governments collectively raised Rs. 18,707 crore during 2001-02 as against Rs. 13,300 crore in the preceding year. The net borrowings of State Governments in 2001-02 amounted to Rs. 17,261 crore, which financed 15.2% of gross fiscal deficit of state governments as against 14.4% in the preceding year.

Yields

The year 2001-02 witnessed a persistent decline in interest rates on market borrowings across maturities, despite larger than budgeted market borrowing during the year. This was largely due to comfortable liquidity position coupled with RBI's undertaking substantial private placement and devolvement which amounted to Rs. 28,892 crore, i.e. 25% of primary issues during 2001-02. The yields on primary issues of dated government securities eased during the year with the cut-off yield varying between 6.98% to 11% during 2001-02 as against the range of 9.47% to 11.7% during the preceding year. The highest yield of 11% was reported in the month of April 2001 for a 15-year government paper. The weighted average yield on government dated securities declined from 10.95% in 2000-01 to 9.44% in 2001-02 (Table 6-5). Chart 6-1 presents primary market yield for government dated securities in recent years. In the last seven years, the cost of borrowing has come down by about 431 basis points from 13.75% in 1995-96 to 9.44% in 2001-02.

The weighted average cost of borrowing of state government securities has been declining in line with dated securities. It declined from 14% in 1995-96 to 10.99% in 2000-01 and 9.2% in 2001-02.

Chart 6-1: Primary Market Yield for Central Government Securities

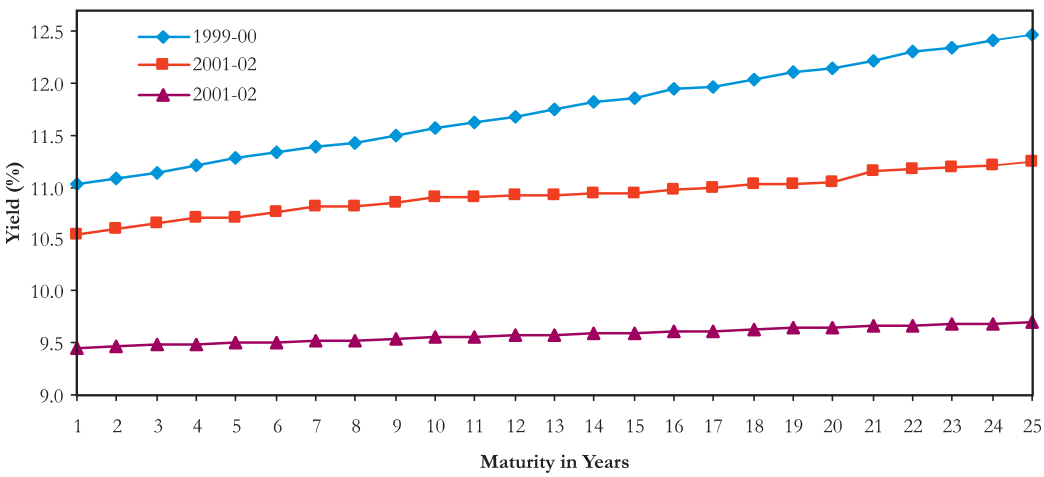


Table 6-5: Profile of Central Government Dated Securities

(Amount in Rs. crore)

Items		2000-01	2001-02
1	Gross Borrowing	100,183	114,213
2	Repayments	28,396	26,499
3	Net Borrowings	71,787	87,714
4	Weighted Average Maturity (In years)	10.60	14.26
5	Weighted Average Yield (Per cent)	10.95	9.44
6	(A) Maturity Distribution (Amount)		
	a Upto 5 years	12,500	2,000
	b Above 5 and upto 10 years	35,000	16,000
	c Above 10 years	52,683	96,213
	Total	100,183	114,213
	(B) Maturity Distribution (Per cent)		
	a Upto 5 years	12.48	1.75
	b Above 5 and upto 10 years	34.94	14.01
	c Above 10 years	52.58	84.24
	Total	100.00	100
7	Price based Auctions Amount	65,000	53,000
8	Yield - (Per cent)		
	Minimum	9.47	6.98
		(2 years, 11 months)	(FRB, 8 years)
	Maximum	11.70	11.00
		(11 years, 9 months)	(19 years, 8 months)
9	Yield - Maturity Distribution-wise		
	(A) Less than 10 years		
	Minimum	9.47	6.98
		(2 years, 11 months)	(FRB, 8 years)
	Maximum	11.69	9.81
		(9 years, 10 months)	(7 years, 5 months)
	(B) 10 years		
	Minimum	11.30	9.39
	Maximum	11.30	9.39
	(C) Above 10 years		
	Minimum	10.47	7.18
		(14 years)	(14 years, 11 months)
	Maximum	11.70	11.00
		(11 years, 9 months)	(19 years, 8 months)

Note: Figures in brackets indicate residual maturity in years.
Source: RBI.

Maturity Structure

Government has been consciously trying to lengthen maturity profile in the absence of call/put options associated with securities. The securities with call/put options are likely to be introduced soon and this would help government to retire high cost debts. During 2001-02, only one issue of government securities for Rs. 2,000 crore, accounting for less than 2% of total primary issuance of dated securities, was issued with a maturity of 5 years. Around 84% of central government borrowings were effected through securities with maturities above 10 years. The maximum maturity of primary issuance increased to 25 years. As a result, the weighted average maturity of dated securities issued during the year increased to 14.3 years from 10.6 years in 2000-01. The maturity profile of government borrowings has been going up steadily since 1995-96, except in 2000-01. The weighted average maturity of outstanding stock of dated securities from 8.2 years in 2000-01 to 8.6 years in 2001-02.

In respect of state government securities, most of the securities were issued with a maturity of 10 years. The bulk of outstanding loans of state governments have maturity of 6-10 years.

Secondary Market

Turnover

The secondary market transactions in debt securities (including government and non-government securities) increased by 124% to Rs. 1,593,621 crore in 2001-02, as against Rs. 712,662 crore during 2000-01 (Table 6-6). Non-government securities accounted for a meager 1.2% of total turnover in debt market. NSE accounted for about 60% of total turnover in debt securities during 2001-02.

Table 6-6: Turnover of Debt Securities

(Rs. crore)

Securities	2000-01	2001-02
Government Securities	**698,121**	**1,573,893**
WDM Segment of NSE	414,096	927,604
Rest of SGL	284,025	646,289
Non Government Securities	**14,541**	**19,728**
CM Segment of NSE	12	59
WDM Segment of NSE	14,486	19,586
'F' Category of BSE	43	83
Total	**712,662**	**1,593,621**

Source: RBI, BSE and NSE.

The non-government securities are traded on the WDM and CM segments of the NSE and on the BSE, although the volumes are quite insignificant. The turnover in non-government securities on WDM of NSE was Rs. 19,586 crore in 2001-02, 35% higher than that during the preceding year. BSE reported a turnover of Rs. 83 crore during 2001-02. NSE accounted for over 99% of total turnover in non-government securities during the year.

The aggregate turnover (in central and state government dated securities and T-bills) through SGL (including outright and repo transaction) touched a level of Rs.1,573,893 crore, recording an increase of 125% over Rs. 698,121 crore in the previous year. The volume of transactions in state government securities increased by 122% to Rs. 6,623 crore. The growing turnover of government securities reflects increasing depth of the market. The monthly turnover in outright transactions for the year 2001-02 ranged between Rs. 64,239 crore and Rs. 134,162 crore, with a monthly average of Rs. 100,997 crore. Such high volumes is attributed to the fact that the commercial banks are flush with funds while the recent past has witnessed several cuts in bank rates and low credit off take due to continuing recession in the industry. The collapse of the equity market has also led to increased interest in debt market. The setting up of CCIL and NDS would enable greater participation and volumes in the days to come. The improvement in trading of corporate debt market is attributed to RBI prescription of demat debt issues, SEBI mandate for trading on exchanges and removal of stamp duty on transfer of dematerialised debt securities.

The bulk of transactions during 2001-02 were on outright basis. The outright transactions amounted to Rs. 1,211,996 crore, accounting for 77% of total turnover (Table 6-7). The share of outright transactions in government securities increased from 23.2% in 1995-96 to 77% in 2001-02. The share of repo transactions declined correspondingly from 76.8% in 1995-96 to 23% in 2001-02. The details of transactions in government securities are presented in Annexure 6-1.

The share of dated securities in total turnover of government securities increased from 69.4% in 1996-97 to 94.1% in 2001-02. T-bills accounted for 5.9% of total SGL turnover during 2001-02. Two-way quotes are available for active government securities from the PDs. Though many trades in government securities take place through telephone, a larger chunk of trades gets routed through NSE brokers.

Table 6-7: Secondary Market Transactions in Government Securities

Year	Total SGL Turnover (Rs. cr.)	Share in Turnover (%)		Share in Turnover (%)	
		Outright	Repo	Dated Securities	T-Bills
1995-96	127,179	23.20	76.80	86.80	12.84
1996-97	122,941	76.40	23.60	69.40	30.12
1997-98	185,708	86.74	13.26	75.04	24.24
1998-99	227,228	82.53	17.47	79.73	19.59
1999-00	539,232	84.66	15.34	89.20	10.12
2000-01	698,121	81.95	18.05	88.98	11.02
2001-02	1,573,893	77.00	23.00	94.10	5.90

Source: RBI.

The share of WDM segment of NSE in total turnover for government securities decreased marginally from 59.3% in 2000-01 to 58.9% in 2001-02 (Table 6-8). As compared to the increase in overall turnover of government securities by 125%, the same on WDM grew by 124% during 2001-02. Share of WDM in transactions of dated securities decreased from 63% in 2000-01 to 61.1% in 2001-02. Its share in transactions of T-bills decreased from 30% in 2000-01 to 27.4% in 2001-02. The Shares of WDM in outright and repo transactions were 76.5% and 0.17% respectively during 2001-02. The share of WDM in total SGL turnover is presented in Table 6-8 and Chart 6-2.

Chart 6-2: Share of WDM in SGL

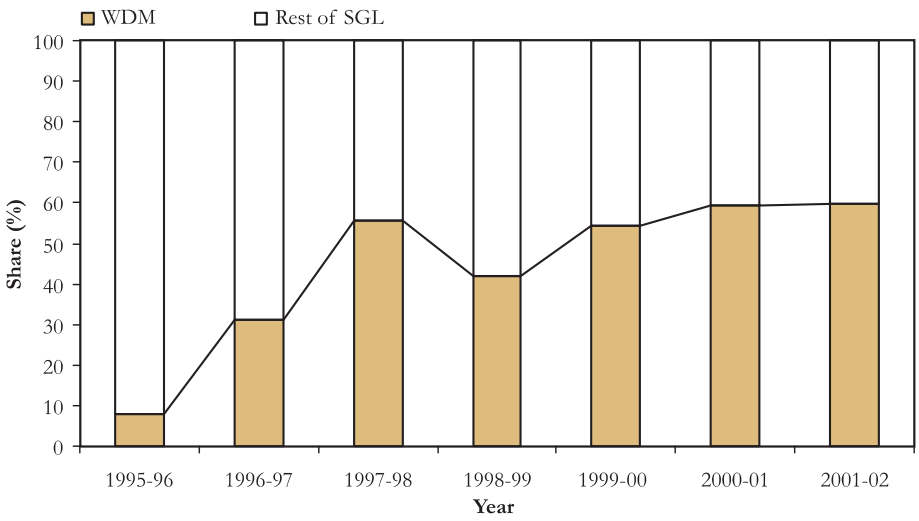


Table 6-8: Share of WDM in Transactions of Government Securities

(Amount in Rs. crore)

Year	Turnover of Government Securities			Turnover of Dated Securities			Turnover of T-Bills		
	On SGL	On WDM	Share of WDM (%)	On SGL	On WDM	Share of WDM (%)	On SGL	On WDM	Share of WDM (%)
1995-96	127,179	9,988	7.85	110,387	7,552	6.84	16,327	2,260	13.84
1996-97	122,941	38,308	31.16	85,318	27,053	31.71	37,027	10,957	29.59
1997-98	185,708	103,585	55.78	139,352	83,789	60.13	45,008	18,866	41.92
1998-99	227,228	95,280	41.93	181,173	83,714	46.21	44,511	10,706	24.05
1999-00	539,232	293,887	54.50	481,010	280,827	58.38	54,591	11,007	20.16
2000-01	698,121	414,095	59.32	618,185	389,698	63.04	76,950	23,142	30.07
2001-02	1,573,893	927,604	58.94	1,474,365	900,649	61.09	92,506	25,543	27.49

Source: RBI & NSE.

Developments in WDM

During 2001-02, 821 more securities with a total outstanding debt of Rs. 160,962 crore were made available for trading on WDM. The number of securities available for trading increased during the year from 1,534 to 1,790, which included 1,159 securities under the listed and deemed listed category and 631 securities under the permitted category. A total of 979 securities were active during 2001-02 as compared to 1,038 in the previous year.

The turnover on WDM segment has been growing rapidly over time. It registered an increase of 121% from Rs. 428,582 crore during 2000-01 to Rs.947,190 crore during 2001-02. The average daily turnover increased from Rs. 1,483 crore to Rs. 3,277 crore during the same period, while the average number of trades per day increased from 223 to 503. The business growth of WDM segment is presented in Table 6-9, Chart 6-3 and Annexure 6-2.

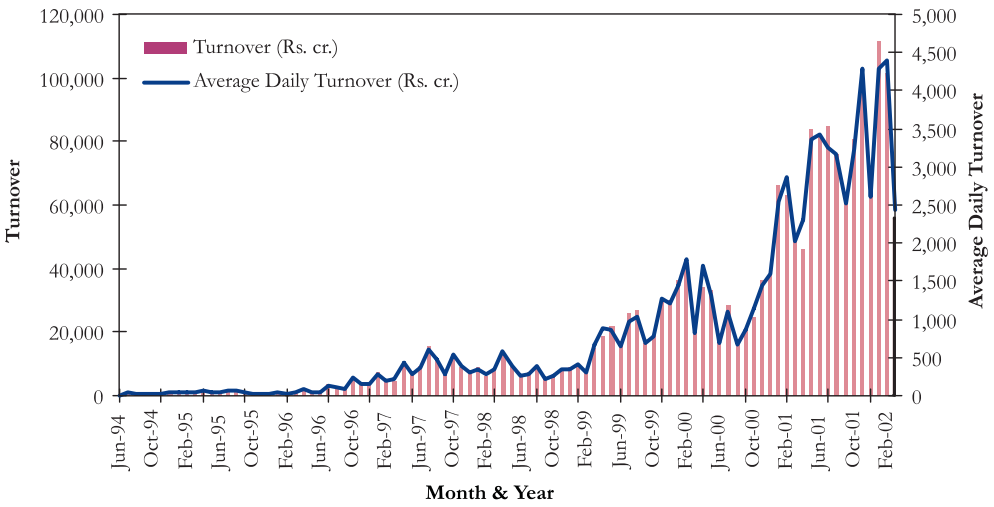
The market remained highly buoyant throughout the year. The highest turnover of Rs. 111,736 crore was witnessed in January 2002. The average daily turnover, which was as low as Rs. 2,314 crore in April 2001, touched the high of Rs. 4,298 crore in January 2002. The average size of a WDM trade marginally decreased from Rs. 6.65 crore in 2000-01 to Rs. 6.54 crore in 2001-02. Such large average size of trades only proves the wholesale nature of the market.

Table 6-9: Business Growth of WDM Segment of NSE

Parameter	Jun 94-Mar 95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-2002
No. of Active Securities	183	304	524	719	1,071	1,057	1,038	979
No. of Trades	1,021	2,991	7,804	16,821	16,092	46,987	64,470	144,851
No. of Retail Trades	168	1,115	1,063	1,390	1,522	925	498	378
Turnover (Rs. cr.)	6,781	11,868	42,278	111,263	105,469	304,216	428,582	947,190
Average Daily Turnover (Rs. cr.)	35	41	145	385	365	1,035	1,483	3,277
Retail Turnover (Rs. cr.)	31	207	201	289	308	218	131	110
Share of Retail Trades (%)	0.45	1.74	0.47	0.26	0.29	0.07	0.03	0.01
Average Trade Size (Rs. cr.)	6.64	3.97	5.42	6.61	6.55	6.47	6.65	6.54
Average Size of Retail Trade (Rs. lakh)	18.21	18.58	18.91	20.79	20.23	23.56	26.31	29.10

Source: NSE.

Chart 6-3: Business Growth of WDM Segment



Retail Trades

The number of retail trades (trade value of less than Rs. 1 crore) had been increasing till 1998-99, but started declining afterwards. The number of retail trades declined to 378 in 2001-02 from 498 in the previous year. The share of retail trades in total turnover declined further from 0.03% to 0.01% during the same period. The efforts made by policy makers to broaden the investor base by retailing government securities does not seem to yield much results.

Securities Profile

Long term securities dominated the market during 2001-02 revealing the interest of investors to hold on to long term of assets. Dated government securities accounted for the bulk of trading. The turnover in government securities increased by 131% during 2001-02. Its share in total turnover, however, increased to 95.2% from 91.2% in the previous year (Table 6-10). The share of T-Bills in WDM turnover has been declining over time. During 2001-02, the share of T-bills in total volume declined to 2.7% from 5.4% in 2000-01.

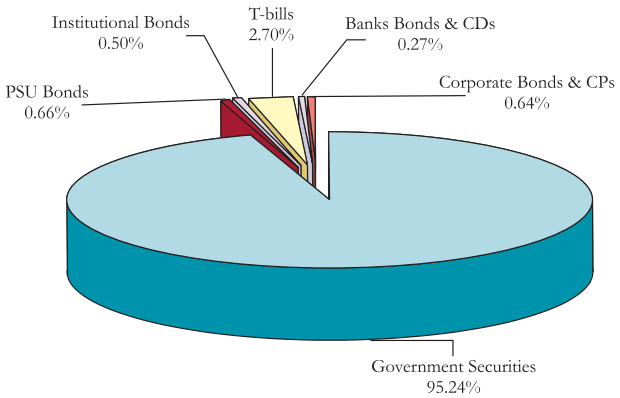
Table 6-10: Security wise Distribution of Turnover

Securities	Turnover (Rs. crore)		% of Turnover	
	2000-01	2001-02	2000-01	2001-02
Government Securities	390,952	902,061	91.22	95.24
T-Bills	23,143	25,543	5.40	2.70
PSU Bonds	3,617	6,238	0.84	0.66
Institutional Bonds	4,270	4,715	1.00	0.50
Bank Bonds & CDs	2,027	2,521	0.47	0.27
Corporate Bonds & CPs	4,516	6,107	1.05	0.64
Others	57	5	0.01	0.00
Total	**428,582**	**947,190**	**100.00**	**100.00**

Source: NSE.

The PSU bonds witnessed a turnover of Rs. 6,238 crore in 2001-02 as against Rs. 3,616 crore in 2000-01. Its share in the total turnover, however, marginally declined from 0.84% to 0.66%. The share of institutional bonds and corporate bonds declined from 1% to 0.5% and that of corporate bonds and CPs declined from 1.05% to 0.64% during the same period. Security-wise distribution of turnover in WDM is presented in Annexure 6-3. Chart 6-4 presents security-wise distribution of turnover in 2001-02.

Chart 6-4: Security-wise Distribution of Turnover, 2001-02



The share of top 'N' securities in turnover of WDM segment is presented in Table 6-11. The increasing trend in the share of top 'N' securities in turnover continued

Table 6-11: Share of Top 'N' Securities/Trading Members/ Participants in Turnover in WDM Segment

Year	In Percent				
	Top 5	Top 10	Top 25	Top 50	Top 100
1994-95	42.84	61.05	80.46	89.81	97.16
1995-96	57.59	69.46	79.60	86.58	93.24
1996-97	32.93	48.02	65.65	78.32	90.17
1997-98	30.65	46.92	71.25	85.00	92.15
1998-99	26.81	41.89	64.30	78.24	86.66
1999-00	37.11	55.57	82.12	90.73	95.28
2000-01	42.20	58.30	80.73	89.97	95.13
2001-02	51.61	68.50	88.73	94.32	97.19
Trading Members					
1994-95	51.99	73.05	95.37	100.00	-
1995-96	44.36	68.58	96.10	100.00	-
1996-97	30.02	51.27	91.57	99.96	100.00
1997-98	27.17	47.85	83.38	99.82	100.00
1998-99	29.87	50.45	86.55	99.98	100.00
1999-00	32.38	53.41	84.46	100.00	-
2000-01	35.17	54.25	86.82	100.00	-
2001-02	35.18	58.68	88.36	100.00	-
Participants					
1994-95	18.37	27.38	38.40	42.20	-
1995-96	29.66	47.15	70.49	76.32	76.58
1996-97	25.27	44.92	67.00	76.33	77.10
1997-98	23.60	38.96	65.59	77.96	80.22
1998-99	22.47	37.39	62.79	79.27	84.51
1999-00	15.54	27.87	52.51	74.76	81.32
2000-01	17.51	28.85	50.64	69.72	76.78
2001-02	17.49	28.25	50.19	69.16	76.49

Source: NSE.

during 2001-02 when the share of top 10 securities increased to 68.5% from 58.3% in 2000-01. This indicates that trading is getting concentrated in fewer securities. Top 50 securities accounted for over 94% of turnover.

Participant Profile

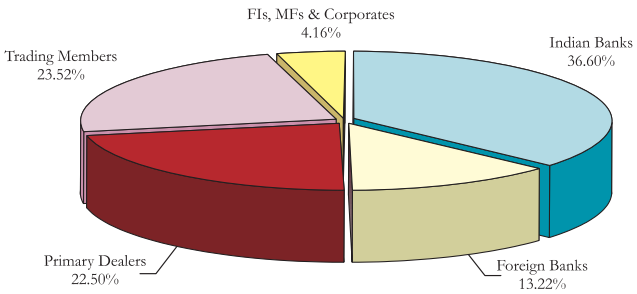
Indian banks, foreign banks and PDs together accounted for over 72.32% of WDM turnover during 2001-02 (Table 6-12). Indian banks continue to be market leader. Their share in turnover increased from 33.5% in 2000-01 to 36.6% in 2001-02, while the share of foreign banks marginally declined from 16.9% to 13.2% during the same period. PDs contributed 22.5% of turnover during 2001-02 as against 22.14% in 2000-01. Participant wise distribution of turnover on WDM is presented in Annexure 6-3 and Chart 6-5.

Table 6-12: Participant-wise Distribution of Turnover

Participants	2000-01	2001-02
Indian Banks	33.54	36.60
Foreign Banks	16.90	13.22
Primary Dealers	22.14	22.50
Trading Members	23.24	23.52
FI, MFs & Corporates	4.18	4.16
Total	**100.00**	**100.00**

Source: NSE.

Chart 6-5: Participant-wise Distribution of Turnover, 2001-02



Contributions of top 'N' trading members/participants in total turnover are presented in Table 6-11. Top '50' trading members accounted for the total turnover of WDM in 2001-02, which is indicative of the narrow membership structure of WDM segment. As at March 31, 2002, there were 88 members of WDM segment. However, only 48 members were active during 2001-02. The share of top 'N' participants has reduced over time indicating diffusion of trades among participants.

Market Capitalisation

Market capitalisation of the WDM segment has witnessed a constant increase, reflecting an increase in the number of securities available for trading on this segment. Total market capitalisation of securities available for trading on WDM segment stood at Rs. 756,794 crore as at end-March 2002, registering a growth of 30.3% over end-March 2001. The relative shares of different securities in market capitalisation changed marginally during 2001-02. Government securities accounted for 71.7% of total market capitalisation at the end of March 2002. The composition of market capitalisation of various securities on WDM in the recent past is presented in Table 6-13. The market capitalisation of securities on WDM at the end of March 2002 is presented in Chart 6-6. The growth of market capitalisation of WDM is presented in Annexure 6-4.

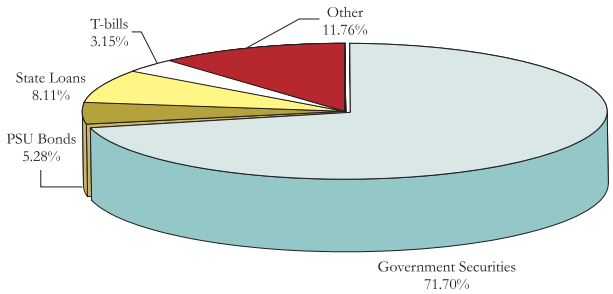
Table 6-13 : Market Capitalisation of WDM Segment

(Amount in Rs. crore)

Security	March-01	March-02	March-01	March-02
Government Securities	397,228	542,601	68.39	71.70
PSU Bonds	36,365	39,944	6.26	5.28
State Loans	44,624	61,385	7.68	8.11
T-bills	17,725	23,849	3.05	3.15
Other	84,894	89,016	14.62	11.76
Total	**580,836**	**756,795**	**100.00**	**100.00**

Source: NSE.

Chart 6-6: Market Capitalisation of WDM Segment at the end of March 2002



Yields

The yields (yield-to-maturity) on government and corporate securities of different maturities of 0-1 year, 5-6 years, 9-10 years and above 10 years are presented in Table 6-14. It is observed that yield on corporate debt is generally higher than on government debt for securities of similar maturity. The yields were higher for securities of higher maturities. The yields on government and corporate securities declined through out 2001-02 except for September 2001.

Table 6-14: Yields on Government and Corporate Securities, 2001-02

(In per cent)

Month/ Year	Government Securities				Corporate Securities			
	0-1 year	5-6 years	9-10 years	Above 10 years	0-1 year	5-6 years	9-10 years	Above 10 years
Apr-01	8.80	9.46	10.17	10.65	-	10.69	-	-
May-01	8.53	9.16	9.94	10.50	9.85	10.32	11.17	-
Jun-01	8.03	8.96	9.71	10.18	9.37	10.25	10.94	-
Jul-01	7.52	8.26	9.31	9.95	9.18	10.48	10.59	10.61
Aug-01	7.10	8.11	9.23	9.94	8.83	9.82	10.10	10.30
Sep-01	7.25	8.29	9.31	10.25	9.20	9.36	11.03	10.55
Oct-01	7.12	7.95	9.09	9.89	8.94	10.20	10.15	10.64
Nov-01	6.85	7.59	8.42	9.07	8.25	10.21	10.28	10.34
Dec-01	6.84	7.53	8.07	8.73	9.11	-	9.66	10.31
Jan-02	6.92	7.30	7.84	8.47	8.22	9.32	-	10.35
Feb-02	6.33	6.72	7.38	8.05	9.45	8.87	-	10.03
Mar-02	6.20	6.76	7.43	8.06	8.11	10.36	9.59	9.77

Source: NSE.

Interest Rate Derivatives

The year 2001-02 witnessed sharp increase in volumes in FRAs/IRSs. The number of such contracts increased from 1,615 as on April 6, 2001 to 4,329 by the end of March 2002. The outstanding notional principal amount also increased from Rs. 22,865 crore to Rs. 86,749 crore during the same period. Since detailed data in this segment are not available publicly, it has not been possible to analyse the market outcome further.

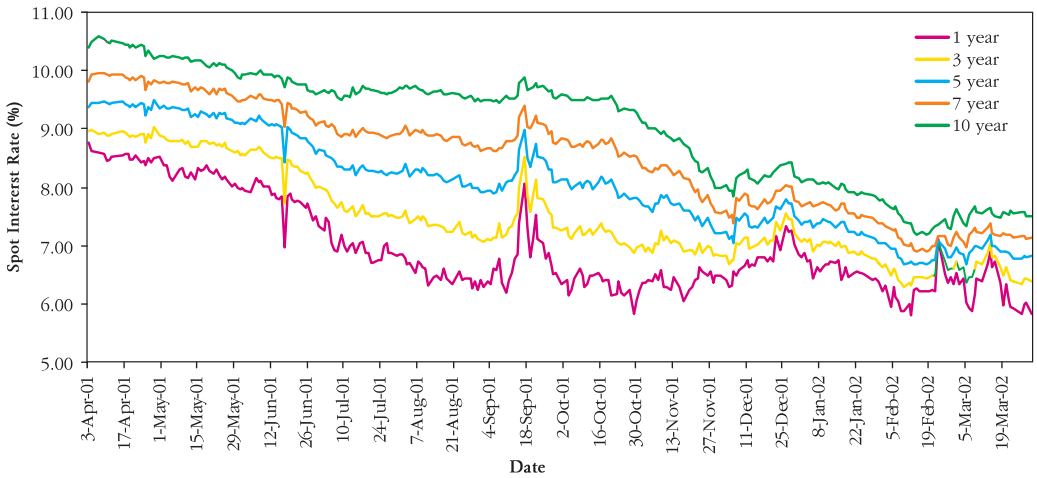
Zero Coupon Yield Curve

Keeping in mind the requirements of the banking industry, financial institutions, mutual funds, insurance companies, etc. that have substantial investment in sovereign papers, NSE disseminates a 'Zero Coupon Yield Curve' (NSE Zero Curve) to help in valuation of securities across all maturities irrespective of its liquidity in the market. This product has been developed by using Nelson-Siegel model to estimate the term structure of interest rate at any given point of time and been successfully tested by using daily WDM trades data. This is being disseminated daily.

The ZCYC depicts the relationship between interest rates in the economy and the associated term to maturity. It provides daily estimates of the term structure of interest rates using information on secondary market trades in government securities from the WDM segment. The term structure forms the basis for the valuation of all fixed income instruments. Modeled as a series of cash flows due at different points of time in the future, the underlying price of such an instrument is calculated as the net present value of the stream of cash flows. Each cash flow, in such a formulation, is discounted using the interest rate for the associated term to maturity, the appropriate rates are read off the estimated ZCYC. Once estimated, the interest rate-maturity mapping is used to compute underlying valuations even for securities that do not trade on a given day. Changes in the economy cause shifts in the term structure, changing the underlying valuations of fixed income instruments. The daily ZCYC captures these changes, and is used to track the value of portfolios of government securities on a day-to-day basis.

The estimates of daily ZCYC are available from February 1998. Chart 6-7 plots the spot interest rates at different maturities for the year 2001-02.

Chart 6-7: Zero Coupon Yield Curve, 2001-02



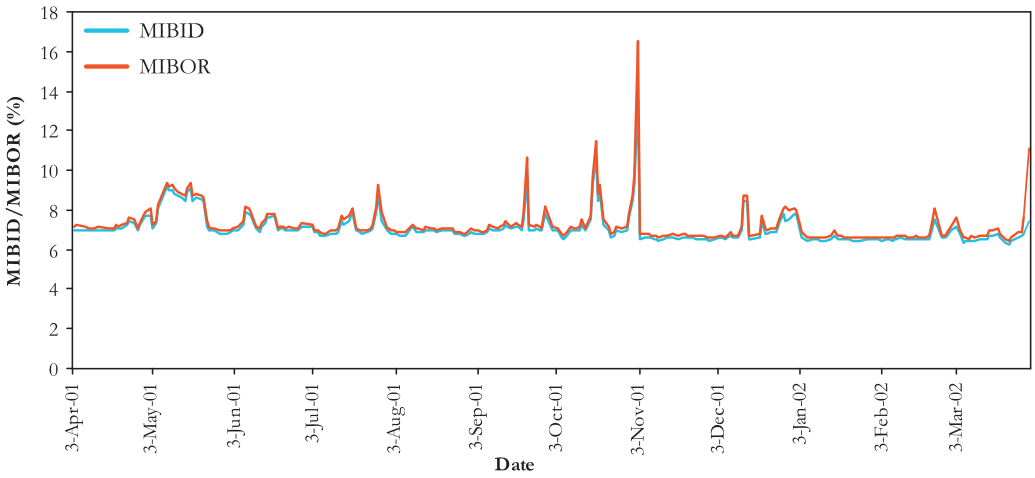
FIMMDA-NSE MIBID/MIBOR

NSE has been computing and disseminating the NSE Mumbai Inter-bank Bid Rate (MIBID) and NSE Mumbai Inter-bank Offer Rate (MIBOR) for the overnight money market from June 15, 1998, the 14-day MIBID/MIBOR from November 10, 1998 and the 1 month and 3 month MIBID/MIBOR from December 1, 1998. In view of the robust methodology of computation of these rates and their extensive use by market participants, these have been co-branded with Fixed Income and Money Market Dealers Association (FIMMDA) from March 4, 2002. These are now known as FIMMDA-NSE MIBID/MIBOR from March 4, 2002. These rates are used as benchmarks for majority of deals struck for interest rate swaps, forward rate agreements, floating rate debentures and term deposits.

FIMMDA-NSE MIBID/MIBOR are based on rates polled by NSE from a representative panel of 31 banks/institutions/primary dealers. Currently, quotes are polled and processed daily by the Exchange at 0940 (IST) for overnight rate and at 1130 (IST) for the 14 day, 1 month and 3 month rates. The rates polled are then processed using the bootstrap method to arrive at an efficient estimate of the reference rates. The overnight rates are disseminated daily to the market at about 0955 (IST) and the 14 day, 1 month and 3 month rates at about 1145 (IST). These are broadcast through NEAT-WDM trading system immediately on release and also disseminated through websites of NSE and FIMMDA and through e-mail.

The overnight MIBID/MIBOR rates ruled fairly steady within a narrow range during the year 2001-02. These touched the peak of 13.47% and 16.54% respectively on November 2, 2001 and the low of 6.29% and 6.47% respectively on March 22, 2002. The rates have been particularly stable during the current financial year, reflective of a stable interest rate environment, and have been hovering around 6-7%. The stability of the rates in overnight call market may be due to the guidelines issued by RBI moving non-banks from the call market in a phased manner. Chart 6-8 presents overnight FIMMDA-NSE MIBID/MIBOR from April 2001 to June March 2002. The FIMMDA-NSE MIBID/MIBOR rates for month ends are presented in Annexure 6-5. The daily FIMMDA-NSE MIBID/MIBOR rates are available at **www.nseindia.com.**

Chart 6-8: Overnight NSE-FIMMDA MIBID/MIBOR Rates, 2001-02



NSE-VaR System

NSE has developed a VaR system for measuring the market risk inherent in Government of India (GoI) securities. NSE-VaR system builds on the NSE database of daily yield curves (ZCYC) and provides measures of VaR using 5 alternative methods (normal variance-covariance, weighted normal, historical simulation, weighted historical simulation and extreme value theory). Together, these 5 methods provide a range of options for market participants to choose from.

NSE-VaR system releases daily estimates of security-wise VaR at 1-day and multi-day horizons for securities traded on WDM segment of NSE and all outstanding GOI securities with effect from January 1, 2002. Participants can compute their portfolio risk as weighted average of security-wise VaRs, the weights being proportionate to the market value of a given security in their portfolio. 1-day VaR (99%) measure for GoI Securities traded on NSE-WDM on March 31, 2002 is presented in Annexure 6-6. The VaR for other GoI securities are available at www.nseindia.com.

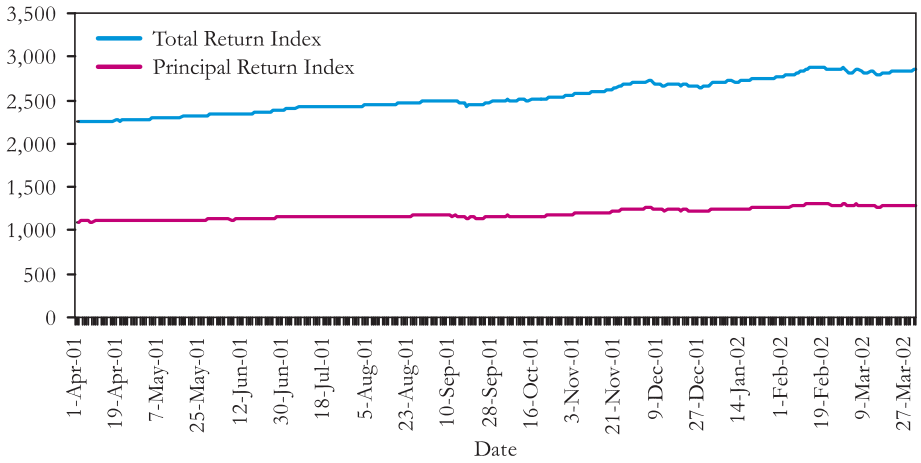
Bond Index

While there exists an array of indices for the equity market, a well-constructed and widely accepted bond index is conspicuous by its absence. There are a few additional difficulties in construction and maintenance of debt indices. First, on account of the fixed maturity of bonds vis-à-vis the perpetuity of equity, the universe of bonds changes frequently (new issues come in while existing issues are redeemed). Secondly, while market prices for the constituents of an equity index are normally available on all trading days over a long period of time, market prices of constituent bonds in a bond index, irrespective of the selection criteria used, may not be available daily. This is on account of the fact that the liquidity of a security varies over its lifetime and, in addition, can witness significant fluctuations over a short period of time. However, market participants need an index to compare their performance with as well as the performance of different classes of assets.

A widely tracked benchmark in this context is the ICICI Securities' (Isec) bond index (i-BEX), which measures the performance of the bond markets by tracking returns on

government securities. The i-BEX has emerged as the benchmark of choice across all classes of market participants - banks, financial institutions, primary dealers, provident funds, insurance companies, mutual funds and foreign institutional investors. It has two variants, namely, a Principal Return Index (PRI) and Total Return Index (TRI). The PRI tracks the price movements of bonds or capital gains/losses since the base date. It is the movement of prices quoted in the market and could be seen as the mirror image of yield movements. During 2001-02, the PRI increased by 17.16%. The TRI tracks the total returns available in the bond market. It captures both interest accruals and capital gains/ losses. In a declining interest rate scenario, the index gains on account of interest accrual and capital gains, while losing on reinvestment income. As against this, during rising interest rate periods, the interest accrual and reinvestment income is offset by capital losses. Therefore, the TRI typically has a positive slope except during periods when the drop in market prices is higher than the interest accrual. During 2001-02, the TRI registered gains of 27.34%. The movement of i-BEX during 2001-02 is presented in Chart 6-9.

Chart 6-9: i-Bex, 2001-02



J P Morgan India Treasury Bill Index captures return on a portfolio invested in domestic short term instruments. It tracks returns on Indian treasury bills, which constitute the most liquid segment of Indian money markets. The movement of popular fixed income indices at monthly rests are presented in Table 6-15.

Table 6-15: Debt Market Indices, 2001-02

At the end of the month	I Sec I-BEX (Base August 1 , 1994=1000)		J P Morgan India Index (Base August 1 , 1994=1000)	
	TRI	PRI	T-Bill	G-Sec
April, 2001	2283.28	1115.17	165.10	222.66
May, 2001	2341.61	1134.38	166.51	228.86
Jun, 2001	2393.88	1150.29	167.72	234.21
July, 2001	2434.96	1160.62	168.99	237.09
August, 2001	2493.65	1174.30	170.20	242.17
September, 2001	2483.35	1163.53	170.99	242.90
October, 2001	2553.55	1187.07	172.38	250.40
November, 2001	2707.62	1250.96	173.34	264.32
December, 2001	2672.75	1231.00	174.02	257.86
January, 2002	2775.60	1269.94	175.40	271.07
February, 2002	2862.16	1301.45	176.42	274.16
March, 2002	2859.32	1295.23	177.36	279.32

Source: ICICI securities and Morgan India.

Policy Debates

ADB Report

The International Securities Consultancy Limited conducted a technical assistance project (under contract with Asian Development Bank) Ministry of Finance on development of a secondary debt market and released its report in February 2002. The report analyses the domestic debt market in India and makes recommendations for its development. The major recommendations are:

- Reduce the direct role of government in the determination of interest rates by establishing independent public debt office function;
- Reduce the direct role of government as owner of financial institutions to permit the development of a greater diversity of views in investment decisions;
- Remove restrictions on investment decisions by institutional investors (such as pension funds and life insurers) and maximise outsourcing of investment decisions and treasury functions to professional fund managers;
- Initiate changes to support a system of properly funded and independently managed pension schemes;
- Simplify public issuance procedures, standardise and regularise private placement documentation to improve access to the market by retail investors;
- Remove impediments to the interaction of the institutional and retail market by ensuring that banks can access stock exchanges on behalf of their customers;
- Improve post trade transparency on secondary debt market to permit efficient price discovery and thereby encourage wider participation in the market;
- Involve the market more formally in decisions on design of financial infrastructure projects;
- Permit short selling of government securities; and
- Ensure rolling, dematerialised settlement for corporate debt instruments.

Primary Issuance

The Public Debt Office of RBI conducts auction for issue of government securities. The bidders have option to submit bids electronically and make payment for the securities by electronic fund transfer. However, the entire process of auction is carried out manually without use of information technology. As a result, the market is localised; it is not transparent; the bidders have no choice to revise their bids; and hence the price discovery is inefficient. What is required is the auction should be held electronically on an all India basis and participants should be able to see the building up of bids and revise their bids if they so feel. This should be possible with full operationalisation of NDS.

The role of RBI as the manager of government debt conflicts with its role as manager of the monetary policy. In the interest of greater autonomy of monetary policy, the issuance of government securities should be managed outside RBI, that is, the decisions relating to debt management and interest rate should be taken independently to avoid perceived conflict of interest.

It is believed that securities market disintermediates by establishing direct relationship between the ultimate investors in securities and issuers of securities. However, in the government securities market, there are three layers of intermediaries (RBI, PDs and Banks)

between the issuers (governments) and investors (households). With the availability of technology, it is possible to completely do away with these intermediaries and save the overheads costs which can be shared by issuers and investors. Government can conduct auction where the investors can bid directly.

Retail Participation

Government securities are the safest investment available to investors. These offer returns comparable to that on bank deposits. A number of measures have been initiated to develop retail market for G-secs. These include establishment of primary and satellite dealers, liquidity support and other facilities to gilt funds, introduction of constituent SGL account facility, allocation of 5% of the notified amount in auctions for the retail segment, launch of NDS and CCIL, etc. Investment in G-secs offers attractive benefits such as good yields, no TDS, easy liquidity, no default risk, tax benefits under section 80L, wide range of maturities to suit every one's need etc. Despite all these, the G-sec market is exclusive preserve of banks, insurance companies, provident funds and trusts. The retail segment would get a boost if there can be retail outlets at convenient location to facilitate distribution and trading of small lots of G-secs. The reach of the stock exchanges can be advantageously used to retail G-secs. The level of awareness about G-secs needs to be improved to make the investors aware about the risk-return profile of G-secs vis-à-vis competing products such as small saving instruments, insurance schemes, equities and debentures etc.

Trading of Securities

The trading framework suffers from following deficiencies:

1. There are strong entry barriers to participate in trading of government securities. Like equity markets, any and everybody who complies with the specified criteria should be allowed to participate in the market.
2. Trades are negotiated bilaterally over phone or NDS. The enforcement of such trades, being in the nature of OTC, is difficult. It is necessary to ban OTC trades and prescribe that all trades in government securities would be subject to discipline of stock exchanges. NDS is expected to enforce market discipline as the deals are required to be reported within 15 minutes of the same being negotiated.
3. The market as such does not have any liquidity. The parties have to search for counterparties and negotiate the best price. It is necessary to mandate that all trades will be executed on the basis of price and order matching mechanism of stock exchanges as in case of equities. NSE introduced automated screen based trading in debt securities, which is an anonymous order matching system. However, banks and institutions have shown little interest to use NSE's trading platform for executing their debt securities transactions. Regulatory fiat is needed to enforce transparency in financial deals. SEBI has taken the initiative in this regard by prohibiting 'negotiated deals' in respect of listed corporate debt securities and prescribing that all such trades would be executed on the basis of price and order matching mechanism of stock exchanges as in case of equities.
4. The knowledge of parties affects the terms of trade and can facilitate formulation of cartels. It is necessary to allow parties to participate in the market anonymously. However, there should be complete audit trail to resolve the disputes, if any, by logging in the trade execution process in entirety.
5. The market is not transparent. Only the parties to trade have information about the trade. It is necessary to enable market participants to see the full market and have all trade related information on real time basis.

6. The market is highly fragmented. A buyer from Chennai can not trade in the Mumbai market since securities held in his account with RBI books cannot be easily transferred to Mumbai and vice-versa. T-bills cannot be traded outside Mumbai. Since the order book is geographically fragmented, the quality of price discovery process is very poor. It is necessary to provide a facility enabling any body from any corner of the country to trade with ease and convenience.
7. NDS is a vastly superior system for negotiation of trades in government securities. However, it does not obviate the difficulties of an OTC market; nor does it provide the liquidity of an order matching market. Since it does not consolidate all orders into an order book, the parties have to search for counter parties. Since it does not guarantee the best price for all trades, the parties have to negotiate with counterparties to arrive at an agreeable price. Since there are strong entry barriers, the number of participants who can negotiate on NDS, is very limited.

Settlement

The settlement involves physical movement of papers. Trades are settled on trade by trade basis without any bilateral/multilateral netting. The trades do not enjoy counterparty guarantee. The settlement system is not efficient, unless the buyers and sellers have both SGL and current accounts with RBI. Since RBI provides these account facilities to only a limited number of entities, non-transferable city-wise settlement facilities are available only to these entities. What is required is a nationwide clearing and settlement arrangement where trades would be netted and net positions would be settled. A clearing corporation should provide novation and guarantee financial settlement of trades in case any counterparty defaults in discharging its obligations. A significant development in this regard is the establishment of Clearing Corporation of India Limited. But it provides settlement of securities on gross basis and provides counterparty for transactions done on NDS.

Debt Derivatives

In the fixed income markets, an investor is exposed to several kinds of risks. These risks may arise due to any factor that influences the potential streams of returns from holding a fixed income security. There are three sources of income from a fixed income security-coupon or interest payments, capital gains/losses, and re-investment income, which is income from the intermediate cash flows that are re-invested. An investor faces considerable risk from an adverse movement in interest rates. In debt markets, there exits an inverse relationship between interest rates and the price of the bond. In situations of rise in interest rates, the price of the bond declines, posing the risk of capital loss to an investor who wants to sell off his security prior to maturity. The risk arising out of variations in interest rates could be hedged by use of interest rate derivatives. The commonly used interest rate derivatives are forwards, futures, swaps and options. Of these, IRSs and FRAs are the most popular derivative instruments and account for the largest share of turnover in interest rate derivatives all over the world.

In India, IRSs/FRAs were introduced in June 1999 with a view to further deepening the money market as also to enable banks, PDs and FIs to hedge interest rate risks. The market for these derivatives, however, has not developed appreciably for lack of legal clarity. It is viewed in some circles that there is no suitable regulatory framework to govern trading of these derivatives. These are not derivatives under the Securities Contracts (Regulation) Act, 1956 as these are not derived from securities. It is desirable to have express legislative provisions to provide for such contracts. Such provisions should cover the entities who can enter into such contracts, the broad parameters of such contracts, clearing corporation for settling these contracts, and a dispute resolution mechanism.

Other obstacles in development of market for debt derivatives are:

***IRS for trading*:** RBI restricts use of these derivative contracts by market participants to hedging the risk in their respective balance sheets only. To come out of the contract, reverse contracts need to be executed by the same parties or they have to wait till the expiry date. Therefore, the participants can not trade in these contracts. On the contrary, in an exchange traded contract, counterparties can come out of the contract by entering into reverse trades with any counter party at any point of time before the life of the contract. This facility increases the liquidity of the contracts and thereby reduces impact cost of trading and hence serves the purpose of risk management better. To provide depth to this market, market participants may be allowed to trade in these contracts.

Acceptable benchmark rate: We have a well accepted Overnight MIBOR that can be used as a bench-mark for very short period. But there is no term money market as such and hence the reference rates for 14-day, 1-month and 3-month MIBOR may not really serve the purpose of an acceptable benchmark rate. If the term money market has liquidity, more acceptable benchmark rates like 3-month MIBOR and 6-month MIBOR would evolve and be widely accepted. The present structure of the money market is also another cause. Two-way quotes are a fundamental necessity for a proper reference rate to be established. Banks can't offer two-way quotes in a call money market since the borrowing in the call is primarily driven by requirements of meeting CRR. Another problem is that while foreign banks and some of the new banks are perennial borrowers in the interbank market, several nationalised banks and institutions are perennial lenders. This gives rise to uni-directional players who are averse to two-way quotes. This polarisation impedes the development of a benchmark rate around which a term-money market can evolve.

***Floating rate loans*:** At least one leg of IRS has to be a floating rate, development of floating rate loan market is essential. A primary reason for non-evolution of floating rate loans is the common perception of the interest rate movements in India. Over the years, RBI has played a dominant role to moderate interest rate. Till recently, as the RBI had a major role in determining interest rates on the sovereign papers, there was very little volatility in the credit market. Floating rate loans would become popular when diverse views emerge among different players in the market for these rates. As lending rates for the companies are built on the bond yields of the similar tenors, the floating rates were not very different from the fixed rate loans, and not considered to be worth the risk. However, today bond yields are increasingly determined by market participants. And hence the consequent likely volatility in lending rates would help create market for floating rate loans and consequently, interest rate swaps and options.

Acceptable yield curves: The yield curve is required for effectively pricing any derivative contract and therefore, the lack of a reliable one hinders the development of derivatives. However, NSEIL has taken initiative to provide a reliable spot curve (ZCYC) to the market participants. Emergence of a proper yield curve would correctly reflect the spread between retail deposit and interbank rates or the credit spread for prime borrowers over the interbank rate. Moreover forward interest rates can be derived from such a yield curve. Developing a model to estimate the credit spread would go a long way to providing the required benchmarks.

***Liquidity in bond market*:** Another reason for absence of an interest rate options market has been the illiquidity in the domestic bond market. Looking at the bond market we see major papers are illiquid, though situation has dramatically changed over last few

years. However the average daily traded value remains at a low level of about 1% of the total outstanding value of sovereign papers in the market.

Awareness: The very concept of swaps is new to India. There is very limited knowledge about these instruments even among the active participants in Indian markets specifically the PSU banks. Moreover, the institutions which carry out the swaps on daily basis do not publish these data through any media and hence it is extremely difficult to develop a swap curve which will be used for the options as well as by other market participants.

ZCYC *versus* YTM

Fixed income instruments, both government securities and corporate paper, constitute sizeable proportion of the investment portfolios of most financial sector entities. The change in the value of these portfolios arising out of shifts in the interest rate structure is of immense concern – both for the purpose of ascertaining the mark-to-market value of the portfolio and in view of concerns related to risk management. This in turn underscores the need for a sound and consistent norms for valuation of fixed income instruments.

Unlike equities for which prices are available on a daily basis which can be used to value any portfolio, the secondary debt market does not provide market quotes for all securities on a regular basis for valuation of fixed income portfolios. Traditionally, the valuation norms for such instruments have been announced from time to time by the regulator for the particular segment, for instance, by SEBI for mutual funds and RBI for banks. These are yield to maturity (YTM)-based norms, with pre-specified credit spreads distinguishing between sovereign and corporate paper. With the objective of moving towards more market determined - as opposed to mandated – valuation norms, RBI recently discontinued its practice of prescribing year-end YTMs for unquoted government securities; these are now put out by PDAI/FIMMDA.

A sound valuation methodology should: (i) have a firm conceptual base, (ii) provide a framework that allows consistent valuation of all similar instruments, and (iii) be available at high frequency (preferably daily) so as to enable players to constantly value and, if required, reshuffle their portfolios.

YTM is the single rate, which equates the quoted price of a security to the sum of the present discounted value of its cash flows. For a given market price, cash flows and time to cash flows, the YTM of a security can be computed from the present value (PV) relation. Conversely, one could derive the price of a security for given cash flows, discounting them using the YTM. However, the latter would involve the assumption of a constant discount rate for all cash flows from a security, irrespective of when they fall due, violating the notion of 'time value of money'. Further, the corollary to this is that two cash flows due at the same time, but coming from two different instruments, are discounted at different (security-specific) YTM rates. This makes it difficult to conceptualise a unique relation between YTM and maturity alone, the so-called Yield Curve. From the perspective of a user, this, in turn, makes it difficult to derive the YTM for a new security with a different coupon rate, even if its maturity matches that of an existing security. Similarly, it is difficult to interpolate the YTM for a new security with a different maturity, even if its coupon rate matches that of an existing security. Hence, there exists a need for an alternative to YTM for valuation of portfolios of fixed income securities that is invariant to security-specific characteristics and provides a unique discount rate–maturity relation. The Zero Coupon Yield Curve (ZCYC) provides such an alternative.

The ZCYC, also referred to as the term structure of interest rates, depicts the relationship between interest rates in the economy and the term to maturity. On any particular day, the ZCYC is estimated using the PV relation. However, unlike in derivation of PVs using YTMs, the discount rate used for computing the PV of each cash flow is the interest rate associated with the time to maturity of the given cash flow. Derivation of the entire set of interest rates requires prior specification of an interest rate–maturity relation (the model) that is estimated using market prices and corresponding PVs for all traded securities. Once estimated, the ZCYC can be used to derive the underlying 'fundamental' price of any fixed income instrument, including non-traded instruments, by discounting its cash flows using the interest rate for the associated 'time to cash flow'. Further, with interest rates being a function of maturity alone, cash flows due at the same time are discounted using the same rate even if they were due from two different instruments.

A usually held argument against ZCYC vis-à-vis YTM is that the former is more complicated both in terms of computation and interpretation. While the computation of YTMs is certainly less time-consuming, it takes far more time and ingenuity to use YTMs as a pricing/valuation methodology for portfolios of securities that include non-traded instruments. In addition, YTM would have limited applicability as the debt market develops and new instruments like STRIPS and other derivative products are introduced. ZCYC, on the other hand, is eminently suitable for valuation of such instruments. With sufficient number of secondary market trades in Government securities available to estimate a chosen model, it is possible to estimate the sovereign term structure daily, thus making it a useful valuation methodology to track changes in the value of portfolios of government securities on a day-to-day basis. Once the ZCYC parameters are available, suitably designed software, such as the NSE Zero Curve Calculator, can easily handle the bond pricing calculations that a treasury would be interested in. Finally, the ZCYC can be used to price all non-sovereign fixed income instruments after adding an appropriate credit spread related to the credit rating and tenor of the instrument. A readily available database of ZCYC would be of immense help for primary dealers, banks and other entities to compute Value at Risk (VaR) of their fixed income portfolios in a consistent manner.

In view of the above, the regulatory authority should consider ZCYC as an alternative to the YTM in setting valuation and risk management systems for fixed income portfolios.

STRIPS

Separate Trading of Registered Interest and Principal of Securities (STRIPS) involves stripping a conventional security into a number of zero coupon securities, which can be traded separately. Such newly created securities are called STRIPS. For example, a 10-year government security, can be stripped into 21 zero coupon securities – 20 carrying half-yearly coupons with maturities of 6 months, 12 months, 18 months and so on and 1 carrying final redemption amount with maturity of 10 years. A Rs. 100 crore government security carrying a coupon of 12% with 10 year maturity has cash flows of 20 semi-annual payments of Rs. 6 crore each and the repayment of principal of Rs. 100 crore after ten years. Each of these 21 cash flows can be treated as a zero coupon instrument which can be traded at varying yields. These 21 instruments are STRIPS of the underlying government security.

As one underlying security can be converted to 21 zero coupon securities, the breadth of the debt market would expand considerably. Increased supply of securities across maturities would provide a continuous market and consequently improve liquidity.

The introduction of STRIPS in government securities would be a good bait for small investors, as these are comparable to other fixed income instruments, which are their favourites. Besides, it would allow the issuer to issue securities with long term maturity for any amount and allow stripping of these securities to meet the market appetite for short-term securities in convenient amounts.

The participants in the debt market normally purchase the securities and hold till maturity. This results in reduced supply of securities for secondary market activity. Further, some participants, like provident funds, bear the reinvestment risk due to the interest receipts every six months. STRIPS would provide a solution to both these problems. Banks can issue STRIPS against the securities held by them. Thus they will earn returns against their investment and also increase the supply of securities to boost the secondary market activity. The provident funds can invest in STRIPS, which will mature on the required specified date. Thereby, the provident funds will be able to invest in government securities as required by law and also achieve the desired cash flow, without bearing the reinvestment risk.

The government security market in India has the necessary size to make STRIPS a success. The secondary market volumes in government securities were Rs.1,574,095 crore during 2001-02. Government and RBI have repeatedly expressed their intention to develop markets for STRIPS and are preparing ground for the same. RBI is consolidating outstanding government securities to ensure sufficient volumes and liquidity in any one issue, which would facilitate the emergence of benchmarks and development of STRIPS.

However, a few legal clarifications/relaxations are needed for issuance and trading of STRIPS. The Negotiable Instruments Act 1881 does not permit transfer of only a part of the amount appearing due on an instrument. Thus, a part of a security, for example, interest component of a security cannot be transferred unless the whole security along with other future interest payments are transferred simultaneously. STRIPS require the principal and the interest coupons to be uniquely identified as distinctive securities. Clarifications are required if the issuance and transfer of STRIPS, even though derived from government securities, would attract any stamp duty and at what rates. CBDT has clarified taxation issues relating to issuance of STRIPS. RBI is setting up a working group to suggest operational and prudential guidelines.

RTGS

RBI has launched a project to construct a real-time gross settlement system (RTGS), which will allow secure inter-bank payments throughout the country. The system is planned to eventually interface to all RBI sites, as well as other member banks across the country. By underwriting all payments with collateral held at RBI, the RTGS system will reduce systemic risk in the banking system, thereby providing increased integrity and security for all interbank transactions. The RTGS would provide for real-time processing and settlement of funds transfers. The first phase of the project calls for creation of an Integrated Accounting System (IAS) to handle all internal and interbank accounting transactions for RBI. This new core banking system will handle all general transactions and central accounting for RBI, including the bank's general ledger.

The RTGS will employ two sets of queues: one for testing funds availability and one for processing of debit/credit requests received from the Integrated Accounting System. All transactions will be queued and submitted for funds availability testing on a first in-first out basis, i.e., all transactions will be queued in the order in which they were received and the oldest transaction in each participant's queue will be tested first. Transactions

which fail a funds availability test will be returned to the payment queue to be retested periodically. An optimizing algorithm will scan the queues periodically during the day to identify potential gridlock situations. Payment messages from a sending bank to the Reserve Bank will be processed through an intermediate processor-the Inter-Bank Funds Transfer Processor (IFTP). The project will employ point-to-point remote copy for back-up and restore operations, meaning that the backup server will be a few miles from the main site, connected over fiber optic infrastructure.

Annexure 6-1: Secondary Market Transactions in Government Securities

(Rs. crore)

	SGL Transactions									WDM Transactions in Government Securities							
	Outright Transactions				Repo Transactions					Outright Transactions				Repo Transactions			
Month/ Year	Dated Securities	State Govt. Securities	Treasury Bills	Total (2+3+4)	Dated Securities	State Govt. Securities	Treasury Bills	Total (6+7+8)	Grand Total (5+9)	Dated Securities	State Govt Securities	Treasury Bills	Total (10+11+12)	Dated Securities	Treasury Bills	Total (14+15)	Grand Total (13+16)
1	2	3	4	5	6	7	8	9	10	10	11	12	13	14	15	16	17
1994-95	**11,383**	**203**	**9,721**	**21,306**	**15,190**	**—**	**14,073**	**29,263**	**50,569**	**2,947**	**79**	**2,634**	**5,660**	**0**	**0**	**0**	**5,660**
1995-96	**17,553**	**464**	**11,513**	**29,531**	**92,834**	**—**	**4,814**	**97,648**	**127,179**	**6,813**	**176**	**2,255**	**9,243**	**739**	**5**	**744**	**9,988**
1996-97	**59,903**	**596**	**33,422**	**93,921**	**25,415**	**—**	**3,605**	**29,020**	**122,941**	**26,891**	**298**	**10,912**	**38,101**	**162**	**45**	**207**	**38,308**
1997-98	**118,541**	**1,348**	**41,201**	**161,090**	**20,811**	**—**	**3,807**	**24,619**	**185,708**	**79,564**	**931**	**17,021**	**97,515**	**4,225**	**1,845**	**6,070**	**103,585**
1998-99	**143,097**	**1,544**	**42,890**	**187,531**	**38,076**	**—**	**1,621**	**39,697**	**227,228**	**78,973**	**860**	**10,586**	**90,419**	**4,741**	**120**	**4,861**	**95,280**
1999-00	**405,285**	**3,631**	**47,575**	**456,491**	**75,725**	**—**	**7,016**	**82,741**	**539,232**	**278,531**	**2,053**	**10,644**	**291,229**	**2,296**	**363**	**2,659**	**293,887**
Apr-00	39,536	127	4,195	43,858	6,187	0	0	6,187	50,045	31,538	99	1,496	33,132	30	0	30	33,162
May-00	39,099	184	4,066	43,349	5,099	0	277	5,376	48,724	30,245	93	1,073	31,412	25	0	25	31,437
Jun-00	18,801	33	2,398	21,233	7,856	0	498	8,354	29,586	15,763	9	718	16,490	65	0	65	16,555
Jul-00	43,285	165	4,317	47,768	5,591	0	837	6,428	54,196	26,119	121	1,043	27,283	125	0	125	27,408
Aug-00	18,245	607	4,903	23,755	5,102	0	1,320	6,422	30,176	13,590	253	1,316	15,159	470	0	470	15,629
Sep-00	22,830	87	5,206	28,123	8,494	0	1,097	9,591	37,714	17,410	23	2,742	20,174	135	0	135	20,309
Oct-00	25,465	193	5,135	30,793	9,003	6	3,264	12,273	43,066	20,690	22	2,863	23,575	115	0	115	23,690
Nov-00	53,848	348	4,500	58,695	13,142	10	1,609	14,761	73,456	32,496	162	2,023	34,681	50	0	50	34,731
Dec-00	43,502	366	5,068	48,935	11,417	0	2,066	13,483	62,418	34,596	227	2,058	36,881	75	0	75	36,956
Jan-01	75,749	366	4,732	80,847	15,272	0	2,385	17,657	98,505	62,246	161	2,156	64,563	145	0	145	64,708
Feb-01	70,897	225	7,294	78,415	10,697	0	2,129	12,826	91,242	59,273	38	2,716	62,027	50	0	50	62,077
Mar-01	57,855	270	8,249	66,375	11,212	0	1,407	12,619	78,993	44,132	48	2,938	47,118	315	0	315	47,433
2000-01	**509,113**	**2,971**	**60,062**	**572,145**	**109,072**	**16**	**16,888**	**125,976**	**698,121**	**388,098**	**1,256**	**23,142**	**412,495**	**1,600**	**0**	**1,600**	**414,095**
Apr-01	57,267	499	6,473	64,239	10,082	7	1,222	11,311	75,550	42,110	292	2,888	45,290	—	—	—	45,290
May-01	94,513	404	6,006	100,923	26,738	10	964	27,712	128,635	79,516	133	2,594	82,243	—	—	—	82,243
Jun-01	100,059	151	5,924	106,134	23,465	0	1,548	25,012	131,146	78,794	55	2,344	81,193	—	—	—	81,193
Jul-01	107,579	294	6,832	114,704	26,839	0	930	27,769	142,473	79,945	121	2,834	82,900	216	0	216	83,116
Aug-01	100,856	448	5,883	107,186	23,322	90	2,353	25,765	132,951	72,543	68	1,546	74,157	131	0	131	74,288
Sep-01	78,905	300	5,668	84,874	21,930	145	2,078	24,153	109,027	59,704	100	2,137	61,941	0	0	0	61,941
Oct-01	92,696	553	4,344	97,593	22,144	160	3,885	26,189	123,782	77,586	160	1,681	79,427	50	25	75	79,502
Nov-01	117,044	551	6,265	123,860	28,123	45	2,205	30,373	154,233	94,348	109	2,651	97,108	37	10	47	97,155
Dec-01	83,532	492	4,956	88,980	30,069	0	1,814	31,883	120,864	59,854	23	1,615	61,492	50	0	50	61,542
Jan-02	125,337	673	8,151	134,162	45,008	20	2,628	47,656	181,818	106,148	114	3,164	109,426	10	0	10	109,436
Feb-02	118,263	804	4,025	123,092	33,370	15	3,065	36,450	159,542	96,712	124	1,191	98,027	0	0	0	98,027
Mar-02	62,453	963	2,803	66,219	44,771	0	2,882	47,653	113,872	52,816	113	863	53,792	79	0	79	53,871
2001-02	**1,138,504**	**6,131**	**67,332**	**1,211,966**	**335,861**	**492**	**25,574**	**361,927**	**1,573,893**	**900,076**	**1,412**	**25,508**	**926,996**	**573**	**35**	**608**	**927,604**

Source: RBI and NSE.

Annexure 6-2: Business Growth of WDM Segment

Month/Year	All Trades					Retail Trades		
	No. of Active Securities	Number of Trades	Average Daily Turnover (Rs. cr.)	Turnover (Rs. cr.)	Average Trade Size (Rs. cr.)	Number of Trades	Turnover (Rs. cr.)	Share in Total Turnover (%)
1994- 95 (Jun-Mar)	**183**	**1,021**	**35**	**6,781**	**6.64**	**168**	**31**	**0.45**
1995-96	**304**	**2,991**	**41**	**11,868**	**3.97**	**1,115**	**207**	**1.74**
1996-97	**524**	**7,804**	**145**	**42,278**	**5.42**	**1,063**	**201**	**0.47**
1997-98	**719**	**16,821**	**385**	**111,263**	**6.61**	**1,390**	**289**	**0.26**
1998-99	**1,071**	**16,092**	**365**	**105,469**	**6.55**	**1,522**	**308**	**0.29**
1999-00	**1,057**	**46,987**	**1,035**	**304,216**	**6.47**	**925**	**218**	**0.07**
Apr-00	207	4,978	1,709	34,183	6.87	35	8	0.02
May-00	236	4,653	1,315	32,875	7.07	20	7	0.02
Jun-00	158	2,771	698	17,445	6.30	31	10	0.06
Jul-00	176	4,275	1,089	28,311	6.62	18	6	0.02
Aug-00	175	2,682	658	16,440	6.13	112	21	0.13
Sep-00	175	3,404	857	21,419	6.29	69	13	0.06
Oct-00	203	3,910	1,137	25,019	6.40	31	11	0.04
Nov-00	222	5,519	1,451	36,285	6.57	31	8	0.02
Dec-00	217	6,092	1,593	38,222	6.27	17	6	0.02
Jan-01	221	10,095	2,554	66,400	6.58	39	14	0.02
Feb-01	225	9,080	2,873	63,212	6.96	38	12	0.02
Mar-01	243	7,011	2,032	48,771	6.96	57	15	0.03
2000-01	**1,038**	**64,470**	**1,483**	**428,582**	**6.65**	**498**	**131**	**0.03**
Apr-01	213	6,606	2,314	46,285	7.00	17	6	0.01
May-01	220	12,220	3,359	83,982	6.87	52	8	0.01
Jun-01	200	11,936	3,293	82,329	6.89	28	5	0.01
Jul-01	223	12,575	3,255	84,629	6.73	25	5	0.01
Aug-01	215	11,622	3,158	75,784	6.52	44	19	0.03
Sep-01	207	9,526	2,528	63,199	6.63	28	4	0.01
Oct-01	196	12,636	3,234	80,860	6.40	17	4	0.00
Nov-01	216	15,300	4,290	98,674	6.45	36	16	0.02
Dec-01	167	10,135	2,600	62,411	6.16	21	6	0.01
Jan-02	228	17,011	4,298	111,736	6.57	36	13	0.01
Feb-02	254	16,127	4,405	101,313	6.28	44	15	0.01
Mar-02	216	9,157	2,434	55,988	6.11	30	9	0.02
2001-02	**979**	**144,851**	**3,277**	**947,190**	**6.54**	**378**	**110**	**0.01**

Source: NSE.

Annexure 6-3: Security-wise and Participant wise Distribution of WDM Trades

(In per cent)

Month/Year	Security-wise Distribution				Participant-wise Distribution				
	Government Securities	T-Bills	PSU/Inst. Bonds	Others	Trading Members	FIs/MFs/ Corporates	Primary Dealers	Indian Banks	Foreign Banks
1994-95 (Jun-Mar)	**44.63**	**38.84**	**11.17**	**5.36**	**59.67**	**4.58**	**0.02**	**14.16**	**21.57**
1995-96	**65.12**	**19.04**	**8.39**	**7.45**	**25.67**	**5.41**	**1.16**	**30.07**	**37.69**
1996-97	**64.70**	**25.92**	**4.66**	**4.73**	**23.85**	**2.91**	**6.10**	**30.01**	**37.13**
1997-98	**76.14**	**16.96**	**2.27**	**4.63**	**20.21**	**3.84**	**12.06**	**41.24**	**22.65**
1998-99	**80.19**	**10.15**	**4.75**	**4.91**	**15.84**	**4.57**	**14.64**	**42.12**	**22.83**
1999-00	**92.99**	**3.62**	**0.50**	**2.89**	**18.75**	**4.06**	**19.42**	**42.72**	**15.05**
Apr-00	92.64	4.38	0.50	2.48	20.25	3.82	23.14	38.68	14.11
May-00	92.36	3.27	1.42	2.95	22.21	4.41	22.41	35.84	15.13
Jun-00	90.78	4.12	2.43	2.67	24.90	5.23	22.28	29.94	17.65
Jul-00	93.13	3.68	0.44	2.75	23.38	4.73	21.23	31.71	18.95
Aug-00	87.06	8.01	1.37	3.56	23.85	4.35	22.27	26.96	22.57
Sep-00	82.02	12.80	1.33	3.85	24.68	3.66	22.32	25.52	23.82
Oct-00	83.24	11.44	0.79	4.53	22.33	4.60	24.04	27.96	21.07
Nov-00	90.14	5.57	2.18	2.11	22.94	3.62	23.79	33.98	15.67
Dec-00	91.30	5.39	0.93	2.38	23.68	3.14	21.69	38.03	13.46
Jan-01	94.20	3.25	0.79	1.76	24.66	4.99	21.55	33.08	15.72
Feb-01	93.91	4.30	0.65	1.14	23.54	4.36	22.56	34.15	15.39
Mar-01	91.23	6.02	0.91	1.84	22.51	3.40	20.04	35.35	18.70
2000-01	**91.22**	**5.40**	**1.84**	**1.54**	**23.24**	**4.18**	**22.14**	**33.54**	**16.90**
Apr-01	91.61	6.42	0.84	1.31	18.82	3.01	25.17	36.81	16.19
May-01	94.84	3.09	0.7	1.37	19.55	3.99	25.28	38.4	12.78
Jun-01	95.77	2.85	0.51	0.87	19.92	3.58	22.88	41.31	12.31
Jul-01	94.86	3.35	0.59	1.20	20.51	4.78	20.60	41.66	12.45
Aug-01	95.99	2.04	0.80	1.17	21.71	3.53	24.49	39.05	11.22
Sep-01	94.63	3.38	0.63	1.36	25.33	4.17	24.19	31.78	14.53
Oct-01	96.21	2.11	0.68	1.00	26.98	4.19	23.74	34.58	10.51
Nov-01	95.76	2.70	0.43	1.11	25.96	3.97	24.49	34.66	10.92
Dec-01	96.02	2.59	0.57	0.82	26.51	4.65	23.11	33.89	11.84
Jan-02	95.11	2.83	0.44	1.62	25.43	4.46	19.19	36.09	14.83
Feb-02	95.58	1.18	1.08	2.16	25.16	4.53	19.78	34.26	16.27
Mar-02	94.68	1.54	1.25	2.53	24.23	4.61	19.43	35.84	15.89
2001-02	**95.24**	**2.70**	**1.16**	**0.91**	**23.52**	**4.16**	**22.50**	**36.60**	**13.22**

Source: NSE.

Annexure 6-4: Market Capitalisation of WDM Securities

Month/Year (end of period)	(In Rs. crore)						(In per cent)				
	Govt. securities	PSU bonds	State loans	T-bills	Others	Total	Govt. securities	PSU bonds	State loans	T-bills	Others
Mar-95	**86,175**	**25,675**	**5,867**	**17,129**	**23,334**	**158,181**	**54.48**	**16.23**	**3.71**	**10.83**	**14.75**
Mar-96	**125,492**	**30,074**	**13,850**	**8,452**	**29,915**	**207,783**	**60.40**	**14.47**	**6.67**	**4.07**	**14.40**
Mar-97	**169,830**	**36,211**	**18,891**	**13,460**	**54,380**	**292,772**	**58.01**	**12.37**	**6.45**	**4.60**	**18.57**
Mar-98	**196,290**	**35,323**	**23,989**	**17,497**	**70,091**	**343,191**	**57.20**	**10.29**	**6.99**	**5.10**	**20.42**
Mar-99	**260,002**	**34,994**	**30,516**	**11,292**	**74,666**	**411,470**	**63.19**	**8.50**	**7.42**	**2.74**	**18.15**
Mar-00	**319,865**	**39,357**	**39,477**	**15,345**	**79,989**	**494,033**	**64.75**	**7.97**	**7.99**	**3.11**	**16.19**
Apr-00	334,429	39,153	40,111	15,249	81,409	510,351	65.53	7.67	7.86	2.99	15.95
May-00	345,393	38,591	40,411	15,562	81,935	521,892	66.18	7.39	7.74	2.98	15.70
Jun-00	349,027	38,815	41,203	15,641	81,690	526,376	66.31	7.37	7.83	2.97	15.52
Jul-00	350,380	39,729	41,261	15,661	82,061	529,092	66.22	7.51	7.80	2.96	15.51
Aug-00	349,544	38,975	42,241	15,681	83,586	530,027	65.95	7.35	7.97	2.96	15.77
Sep-00	346,284	38,499	42,411	15,710	83,777	526,681	65.75	7.31	8.05	2.98	15.91
Oct-00	351,570	39,229	43,488	15,845	84,198	534,330	65.80	7.34	8.14	2.97	15.76
Nov-00	369,594	39,084	43,519	15,785	84,997	552,979	66.84	7.07	7.87	2.85	15.37
Dec-00	378,668	39,198	43,806	16,351	85,149	563,172	67.24	6.96	7.78	2.90	15.12
Jan-01	390,132	38,168	44,093	16,991	84,494	573,878	67.98	6.65	7.68	2.96	14.72
Feb-01	397,605	37,517	44,550	17,306	84,737	581,715	68.35	6.45	7.66	2.97	14.57
Mar-01	**397,228**	**36,365**	**44,624**	**17,725**	**84,894**	**580,836**	**68.39**	**6.26**	**7.68**	**3.05**	**14.62**
Apr-01	424,161	36,199	45,095	18,667	85,251	609,373	69.61	5.94	7.40	3.06	13.99
May-01	438,203	36,315	46,940	18,538	85,374	625,370	70.07	5.81	7.51	2.96	13.65
Jun-01	442,290	38,865	47,302	21,056	84,917	634,430	69.71	6.13	7.46	3.32	13.38
Jul-01	461,383	39,442	47,810	22,272	83,273	654,181	70.53	6.03	7.31	3.40	12.73
Aug-01	470,148	42,719	50,711	23,041	82,835	669,455	70.23	6.38	7.57	3.44	12.37
Sep-01	474,779	42,781	50,217	23,347	87,037	678,161	70.01	6.31	7.40	3.44	12.83
Oct-01	490,781	42,343	52,367	23,652	87,776	696,920	70.42	6.08	7.51	3.39	12.59
Nov-01	512,702	43,260	53,829	23,586	87,856	721,234	71.09	6.00	7.46	3.27	12.18
Dec-01	514,171	41,823	54,771	24,266	87,467	722,497	71.17	5.79	7.58	3.36	12.11
Jan-02	529,896	41,566	57,955	24,004	88,087	741,508	71.46	5.61	7.82	3.24	11.88
Feb-02	541,401	41,130	59,675	24,366	89,520	756,092	71.61	5.44	7.89	3.22	11.84
Mar-02	**542,601**	**39,944**	**61,385**	**23,849**	**89,016**	**756,794**	**71.70**	**5.28**	**8.11**	**3.15**	**11.76**

Source: NSE.

Annexure 6-5: FIMMDA NSE MIBID/MIBOR Rates

Month/Date	OVERNIGHT AT 9.40 a.m.*		14 DAY AT 11.30 a.m.**		1 MONTH RATE AT 11.30 a.m.***		3 MONTH RATE AT 11.30 a.m.***	
	MIBID	MIBOR	MIBID	MIBOR	MIBID	MIBOR	MIBID	MIBOR
29-Jun-98	6.81	7.12	-	-	-	-	-	-
31-Jul-98	3.25	4.18	-	-	-	-	-	-
31-Aug-98	8.59	8.88	-	-	-	-	-	-
30-Sep-98	8.18	8.38	-	-	-	-	-	-
30-Oct-98	8.63	8.81	-	-	-	-	-	-
30-Nov-98	8.00	8.06	8.44	9.06	-	-	-	-
31-Dec-98	-	-	8.87	9.45	9.45	10.24	10.43	11.28
30-Jan-99	8.33	8.51	8.80	9.34	9.32	10.04	10.40	11.08
27-Feb-99	9.12	9.27	9.23	9.82	9.87	10.46	10.94	11.45
31-Mar-99	10.87	12.97	9.09	10.06	9.44	10.35	10.30	11.20
29-Apr-99	8.25	8.45	8.25	9.01	8.93	9.72	9.83	10.63
31-May-99	8.04	8.19	8.44	8.93	9.01	9.78	9.80	10.72
30-Jun-99	-	-	8.48	9.11	9.11	9.84	9.89	10.68
31-Jul-99	8.18	8.31	8.36	8.86	8.79	9.37	9.36	10.09
31-Aug-99	9.93	10.09	9.24	9.83	9.46	10.11	9.86	10.57
30-Sep-99	-	-	9.11	9.64	9.57	10.20	10.06	10.70
30-Oct-99	8.10	8.26	8.82	9.62	9.45	10.17	10.31	11.08
30-Nov-99	7.95	8.04	8.40	9.02	9.08	9.75	10.05	10.70
31-Dec-99	7.07	7.57	8.61	9.27	9.12	9.89	9.76	10.53
31-Jan-00	8.09	8.19	8.33	8.85	8.78	9.32	9.60	10.31
29-Feb-00	8.99	9.10	8.76	9.66	8.98	9.80	9.38	10.24
31-Mar-00	14.10	16.52	9.98	10.93	9.90	10.82	9.96	10.96
29-Apr-00	6.96	7.06	7.35	8.11	8.03	8.68	8.78	9.47
31-May-00	6.92	7.02	7.76	8.66	8.25	9.12	8.92	9.64
30-Jun-00	-	-	9.80	11.25	9.71	10.92	9.78	11.13
31-Jul-00	8.20	8.33	9.14	10.11	9.62	10.49	10.28	11.11
31-Aug-00	13.94	14.31	13.02	14.33	12.54	13.61	11.58	12.67
30-Sep-00	10.10	10.28	10.29	11.23	10.55	11.49	10.75	11.76
31-Oct-00	8.10	8.26	8.77	9.48	9.34	10.16	9.89	10.73
30-Nov-00	7.98	8.06	8.68	9.33	9.12	9.82	9.73	10.54
29-Dec-00	8.24	8.46	9.21	9.96	9.49	10.20	9.85	10.64
31-Jan-01	9.66	9.85	9.41	10.05	9.63	10.28	10.00	10.57
28-Feb-01	7.71	7.84	8.11	8.80	8.67	9.38	9.40	10.10
31-Mar-01	10.22	12.18	9.03	9.89	9.08	9.86	9.26	10.25
30-Apr-01	7.25	7.39	7.55	8.33	8.15	8.83	8.83	9.54
31-May-01	6.79	6.95	7.40	8.04	7.89	8.57	8.41	9.08
29-Jun-01	7.20	7.34	7.25	7.85	7.69	8.41	8.16	8.87
31-Jul-01	6.91	7.04	7.29	7.88	7.58	8.17	7.99	8.66
31-Aug-01	6.92	7.03	7.01	7.40	7.34	7.82	7.82	8.32
28-Sep-01	7.77	8.21	7.52	8.14	8.07	8.70	8.33	8.98
31-Oct-01	8.47	8.77	7.15	7.72	7.39	8.03	7.61	8.37
29-Nov-01	6.42	6.59	6.74	7.23	7.26	7.80	7.77	8.32
31-Dec-01	7.80	8.11	7.42	8.04	7.63	8.26	7.88	8.57
31-Jan-02	6.51	6.64	6.89	7.40	7.15	7.73	7.73	8.41
28-Feb-02	6.94	7.16	6.84	7.33	7.23	7.78	7.79	8.37
30-Mar-02	7.44	11.09	7.41	8.06	7.39	8.05	7.63	8.29

Note:

* Overnight : Disseminated since June 15, 1998.
** 14 Day : Disseminated since November 10, 1998.
*** 1 month : Disseminated since December 1, 1998.
*** 3 month : Disseminated Since December 1, 1998.

Annexure 6-6: 1-day VaR (99%) for GoI Securities Traded on NSE-WDM as on March 30, 2002*

Security Type	Security Name	Issue Name (%)	VaR (%)					Clean Price (off NSE-ZCYC) (In Rs.)
			Normal	Weighted Normal	Historical Simulation	Weighted Historical Simulation	EVT	
GS	CG2004	12.50	0.640	0.701	0.888	0.485	0.611	111.598
GS	CG2004	12.59	0.669	0.735	0.915	0.524	0.635	112.919
GS	CG2006	11.68	0.896	0.864	0.937	0.771	0.744	117.483
GS	CG2008	11.40	1.262	0.962	1.347	0.834	0.948	122.065
GS	CG2008	12.00	1.199	0.943	1.299	0.808	0.881	124.449
GS	CG2008	12.25	1.245	0.953	1.340	0.826	0.922	126.580
GS	CG2009	11.99	1.336	0.976	1.312	0.868	0.986	126.556
GS	CG2010	11.30	1.543	1.029	1.706	0.903	1.153	124.867
GS	CG2010	12.25	1.504	1.014	1.627	0.900	1.118	130.648
GS	CG2010	12.29	1.444	1.001	1.478	0.898	1.069	130.010
GS	CG2011	10.95	1.671	1.059	1.677	0.872	1.218	123.725
GS	CG2011	12.32	1.579	1.030	1.685	0.886	1.155	132.228
GS	CG2011	9.39	1.750	1.089	1.680	0.883	1.288	113.352
GS	CG2011A	11.50	1.713	1.064	1.654	0.854	1.223	128.080
GS	CG2012	11.03	1.814	1.089	1.748	0.821	1.313	125.554
GS	CG2012	9.40	1.911	1.124	1.798	0.829	1.418	113.864
GS	CG2013	9.81	1.980	1.136	1.772	0.860	1.485	117.189
GS	CG2014	10.00	2.085	1.163	1.963	0.940	1.546	119.144
GS	CG2014	11.83	2.039	1.143	1.905	0.914	1.557	134.285
GS	CG2015	11.43	2.130	1.175	1.999	0.956	1.621	131.724
GS	CG2015	11.50	2.106	1.166	1.957	0.940	1.598	132.112
GS	CG2015	9.85	2.235	1.216	2.154	1.010	1.715	118.501
GS	CG2016	10.71	2.232	1.216	2.164	0.986	1.714	126.126
GS	CG2017	8.07	2.486	1.327	2.562	1.034	1.899	103.095
GS	CG2021	10.25	2.618	1.487	2.848	0.990	2.029	124.071
GS	CG2026	10.18	2.819	1.772	3.304	1.171	2.339	124.571

* VaR values for other government securities available at http://www.nseindia.com