

Report of the Working Group on Rupee Derivatives

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CONTENTS

Executive Summary

Section I Introduction

Section II New OTC Rupee Derivatives

Section III Introduction of Exchange-Traded Interest Rate Derivatives

Section IV Increasing Participation in OTC Derivatives Market

Section V Legality, Netting, Documentation, Accounting and Valuation of OTC Derivatives

Section VI Board Policies, Risk Management System and Regulatory Requirement

Section VII Recommendations

Glossary

Annex

Executive Summary

In order to further deepen the money market and enable market participants to manage and control interest rate risk, the Working Group explored the possibilities of expanding the over-the-counter (OTC) rupee derivatives market in India. The Group also considered introduction of exchange-traded interest rate derivatives in India for better hedging of risk as also to encourage wider participation in derivatives market. The Group focussed on such related issues as legality, netting, documentation, accounting and valuation procedures for interest rate options. It has also laid down various considerations governing Board policies, risk management system and regulatory requirement. The major recommendations of the Group are as follows:

- Less complex interest rate options to be permitted in the first phase include vanilla caps, floors and collars, European Swaptions, call and put options on fixed income instruments/benchmark rates and unleveraged structured swaps based on overnight indexed swaps (OIS) and FRAs where the risk profile of such structure is similar to that of the building blocks.
- Scheduled commercial banks, financial institutions and primary dealers should be allowed to both buy and sell options; corporates may sell options initially without being the net receivers of premium. Mutual funds and insurance companies may also write options as and when their respective regulators allow them.
- Definition of short sales may be reviewed as per international best practices.
- Four contracts, viz., a) Short-term MIBOR Futures Contracts, b) MIFOR Futures Contract, c) Bond Futures Contract and d) Long-term Bond Index Futures Contract could be considered for trading on exchanges at this stage. Of them, Bond Futures Contract could be launched where settlement should be done on the basis of delivery of securities. On other contracts, settlement could be done on cash basis.
- Market regulator should lay down only broad eligibility criteria and the Exchanges should be free to decide on the underlying stocks and indices on which futures and options could be permitted.
- Netting should be allowed on intra-day basis at client level positions.
- ICAI could be requested to develop guidelines for accounting of exchange-based transactions on interest rate derivatives.
- RBI may consider mandatory anonymous disclosure of deals done in a standardised manner on the negotiated dealing system platform.

- Brokers accredited by FIMMDA may be permitted in OTC derivatives market.
- SEBI may consider issuing guidelines in regard to derivative products that MFs can trade in. IRDA should come out with guidelines for participation of insurance companies in derivatives market.
- To make the OTC derivatives contracts legally enforceable, amendment to Section 18A of the SCRA, 1956 may be followed up vigorously with the Ministry of Finance by RBI. To clarify the status of derivatives contracts in India undertaken by banks/FIs/PDs, the Banking Regulation Act, 1949 may be amended.
- A centralised clearing system for OTC derivatives may be introduced through CCIL. A draft legislation on netting that has been forwarded to the Government by RBI should incorporate netting of derivative contracts. Till such time as the netting legislation is passed, bilateral netting by novation, on similar lines as done by FEDAI for foreign exchange contracts, may be operationalised by FIMMDA for the derivatives market.
- OTC derivatives contracts should be governed by an approved ISDA Master agreement executed between two Indian counterparties who would be free to choose the governing law to be Indian Law or otherwise.
- ICAI may be approached to lay down detailed accounting and disclosure guidelines for derivative transactions in line with the principles put forth under FAS 133 and IAS 39.
- Credit conversion factors on the purchased options as laid down by the RBI vide its circular dated December 13, 2002, may be used to compute the capital adequacy.
- Derivative dealers can choose the pricing and valuation model for interest rate options according to their opinion on the suitability of the models.
- FIMMDA should publish the prices to be used by banks/PDs/FIs for the valuation after polling and it should also publish the volatilities using a suitable model.
- A common minimum information framework and a public disclosure system may be adopted by market participants.

Report of the Working Group on Rupee Derivatives

Section I

Introduction

1.1 Over-the-counter (OTC) derivatives have come to play an important role in the financial systems the world over. These instruments allow users to unbundle risks and allocate them to investors most willing and able to assume them. This has brought substantial benefits to the commercial community in facilitating hedging and, hence, business planning more generally, and have enabled the financial institutions to offer a progressively wider range of services and greater efficiency in the intermediation process as well as to exploit market imperfections and other trading opportunities for their own gain. However, conditions need to be created to encourage more of them to participate in this market using a wider array of instruments, with appropriate policies to promote stability and development of the financial infrastructure.

1.2 The factors generally attributed as the major driving force behind growth of financial derivatives are (a) increased volatility in asset prices in financial markets, (b) increased integration of national financial markets with the international markets, (c) marked improvement in communication facilities and sharp decline in their costs, (d) development of more sophisticated risk management tools, providing economic agents a wider choice of risk management strategies and (e) innovations in derivatives markets which optimally combine the risks and returns over a large number of financial assets leading to higher returns, reduced risk as well as transaction costs as compared to individual financial assets.

1.3 Globally, OTC market for interest rate derivatives has grown significantly over the last decade. About 70 per cent of the total notional outstanding amount for interest rate options comes from the OTC market. In a BIS survey published in November 2002, the notional amount outstanding in OTC interest rate derivatives market in June 2002 stood at US \$ 90 trillion as compared to US \$ 48.1 trillion in June 1998. Again, of US \$ 90 trillion, 76 per cent was contributed by Swaps, 14 per cent by Options and 10 per cent by Forward Rate Agreements (FRAs).

1.4 In order to manage and control interest rate risks as also to further deepen the money market, OTC rupee derivatives in the form of Forward Rate Agreements (FRAs)/Interest Rate Swaps (IRS) were introduced in India in July 1999. These derivatives enable banks, primary dealers (PDs) and all-India financial institutions (FIs) to hedge interest rate risk for their own balance sheet management and for market-making purposes. Banks/PDs/FIs can undertake different types of plain vanilla FRAs/IRS. Swaps having explicit/implicit option features such as caps/floors/collars are not permitted now.

1.5 Available data show that FRAs/IRS transactions have recorded substantial increase during the recent period. In terms of number of contracts and outstanding notional principal amount, such transactions have jumped from about 200 contracts amounting to Rs.4,000 crore in March 2000 to 6,500 contracts for Rs.1,50,000 crore in December 2002. However, the market is highly concentrated as the share of 13 major participants in the aggregate outstanding notional principal amount accounted for over 90 per cent in December 2002 (**Annex I.1**). Though in majority of these contracts, the market players have used NSE-MIBOR as the benchmark rate, they have also been using such other benchmarks as Mumbai Inter-Bank Forward Offered Rate (MIFOR), Mumbai Inter-Bank Offered Currency Swaps (MIOCS), Mumbai Inter-Bank Overnight Index Swaps (MIOIS), Treasury Bill rates, etc.

1.6 Meanwhile, mutual funds were allowed by SEBI to participate in derivative trading in February 2000. Exchange-traded derivatives were introduced by way of futures in Stock

Exchange, Mumbai (BSE) and National Stock Exchange (NSE) from June 2000. SEBI has also allowed use of options on indices and individual stocks with effect from July 2001. With regard to OTC products, Foreign Exchange Management Act, 2000 permits banks to provide risk management tools like swaps, options, caps, collars and FRAs to clients to hedge interest rate risk arising out of foreign currency liabilities. Recently, a RBI Technical Committee has recommended introduction of “Foreign Currency - Rupee Options”.

1.7 Against this background, it was felt that the hedging mechanism should be uniform between rupee liabilities and foreign currency liabilities. Also, since considerable time has elapsed after the introduction of guidelines on FRAs/IRS in 1999 and market has attained a certain level of maturity in using these products coupled with the fact that participants would be increasingly exposed to interest rate risk in future, there is a need to consider more complex features of swaps and options.

1.8 In order to examine all these issues, the Working Group on OTC Rupee Derivatives was constituted by Dr. Rakesh Mohan, Deputy Governor on November 7, 2002 under the Chairmanship of Shri Jaspal Bindra, Chief Executive Officer, India Region, Standard Chartered Bank with appropriate representations from banks, PDs, mutual funds and RBI following its announcement in the mid-term Review for the year 2002-03 on October 29, 2002. The Group was required to suggest the modalities for introducing dealing in derivatives having explicit option features such as caps/floors/collars in the rupee derivatives segment and also the norms for capital adequacy, exposure limits, swap position, asset-liability management, internal control and other risk management methods for these derivatives (**Annex I.2**). Shri D. Anjaneyulu, Adviser-in-Charge, Monetary Policy Department was appointed the Convenor of the Group.

1.9 Further, the High Level Committee on Capital Market (HLCC) in its meeting on November 8, 2002 recommended that issues relating to exchange-traded interest rate derivatives should also be referred to this Group for examination. Accordingly, Shri Nagendra Parakh, Chief General Manager, SEBI was inducted into the Group. Subsequently, in order to further broaden the deliberations, Shri Dileep Madgavkar, Chief Investment Officer, Prudential ICICI Asset Management Company Ltd. representing the Association of Mutual Funds in India (AMFI), Shri Alok Aggarwal, President - Finance, Reliance Industries Ltd., Shri Mohan Shenoy, Head, Treasury, Kotak Mahindra Finance Ltd., Shri Monish Tahilramani, Head of Interest Rates, Treasury and Capital Markets, HSBC and Shri Chetan Shah, Managing Director, Deutsche Bank AG were special invitees to the Group.

1.10 The Group while deliberating on the issues had identified, in its second meeting, five broad areas where it felt that more structured work was required. Accordingly, five Sub-Groups were constituted to study in detail and recommend on the following areas:

- Increasing Participation in OTC Derivative Market.
- Exchange-traded Derivatives.
- Accounting, Valuation, Legality of OTC Derivatives and Master Agreement.
- Board Policies, Regulatory Requirement and Risk Management Policies.
- Products that can be allowed without short selling.

The inputs provided by the Sub-Groups (**Annex I.3**) have provided immense help in drafting the final Report.

1.11 The Group has benefited from the active participation of Shri N.V. Deshpande, Principal Legal Adviser, Smt. Usha Thorat, CGM-in-Charge, IDMC, Dr. D. V.S. Sastry and Shri Deepak

Mohanty, Advisers of Monetary Policy Department, Smt. Grace Koshie, CGM-in-Charge, ECD, Dr. T. C. Nair, CGM, DEIO, Shri M.R. Srinivasan, CGM-in-Charge, DBOD, Shri R. Gandhi, CGM-in-Charge, DIT, Shri P.S.Bindra, Joint Legal Adviser, Legal Department, Shri B. Mahapatra, GM, DBOD, Shri G. Padmanabhan, GM, ECD, Shri D. Mishra, GM and Smt. Sudha Damodar, DGM of DBOD, Shri A.R. Prabhu and Shri Indranil Chakraborty, Assistant General Managers and Dr. Sunando Roy, Assistant Adviser of IDMC, Smt. A. Rajlakshmi, Assistant General Manager of ECD and Shri Sunil Kumar, Legal Officer, Legal Department. The Group expresses its sincere appreciation to Shri Amitava Sardar, Director and Dr. Mohua Roy, Assistant Adviser of Monetary Policy Department who have co-ordinated the working of the Group in its deliberations and in the preparation of the Report.

1.12 The Group is grateful to Dr. Rakesh Mohan, Deputy Governor, RBI, for his encouragement.

1.13 The Report of the Working Group is organised in seven Sections. After the introduction in Section I, Section II proposes new OTC derivative products, while Section III advocates the introduction of exchange traded interest rate derivatives. Section IV explores the scope of increasing participation in OTC derivatives market. Section V focuses on legality, netting, documentation, accounting and valuation procedures for interest rate options. Section VI lays down the considerations which should govern Board policies, risk management system and regulatory requirement. Finally, Section VII presents the summary of recommendations of the Working Group.

1.14 An Executive Summary has also been given at the beginning of this Report.

Section II

New OTC Rupee Derivatives

2.1 Since the inception of derivative trading in India, swap products are being widely used by the market to convert floating rate exposures to fixed rate and vice versa. Swaps linked to benchmarks like NSE-MIBOR and 6-month MIFOR have become quite liquid. While the OTC derivatives market has shown healthy growth under extant regulations in a relatively short period of time, the Group was of the opinion that it is important to move to the next stage of development by introducing option products. Since the RBI circular of 1999 clearly disallows option products, the Group recommends that RBI issue a sequel to the original circular that permits the use of options.

I Types of Options

2.2 Since interest rate options as derivatives are being introduced for the first time in India, the Group recommends that the same be introduced in the local market in a phased manner so as to avoid any unwarranted shock. It is suggested that relatively less complex interest rate options may be permitted in the first phase. (Definitions and illustrations in **Annex II.1**) These products could include:

- Vanilla caps, floors and collars
- European Swaptions
- Call and put options on fixed income instruments or benchmark rates

2.3 While unleveraged structured swaps based on overnight indexed swaps (OIS) and FRAs where the risk profile of such structure is similar to that of the building blocks could simultaneously be introduced, the Group recommends that more sophisticated products may be introduced in the next phase which may include American and Bermudan swaptions, Digital options, Barrier options, Index Amortising caps, floors and other complex structures.

II. Benefits of Various Option Products

2.4 The Group felt that the introduction of interest rate option products in India, complementing the currently existing swap market, would lead to the following benefits.

Effective Hedging

2.5 Availability of options will provide the entire universe of hedging avenues to corporates. Options are a useful instrument to hedge both on-balance sheet and off-balance sheet exposures. A typical example of hedging an on-balance sheet exposure would be the purchase of a cap to hedge a floating rate liability or purchase of a floor to hedge a floating rate asset. Similarly, a typical example of hedging an off-balance sheet item could be the purchase of a swaption by a corporate for hedging a loan commitment, which is yet to be drawn down.

Contingent Exposures

2.6 Options are very useful in managing risks on contingent exposures. For example, if a company participates in the bidding of a project where a sizeable amount of funding is required, but does not know whether it would be awarded the bid, it may make use of options to hedge the risks of an adverse move in the interest rate markets.

Liquidity

2.7 Active option trading has been seen to impart reasonable liquidity and direction to the underlying market.

Cost Reduction/Yield Enhancement

2.8 In the case of a floating rate loan, if interest rates rise, the borrower may like to prepay the loan. But the prepayment penalty could be high. In such cases, a cap may be preferable as the initial upfront premium could work out to be cheaper. In order to reduce the premium, the company can both buy a cap and sell a floor, creating a collar structure. In a swap, by having an embedded cap on the floating rate, the fixed rate will be lower than in a normal swap. So, if the fixed rate payer has a view that interest rates will not rise to the extent of breaching the cap, entering into this kind of swap will provide cost reduction or yield enhancement.

Market Development

2.9 Currently, it is not possible to accurately price a number of products such as floating rate bonds and constant maturity treasury (CMT) swaps, since their pricing requires some estimate of interest rate volatility. Once there are interest rate options, the implied option volatilities can be used to infer volatilities in the underlying market, leading to better price discovery.

III. Best Practices for Option Trading

2.10 In the context of a developing market, the sophistication levels of various banks, institutions, corporate clients and institutional investors are very different. The Group recommends that scheduled commercial banks (excluding RRBs), financial institutions and primary dealers should be allowed to both buy and sell options for hedging balance sheet related exposures and market making, albeit with appropriate safeguards. These entities may also offer these products to corporates to help them hedge their balance sheet exposures. The Group felt that in order to increase depth in the market, it would be desirable to allow corporates to sell options to hedge their balance sheet exposures. Keeping in view the inherent risks involved and issues of monitoring of risk management of corporates, the Group recommends that initially corporates may sell options without being net receivers of premium. Such transactions of corporates should be monitored on a per transaction basis by banks. Mutual funds and insurance companies may also buy and sell options as and when their respective regulators allow them.

2.11 The Group felt that it is time for the market to adopt certain best practices to follow while offering derivative products to their clients. Some of the safeguards that may be employed by banks and institutions while offering derivatives to their clients are listed below:

- Banks could internally institute a procedure to enter into derivative transactions, particularly option-based structures, only with those counterparties that clearly understand the benefits and potential risks. In order to determine the same, some very basic criteria like an external risk rating or a minimum net worth could be employed by the bank as the first level check.
- Further, banks should clearly delineate risks and benefits of the suggested derivatives strategies in their term-sheet/offer letter to clients. Where possible, this should be corroborated with a sensitivity analysis of the changes in the payoff of such strategies with respect to changes in the underlying to clearly demonstrate the risks and rewards of the strategy.
- While it is relatively simpler for banks in the foreign currency products to examine the underlying, the task becomes extremely difficult when the underlying is a rupee exposure. Hence, a corporate buying a derivative structure needs to certify in writing that the same is being used to hedge balance sheet exposures.
- There must be a formal credit clearance sought internally, either for the specific transaction or for a derivative facility, for every client that deals in derivatives.

IV. Further Issues for Development of the Derivatives Market

Short Sales

2.12 With the current ban on short selling, “received” risks in the books of the dealers can only be hedged on a portfolio basis, which is inefficient and is fraught with different kind of risks, particularly “basis risks” as “like for like” hedging is not achieved. Permitting short sale would reduce such risks. Therefore, a re-look at the definition of “short selling” is warranted since this definition is unduly restrictive for development of derivatives market.

2.13 While the way forward in expanding the derivatives market despite the current restrictions in place have been delineated in the earlier part of this Section, the Group

recommends that the definition of short sale, as currently used, may be reviewed and modified so that it conforms to both practical and prudential requirements. The Group also recommends that regulatory guidelines for short selling may be put in place as per international best practices.

Hedging Requirements

2.14 Options involve non-linear payoffs and, hence, hedging schemes for options positions tend to be dynamic in nature and hedges are required to be rebalanced frequently. Static one-time hedging of an option position is possible only by entering into an offsetting option transaction. The hedging of an options portfolio entails calculation of various “Greeks”.

Delta Hedging

2.15 Interest rate option contracts have to be hedged by neutralising the delta of the option (changes in the level of the underlying asset’s price) by taking a position in spot underlying. The most efficient way to delta hedge interest rate option positions is to use the interest rate futures market, if available. However, where the benchmark is fixed income security, hedging for selling put options and purchased call options would not be possible till short selling is allowed in underlying securities. Hence, in the absence of interest rate futures and ability to short sell securities, delta hedging of options will require warehousing the correlation risk in the bank’s books and hedging it on a portfolio basis using swaps, securities and other financial instruments that the bank deals in.

Gamma and Vega Hedging

2.16 Although the exposure of an option’s value to changes in the level of the underlying asset’s price can be hedged, exposure to changes in the volatility of the underlying (gamma and vega) is not hedgeable with a linear fixed income instrument. On the other hand, as the inter-bank players are likely to be net writers of options, their exposure to volatility risk would be significant. An option’s volatility risk (gamma and vega of options portfolio) can be hedged fully only with another option. Generally, a portfolio that is gamma-neutral, will not be vega-neutral and vice versa. To make a portfolio both gamma and vega-neutral, at least two traded derivatives on the same underlying asset must usually be used. All these risks will require constant rebalancing as the changes in underlying will constantly affect the values of these Greeks. As the "greeks" change over time, hedging positions will have to be readjusted.

Section III

Introduction of Exchange-Traded Interest Rate Derivatives

3.1 While OTC derivatives market has traditionally played a dominant role in debt markets globally and would continue to do so in future, it is desirable to supplement the OTC market by an active exchange-traded derivative market. In fact, those who provide OTC derivative products can hedge their risks through the use of exchange-traded derivatives. In India, in the absence of exchange-traded derivatives, the risk of the OTC derivatives market cannot be hedged effectively. Exchange-traded derivative market has the following features: an electronic exchange mechanism and emphasises anonymous trading, full transparency, use of computers for order matching, centralisation of order flow, price-time priority for order matching, large investor base, wide geographical access, lower costs of intermediation, settlement guarantee, better risk

management, enhanced regulatory discipline, etc. At present, in India, there exists a reasonable OTC market for interest rate products which raises the need for exchange-traded interest rate derivatives products.

3.2 Also, some of the features of OTC derivatives markets embody risks to financial market stability, viz., (i) the dynamic nature of gross credit exposures, (ii) information asymmetries and lack of transparency, (iii) the high concentration of OTC derivative activities in major institutions, and (iv) the dominance of OTC derivatives markets in the global financial system. Instability arises when shocks, such as counterparty credit events and sharp movements in asset prices that underlie derivative contracts, occur which significantly alter the perceptions of current and potential future credit exposures. When underlying asset prices change rapidly, the size and configuration of counterparty exposures can become unsustainably large and provoke a rapid unwinding of positions.

3.3 The Group felt that there is a need for exchange-traded interest rate derivatives (IRDs) as debt market volumes, particularly in IRS, have been growing rapidly and exchange-traded products would reduce the risk substantially through a clearing corporation, novation, multilateral netting, centralised settlement and risk management. The Group considered that India has already set up mature institutional infrastructure for trading, clearing and settlement in the equity markets which could be harnessed for the debt market. It, therefore, proposes to allow trading in IRDs through the anonymous order-driven screen-based trading system of the stock exchanges which will facilitate participation by all classes of investors and increase market access across the country.

I. Choice of Suitable Products

3.4 In this context, the Group examined the suitability of products that could be introduced immediately on the exchange. Accordingly, the products considered included contract on a basket of bonds or contract on a synthetic derived out of some of the bonds, contract on swap rate index or contract on a bond index or contract on overnight rates (MIBOR Futures) or contract on T-Bills. The Group felt that a phase-wise introduction of products would provide more stability to the market. Hence, it would be more relevant if an index is selected which will comprise a basket of liquid bonds from the underlying market. The same can be from different maturity buckets like for short-term up to 5 years, in the mid-segment ranging from 8 to 12 years and longer-end bonds. Since there is more liquidity in the 8-12 year bucket, an ideal index should capture the bonds to arrive at an index that would reduce the basis risk. It was also felt that while creating the index, some back-testing and stress-testing is required. It was also observed in this context that selecting a few specific bonds for derivative products would not be very difficult as there is relatively higher level of liquidity in some of the bonds of longer horizons. Hence, products on specific bonds can also be considered at a later stage. The Group also felt that Future contracts on Overnight MIBOR could also be welcomed by market participants as NSE-MIBOR is used extensively by market participants and it is a widely-used rate for overnight reference rate. The Group discussed about contract on CP rates but it was felt that CP issue sizes are very small and since the market for a particular CP is not well spread out, it could lead to a credit call on a company rather than a hedge instrument. The Group also discussed the possibility of having a contract related to AAA corporate category bonds but it was felt that since the market in this category is illiquid and also due to heterogeneous credit-worthiness of individual companies even within the AAA-category, it would be difficult to establish a derivative market at present. The Group also felt that as there would be less interest in contracts on T-bills since available 91-day T-bill stock is limited, all 364-day T-bills with residual maturity of 91 days may be made deliverable for such contracts. The Group maintained that to start with, the contracts should range from 1 month, 2 months and up to 12 months.

I.1 *Derivative Contracts Eligible for Trading*

3.5 It is proposed that interest rate futures, interest rate options, interest rate swaps – both plain vanilla swaps as well as swaps with embedded options like caps/floors/collars, as well as standardised repos may be allowed to be traded on the stock exchanges. The introduction could be in a phased manner starting with Futures contract and followed by Option contracts.

3.6 The Group considered that the success of a product would depend upon its utility and economic purpose. After prolonged deliberations and assessing the present state of underlying debt market and OTC derivative market, the Group narrowed down its focus on four contracts viz., a) Short-term MIBOR Futures Contracts, b) MIFOR Futures Contract, c) Bond Futures Contract and d) Long-term Bond Index Futures Contract.

3.7 The derivative contracts short-listed by the Group for trading on the stock exchanges at the initial stage are described briefly as under :

Short-term MIBOR Futures Contract

3.8 This would be a futures contract based on the FIMMDA-NSE Overnight Daily MIBOR. There would be 12 variants of this futures contract depending on contract tenor, viz., a 1-month contract, a 2-month contract, and so on up to a 12-month contract. Contract price would be quoted on a 100 minus MIBOR basis. A contract would expire on the last business day of the expiration month. Daily settlement will take place at the closing price of the Futures contract where closing price would be the last 30 minutes' weighted average prices of the deals reported on the system. If it is not traded during last half an hour, then the last traded price should be considered as closing price. The final settlement will take place in cash on the expiration day based on the simple average MIBOR fixations for the tenor of the contract. The fixation for the day prior to a holiday would be considered as the MIBOR fixation for the holiday for a contract.

MIFOR Futures Contract

3.9 This would be futures contract based on the 6-month LIBOR and Rupee-Dollar 6-month forward rate provided by FEDAI for the expiration date. These contracts would be quarterly contracts and will follow the March-June-September-December expiration cycle. Contract price would be quoted on a 100 minus MIFOR basis. A contract would expire on the last business day of the expiration month. Daily settlement will take place at the closing price of the Futures contract where closing price would be the last 30 minutes' weighted average prices of the deals reported on the system. If it is not traded during last half an hour, then the last traded price should be considered as closing price. The final settlement will take place in cash on the contract expiration day based on the MIFOR computed for the day by the stock exchange after the close of market hours taking into account the relevant LIBOR rate as well as the Rupee-US\$ Forward premia computed by FEDAI (currently 6-month).

Bond Futures Contract

3.10 This would be a futures contract based on specific underlying Central Government bonds. There would be four variants of this futures contract depending on contract tenor, viz., a 3-month contract, a 6-month contract, a 9-month contract, and a 12-month contract. The specific bond(s) will be as identified by the stock exchange from time to time based on broad parameters like liquidity, outstanding issue size, etc. These futures would be valued on quoted clean price. On expiration day, the final cash settlement would be on the basis of closing price of the day.

Long-term Bond Index Futures Contract

3.11 This futures contract would be based on an index derived from liquid securities in the long term maturity bucket, such as 8-12 years. The market capitalisation for the purpose of this index will be based on actual weighted average trade prices. There would be four variants of this futures contract depending on contract tenor, viz., a 3-month contract, a 6-month contract, a 9-month contract and a 12-month contract. The price quote shall be clean composite price. Daily settlement would be done at the closing price of the day.

3.12 The detailed contract specifications of these four products are given at **Annex III.1**.

I. 2 Eligible Underlying Debt Securities

3.13 The market regulator should lay down only broad eligibility criteria and the Exchanges should be free to decide on the underlying stocks and indices on which futures and options could be permitted depending upon the preferences of market participants. The broad eligibility criteria should focus on the issues of risk containment and manipulability. Manipulability is in turn a function of liquidity (daily average volumes) of trades in the underlying instruments as well as its market capitalisation. The choice of the underlying would have to be achieved from a fine balance between the goal of improving broad-based liquidity of the underlying debt market, and the risk of a possibility of a market misconduct arising from having derivatives on a highly illiquid underlying.

II. Market Structure for Trading of IRD Contracts

3.14 The Group recommends that the present market structure for trading of equity derivatives on stock exchanges could be used for the proposed exchange-traded market for interest rate derivatives. The broad details of the market structure are as follows:

Permitted Exchanges

3.15 Equity derivatives trading is permitted at present only in NSE and BSE. It is proposed that interest rate derivatives contracts should be allowed to be traded on the automated, order-driven system of these exchanges only.

Trading Model

3.16 In view of the familiarity of the market and its participants with the systems, processes and procedures followed for exchange-traded equity derivatives should be applied for interest rate derivatives on the permitted exchanges. No additional infrastructure or connectivity issues need to be resolved to use the equity derivatives trading model for trading in interest rate derivatives. There would also be no requirement for a fresh membership on the exchanges or on the clearing corporation/clearing houses to trade on interest rate derivatives provided RBI is satisfied with the present eligibility criteria for membership. NSE have indicated that they are in a position to commence trading in interest rate derivatives within a short period.

Entities in the Trading System

3.17 Like equity derivatives market, the proposed interest rate derivatives market may have four entities in the system as detailed below :

- Trading Members (TM) - These are members of the exchange and can trade on their own behalf as well as on behalf of their clients. Each TM may have more than one user.
- Clearing Members (CM) – These are members of the clearing corporation and carry out risk management activities and perform actual settlement. CMs are also trading members and clear trades for themselves and/or others. Those CMs that are allowed to clear their own trades as well as on behalf of other TMs are called Trading-cum-Clearing members(TCM). Those CMs that are allowed to clear only their own trades (including on behalf of their clients) are called Self-Clearing Members (SCM).
- Professional Clearing Members (PCM) – A PCM is a CM who is not a TM. Typically, banks and custodians become PCMs and clear and settle for their TMs.
- Participants – A participant such as a FI, is a client of TMs. These clients may trade through multiple TMs but settle through a single CM.

Membership Criteria

3.18 The Group feels that the existing two-tier membership structure, viz., Clearing Members and Non-Clearing Members, of the equity derivatives segment may be retained for the debt derivative segment as well. Also, members of the existing equity derivative segment of an exchange will not automatically become members of the interest rate derivatives market segment. Only those who satisfy the stricter eligibility conditions of the IRD market will be admitted to debt derivatives trading.

Risk Management

3.19 The clearing corporation/house becomes counterparty to each trade or provide unconditional guarantee to settle the trade. Risk management measures adopted by exchanges and clearing corporation/clearinghouse include:

- Liquid net worth requirements, i.e., liquid assets as prescribed must be pledged in favour of clearing corporation.
- Portfolio based margining approach, which takes an integrated view of the risk involved in the portfolio of each client comprising his positions in all derivative contracts.
- Initial margin requirements, based on worst scenario loss of a portfolio of an individual client to cover 99% VaR over one day horizon across various scenarios of price changes and volatility shifts.
- Mark-to-market margin in respect of daily settlement.
- Margin on calendar spreads, short option minimum margin, margin on premiums.
- Exposure limits on the notional value of gross open positions of a clearing member.
- Position limits for Trading Members, clients, market, etc.
- Unique client code.

- Settlement Guarantee Fund with contribution from the market participants

Clearing and Settlement

3.20 Clearing and settlement activities in the segment should be undertaken by the Clearing Corporation/house with the help of Self-Clearing Members (SCM), Trading Member–Cum–Clearing Member (TCM) and Professional Clearing Members (PCM). The clearing mechanism essentially involves working out open positions and obligations of clearing (SCM/TCM/PCM) members through multilateral netting at client level.

Clearing Banks

3.21 Funds settlement should take place through clearing banks. For the purpose of settlement, all clearing members are required to open a separate bank account with the designated clearing bank for segment. The Group felt that the Primary Dealers as well as banks should be allowed to settle the deals as Professional Clearing Members of NSCCL as existing in the futures and options (F&O) segment of the exchange. Also, the RTGS system could be used for effecting inter-bank settlement in future.

Settlement of Futures Contracts

3.22 Futures contracts have two types of settlements - the marked-to-market (MTM) settlement which happens on a continuous basis at the end of each day and the final settlement which happens on the last trading day of the futures contract. All futures contracts for each member need to be MTM to the daily settlement price of relevant futures contract at the end of each day. The CMs who have a loss are required to pay MTM loss amount in cash which is in turn passed on to the CMs who have made a MTM profit. CMs are responsible to collect and settle the daily MTM profits/losses incurred by the TMs and their clients clearing and settling through them. Similarly, TMs are responsible to collect/pay losses/ profits from/to their clients.

III. Other Related Issues

3.23 The Group also deliberated upon the following issues relating to trading of IRD on stock exchanges. Its views on these issues are summarised below:

Cash Settlement vs. Physical Settlement

3.24 The Group recommends that settlement should be done on cash basis other than that for bond futures contract where settlement should be done on delivery basis. This would ensure better integration between spot market and futures market. Futures and options on individual securities can, therefore, be delivered as in the spot market.

Netting and Cross Margining

3.25 The Group recommends that the netting should be allowed on intra-day basis at client level positions. However, the case of cross margining with underlying market would be considered at a later stage.

Accounting and Taxation Aspects

3.26 The Institute of Chartered Accountants of India (ICAI) has issued guidance notes on accounting of derivatives transactions in the equity derivatives market. The ICAI could be

requested to develop similar guidelines for accounting of exchange-based transactions in interest rate derivatives. The tax issues incidental to derivative transactions in the equity market could be similarly applicable to interest rate derivative transactions.

Section IV

Increasing Participation in OTC Derivatives Market

4.1 While OTC derivatives market in India has recorded significant growth in recent period, the market is highly concentrated among selected foreign banks, private sector banks and a PD. The Group felt that the market needs to be broad-based in terms of different classes of participants in it; otherwise, eventually counter-party exposures limit of these selected entities would act as an impediment to growth of this market. In this context, it would be logical to seek greater participation from target segments such as public sector banks, mutual funds (MFs), insurance companies (ICs) and primary dealers (PDs). Accordingly, the following difficulties faced by these segments need to be addressed.

- Ambiguity over legality of OTC derivatives (discussed in Section V)
- Lack of legality of netting of obligations to save on credit lines (discussed in Section V)
- Lack of transparency in terms of disclosures of quotes and valuation curves,
- Need to demystify the apprehensions on derivatives instruments through imparting proper training both at the senior management level and the middle level
- Implicit ban on use of brokers
- Narrow participants base. The market is particularly characterised by the absence of MFs, insurance companies and public sector banks.

I. Transparency

4.2 While some banks do publish rates on interest rate swaps and standard FC-Rupee swaps on Reuters once a day, continuous updation of these rates are not done in the manner in which brokers, internationally, update rates on Reuters, thus enhancing market information levels. This paucity of information impacts participants negatively. It was felt by the Group that any enhancement in the levels of transparency would go a long way in encouraging active participation in the derivatives market. Hence, the Group recommends that, in order to improve transparency, RBI may consider mandatory anonymous disclosure of deals done, in a standardised manner, on the negotiated dealing system (NDS) platform. Publication of such figures on a consolidated basis would give the current as well as prospective participants a better picture of market liquidity and provide the much-needed historical data for analysis.

4.3 Further, the Group felt that FIMMDA should as soon as possible, start publishing valuation curves on the currently two most liquid benchmarks - MIBOR and MIFOR and standardise market practices in terms of accrediting brokers, documentation, etc.

II. Familiarisation and Expertise-building

4.4 Dispelling the apprehension on derivatives could be a major step in popularising the use of derivative instruments, particularly among public sector banks and PDs. The Group recommends that FIMMDA may arrange to impart training in derivative products covering various aspects such as pricing, valuation, risk management, documentation and back office functions. The approach could be two-pronged: one directed towards the senior management

and the other at the level of dealers. The training programs for the dealers should be more intensive.

III. Brokers

4.5 Currently, since brokers are not permitted to deal in derivatives segment, market participants tend to confirm brokered deals as direct deals. In the existing Guidelines on FRAs/IRS, there is no explicit ban on the use of brokers by the participants. However, use of brokers in call/notice money markets and deposit mobilisation by banks stands prohibited from 1978. As such, there are practically no 'money market brokers' in India. However, brokers operate in the government securities market. In the foreign exchange market, brokers accredited by the Foreign Exchange Dealers Association of India (FEDAI) have been permitted. Banks and FIs have, however, been permitted the use of brokers, subject to safeguards, for specific purposes.

4.6 The Group felt that the need for broker participation in the market should be examined afresh to bring about the required depth and liquidity in these markets. The Group recommends moving forward with due caution and allowing only the brokers accredited by FIMMDA to act as authorised intermediaries in derivatives market. It was felt that brokers should function only as intermediaries with no proprietary involvement to limit the probability of fraud. In the "Handbook of Market Practices" brought out by FIMMDA, a broad framework for accrediting/approving intermediaries in money market has been contemplated but it is yet to take shape. The Group recommends stringent regulation of the FIMMDA-accredited derivative market brokers with proper institution of systems of accountability and responsibility for these intermediaries as per international best practices.

IV. Towards Broader Participation

4.7 With regard to virtual absence of public sector banks in this area, it is found that the principal impediment to their participation lies in the lack of clarity on legality of OTC derivatives. A general apprehension about the market arising from lack of skill and exposure and lack of transparency also contribute to their low inclination to enter the market. With regard to PDs, only one PD is actively participating in the market. The other PDs are hesitant to enter the derivatives market mainly due to the unclear legal status of the OTC derivatives and lack of transparency in the market.

4.8 With regard to participation of mutual funds (MFs), presently, they are permitted to trade only in exchange-traded derivatives. Since there is no exchange-traded debt derivative at present, no guidelines are available in this regard. Mutual fund participation in the OTC debt derivative market needs further examination from the point of view of its legality. Hence, in the interest of abundant clarity, the Group recommends that SEBI may consider issuing guidelines in regard to products that MFs can trade in, the purpose for which MFs can enter into these transactions and any other related regulatory aspects.

4.9 Similarly, in respect of insurance companies, the regulatory authority, i.e., Insurance Regulatory Development Authority (IRDA) should consider permitting insurance companies to operate in derivatives market for the purpose of hedging. The Group recommends that IRDA should come out with guidelines for participation of insurance companies in derivatives market. This can help growth in long ended derivatives market as insurance companies, once allowed in the market, are expected to be very active participants given the asset/liability mismatches that they have.

Section V

Legality, Netting, Documentation, Accounting and Valuation of OTC Derivatives

I. Legality of OTC Derivatives

5.1 While the introduction of Section 18A of Securities Contract (Regulation) Act, 1956 has resolved the legality problem as far as exchange-traded derivatives are concerned, the issue is still open for OTC derivatives. The provisions of law which affect the legality of OTC derivatives are:

- Section 30 of Contracts Act, 1872 which renders all wagering contracts as unenforceable and void.
- Section 2(aa) of Securities Contract (Regulation) Act, 1956, defining “derivatives” and
- Section 18A of Securities Contract (Regulation) Act, 1956 which makes only the exchange-traded derivatives legal.

5.2 The definition of derivative as contained in Section 2 (aa) of SCRA, 1956 is not wide enough to cover OTC derivatives like Interest Rate Swaps and Forward Rate Agreements, and it would render all OTC contracts void *ab initio* under Section 18A, which states:

18A. Contracts in derivatives

Notwithstanding anything contained in any other law for the time being in force, contracts in derivatives shall be legal and valid if such contracts are –

- (a) traded on a recognised exchange;*
- (b) Settled on the clearing house of the recognised stock exchange in accordance with the rules and bye-laws of such stock exchange*

In view of this legal constraint, RBI, based on an opinion obtained from the Solicitor General of India, had directed FIMMDA to frame a draft legislation governing OTC derivatives which is given below:

“Notwithstanding anything contained in any other law for the time being in force or *the provisions of section 28 of this Act*, the following contracts shall be legal and valid:

- (i) if such contracts in derivatives are:
 - a. traded on a recognised stock exchange;
 - b. settled on the clearing house of the recognised stock exchange in accordance with the rules and bye-laws of such stock exchange.
- (ii) if such contracts are of the class and nature as notified by the Reserve Bank of India or the Securities and Exchange Board of India or the Central Government from time to time and entered into by persons or entities as may be authorised as ‘eligible persons/entities’ by the Reserve Bank of India or the Securities and Exchange Board of India or the Central Government from time to time.”

5.3 The Group felt that an ordinance/change in the SCRA, as suggested by FIMMDA, would provide abundant clarity on the matter, along with ensuring a degree of comfort to such market players who had been hesitant so far to undertake OTC derivative transactions. Accordingly, the

Group recommends that the matter may be now followed up vigorously with the Ministry of Finance by RBI for appropriate amendment to Section 18A of SCRA, 1956.

5.4 Also, derivative trading is implicitly allowed by banks under Banking Regulation Act, 1949 (**Annex V.1**). Hence, the Group recommends that, in the meantime, to clarify the status of derivatives contracts in India, the Banking Regulation Act, 1949 may be amended stating that notwithstanding anything contained under Section 30 of Contracts Act, 1872, if any such derivative contracts are of the class and nature as notified by the Reserve Bank of India from time to time and entered into by persons or entities as may be authorised as 'eligible persons/entities' by the Reserve Bank of India, they will be legally valid.

II. Settlement, Clearing and Documentation Issues

5.5 The Group discussed the issues in documentation, clearing, settlement and counterparty risk management that have been hampering the development of the OTC derivatives market in India:

- As the OTC contracts are bilateral, despite International Swap Dealers Association (ISDA) standard documentation being available, a lot of negotiation occurs in clauses relating to contract enforcement and counterparty risk management. Many counterparties insist upon outside India law and jurisdiction.
- The lack of netting and the bilateral settlement of each contract results in a lot of back office processing besides increasing risk of failures.
- As contracts are bilateral, cancellation or reversal of contracts is very difficult and opposite positions continue to build up the outstanding notional principal although the net position may be small.
- Each party has to manage counterparty risk on its own leading to a variety of exposure limits and credit support or collateral arrangements. No mark-to-market settlement is made usually considering the processing burden.

II.1 Clearing Arrangement for Derivatives

5.6 Several matching, collateral management and clearing services operated in G-10 countries have been detailed in the Bank for International Settlements (BIS) Report on OTC derivatives (BIS, 1998) (**Annex V.2**). Of these, London Clearing House's SwapClear which was introduced in 1999 and OM Stockholm which operates a centralised clearing system for both exchange-traded and OTC derivatives, including customised financial instruments, offer workable models for clearing and settlement of OTC swap contracts through a clearing house. The Group recommends that a similar facility may be introduced through Clearing Corporation of India Limited (CCIL) for clearing of OTC derivatives in India. Key aspects of this model are given in **Annex V.3**. The system proposed would have the following advantages:

- Counterparty risk for individual participants as well as the system as a whole is eliminated with CCIL becoming central counterparty and implementing effective margining mechanisms.
- With no counterparty risk, credit exposure limits will be freed for market participants leading to expansion in market volumes.
- Simplification of documentation and settlement operations can be achieved which would reduce operational risk and settlement costs resulting in broader participation.
- Large participants such as nationalised banks would feel comfortable with CCIL as central counterparty and the elimination of the need for bilateral documentation.

- Elimination of counterparty risk would lower swap costs as this risk premium would not need to be built into price.
- Fewer payments would result from multilateral netting.
- Operational risks can be reduced and efficiencies achieved with straight-through-processing.

On the whole, the market would benefit from reduced risks and costs associated with derivatives settled through the clearing house.

II.2 Netting Legislation

5.7 As the volume and value of the derivative transactions increase in the market, the counterparty limits will get exhausted and will reduce the banks' ability to act as a market maker in various financial products. It will also lead to increased amounts of capital being required to be maintained by banks. Even currently, some of the banks are unable to undertake interest rate swap transactions due to counterparty limits being exhausted. Netting would, therefore, be necessary given the lack of limits that counterparties would have for one another as volumes expand.

5.8 In this connection, the Group noted that RBI has forwarded a draft 'Payment and Settlement Legislation Bill' to the Government of India. The Group recommends that a suitable clause which will permit netting of derivative contracts may be incorporated in the draft.

5.9 Netting can also be done by novation and it aims to reduce liquidity risk on both the counterparty and its correspondent bank, and to reduce counterparty credit risk from a gross to a net basis in respect of each separate forward date. The Group recommends that till such time as the netting legislation is passed, bilateral netting by novation, on similar lines as done by FEDAI, may be operationalised by FIMMDA for the derivatives market.

5.10 Although netting by novation is, in essence, a bilateral mechanism, it can be operated on a multilateral basis within a larger group of banks, but in that case a third party may be employed to undertake the novated net obligation as counterparty to each participating bank. This process is described as "novation and substitution". The Group recommends that multilateral netting by novation for derivatives market may be operationalised by CCIL. CCIL should have a clear understanding of the risks involved in netting and there should be well-defined procedures of management of credit and liquidity risks that specify the responsibilities of each of the participants with the CCIL. The introduction of centralised trading and settlement mechanisms for purely bilaterally negotiated and settled transactions would give rise to a need for additional regulation. Electronic trading systems need to be regulated in a limited sense if these come to serve a price discovery function. The Group was of the opinion that detailed guidelines would have to be issued in regard to netting by novation through CCIL.

II.3 Documentation

Master Agreement

5.11 The Group discussed the issue of documentation and felt that participants should use master agreements to establish the terms and conditions of OTC derivatives transactions, both with other dealers and with end-users. There should be a single master agreement for all transactions with one counterparty, in order to minimise counterparty credit exposures by applying close-out netting provisions to the broadest possible set of obligations. The most widely

used master agreements are those developed by ISDA and the same may be used with appropriate schedules.

5.12 The Group recommends that the OTC derivatives contracts should be governed by an approved ISDA Master Agreement executed between two Indian counterparties who would be free to choose the governing law to be Indian Law or otherwise. The terms of each transaction should be recorded in a written confirmation. The Group also felt that the stress should be placed upon timely exchange of deal confirmations.

5.13 The Group felt that documentation for OTC interest options can be similar to interest rate swaps, i.e.,

Interbank

- ISDA Master Agreement
- Individual confirmations for each transaction

Corporate

- ISDA Master Agreement
- Individual confirmations for each transaction
- Company Board Resolution
- Delegation of authority along with specimen signatures
- Certificate that the transaction is a balance sheet hedge
- Confirmation that Board has knowledge of the transaction

Transaction Documentation

5.14 Market makers desirous of transacting in derivatives should obtain requisite permissions from their management (Board/Risk Management Committee) specifying various issues including the nature of risks it wishes to take upon its books. The following being in the nature of best practices may be adopted:

- Approval of the Board/Risk management Committee for transacting in interest rate derivatives by specifying the following:
 - Nature of Products
 - Various risks involved
 - Methodology adopted for estimation of such risks
 - Appropriate risk limits
 - Pricing methodology
 - Hedging mechanism
 - Adequacy of Procedures at front, middle and back offices with regard to documentation, dealing, confirmation and settlement
 - Stop losses etc. for open positions
- Market makers should put in place appropriate risk management systems and have *inter alia* the following on daily basis:
 - MTM of the portfolio
 - MTM of various Greeks
 - Value at Risk

- Market makers could also be required to report to their Board/Risk Management Committees/ALCO at regular intervals about the activities undertaken on various products.
- Before entering into an option contract, for the first time with a corporate, the bank/FI/PD needs to explain to the counterparty the risks and benefits of entering into such transactions. Such communication should be a part of the documentation of the transaction(s).
- In addition, the bank/FI/PD should ensure that the Board of Directors of the corporate has:
 - Drawn up a risk management policy for the corporate.
 - Laid down clear guidelines for concluding the transactions.
 - Institutionalised arrangements for a quarterly review of operations and annual audit of transactions to verify compliance with the regulations.
 - Put in place a board resolution authorising the corporate to enter into derivative transactions.
 - Named the authorised signatories who would be allowed to transact on behalf of the corporate.

5.15 The Group recommends that FIMMDA may be asked to suggest the minimum requirements in respect of a confirmation for an option. It was felt that since the structures shown to clients may have several building blocks, it may not be feasible for FIMMDA to create a confirmation template for each permutation/combination of such building blocks.

Settlement Documentation

5.16 OTC settlement will generally be on bilateral and net basis. However, the participants may choose any other mechanism as mutually agreed upon. The Group recommends that FIMMDA may be called upon to suggest the documentation for settlement of premium and the documentation for exercise and settlement of option, depending upon products and participants.

Collateral

5.17 Market participants may choose to use collateral to mitigate credit risk on very long tenor exposures depending upon the individual risk perspectives. The Group recommends that collateral may be based on the MTM values of counterparty contracts compared with the threshold limit on exposure that each counterparty may choose to have on the other.

III. Accounting Norms for Interest Rate Options

5.18 The banks/FIs have been advised to adopt suitable accounting norms on the basis of the general accounting principles set out in the circular issued in 1999, after the approval of their respective Boards. The Group recommends that the participants may adopt suitable norms for accounting of interest rate options after the approval of their respective Boards keeping in view the following principles:

- In case the option contract has been entered into for the purpose of hedge, the premium paid/received on such option contract shall be apportioned over the period of the option, i.e., from the date of entering into the contract to the date of expiration of the option.
- In case the option contract has been entered into for other than hedge then:
 - the premium paid/received should be immediately accounted for;
 - the option should be marked to market on a periodical basis and the resultant gain/loss should be booked in the profit and loss account. The basis for marking to market has been given in the sub-section on “valuation of options” below.
- On exercise of an option, the amount receivable/payable under the option will be apportioned over the period for which the amount is so receivable/payable.
- In case an option contract has been terminated/cancelled, the resultant gain/loss will be accounted for immediately irrespective of whether the transaction was entered into for hedge or otherwise.

A model set of accounting entries for a trading portfolio of a market maker is given in the **Annex V.4**.

5.19 The accounting treatment for derivatives has entered a transition period as regulatory bodies around the world push for increased disclosure and transparency of derivative transactions. Financial Accounting Standards Board (FASB) in the US has taken a lead with the release of Financial Accounting Standard 133 (FAS 133) in 1998 – *Accounting for Derivative Instruments and Hedge Activities*. In June 2000, the FASB issued FAS 138, *Accounting for Certain Derivative Instruments and Certain Hedging Activities – An Amendment of FASB Statement No. 133*. These standards apply to US multinationals and financial institutions as well as all foreign firms who are obliged to follow US GAAP (Generally Accepted Accounting Principles). In a related development, the International Accounting Standards Committee (IASC), a London-based organisation, approved IAS 39 in late 1998, which sets comprehensive accounting requirements for financial instruments for international companies. (Some salient features of these standards are given in **Annex V.5**)

5.20 In India, although banks are well-regulated by RBI in respect of their derivative positions, corporates are not so tightly regulated. As corporates are allowed to enter into complex derivative instruments, the risks in the off-balance sheet items also increases. The Group, therefore, recommends that the ICAI may be approached to lay down detailed accounting and disclosure guidelines for derivative transactions in line with the principles put forth under FAS 133 and IAS 39.

Disclosure

5.21 The parameters to be disclosed in balance sheets are covered in Section VI.

Capital Adequacy

5.22 The Group recommends that the credit conversion factors on the purchased options, based on original maturity or the current exposure method and potential future exposure, as laid down by RBI vide its circular DBOD.BP.BC.48/21.03.054/2002-03 dated December 13, 2002 may be used to compute capital adequacy. However, more sophisticated and large derivatives users may assess potential future credit risk through probability analysis for estimating the volatility of underlying variables and its expected impact on the future contract value over time.

Tax Treatment

5.23 The taxes applicable in respect of an option contract will be the income tax and the stamp duty. Since the chargeability of tax would depend on the facts and circumstances of each case and the nature of transaction between hedge and speculation, the Group recommends that the market participants take the opinion of tax experts on the same.

IV. Valuation of Options

5.24 The valuation of interest rate options is a complex issue which has been the subject of intense academic debate. Because option valuation requires future interest rates as well as volatilities, it becomes important to model the evolution of interest rates going forward. Several models are available for pricing and valuing interest rate options. Illustratively:

- Closed Form Model: Black's Model
- Single Factor Models: Vasicek and Cox, Ingersoll and Ross Model
- Multi-Factor Models: Heath Jarrow and Merton, Longstaff and Schwartz
- Markov Models: Ho and Lee, Hull and White

5.25 Black's model is the most widely used model for pricing simple interest rate options whereas Heath, Jarrow and Morton model is employed for pricing complex options. The Group recommends that derivative dealers can choose the pricing and valuation model for interest rate options according to their opinion on the suitability of the models keeping in view certain parameters illustrated in **Annex V.6**.

5.26 The most commonly followed approach in the international context for the implementation of interest rate models for option pricing is to use *traded prices* of caps and floors in the market to calibrate the model. This eliminates the need to get explicit volatilities because the implied volatilities in traded options give information about the term structure of volatility, as long as there exist sufficiently traded options across the spectrum for which the model has to be implemented. This model can then be used for the valuation of other options. In view of this, the Group recommends that FIMMDA should publish the prices to be used by banks/PDs/FIs for valuation after polling sufficient number of market participants who are quoting the prices. Moreover, it should also publish the volatilities using a suitable model. Banks are free to use the volatilities or the prices as per their requirement. The broad policies regarding calibration of model parameters and other features like stress-testing and back-testing should follow the internationally accepted best practices as laid down by BIS.

Section VI

Board Policies, Risk Management System and Regulatory Requirement

6.1 The Basel Committee on Banking Supervision (BCBS) of the Bank for International Settlements (BIS) in its Consultative Paper on the New Capital Adequacy Framework issued in January 2001 has mentioned “Principles for management and supervision of interest rate risk” as a supporting document which should be the minimum standards expected to be followed by internationally active banks. RBI, after taking into account these principles as also the Core Principles for Effective Banking Supervision of the BCBS, has prepared a comprehensive Guidance Note on Market Risk Management in October 2002 for facilitating introduction of best practices for management of liquidity risk and market risk for banking organisations in India. In this context, while appreciating the fact that the basic risks associated with derivatives transactions are not new to any banking organisation, the Group felt that there is a need to underscore separately the risks arising out of the use of these instruments. This is because though derivatives instruments facilitate identification and management of specific risks, often these basic risks are repackaged in such a manner that the overall risks of the portfolio could become very complex which may have the potential to threaten, at the extreme, the very existence of an organisation as evidenced by the recent episodes of bankruptcies of Orange County, Barings, etc. Under this perspective, the Group attempted to highlight the basic principles of sound risk management of both trading and non-trading use of derivative instruments.

6.2 The Group attempted to adapt recommendations made in various BIS and International Organisation of Securities Commission (IOSCO) documents. In particular, the Joint Report by the BCBS and the Technical Committee of the IOSCO (September 1998) has recommended a common minimum framework of data elements on which regulatory authorities should have access.

6.3 Before discussing these issues, it is imperative that basic principles of sound risk management practice for use of derivative instruments are laid out. There are five such basic principles as indicated below:

- Appropriate oversight of risk management process by the Boards of Directors and senior management.
- Adequate risk management process integrating proper measurement of risks, establishment of prudent risk limits, continuous monitoring of limits and frequent sound management information system.
- Comprehensive internal controls and procedures.
- Sound risk management practices for each type of risks and
- Common minimum information framework and public disclosure of information.

6.4 Of these five basic principles, the Guidance Note released by RBI in October 2002 has dealt extensively with the first three principles. The Group, therefore, elaborated on the remaining two basic principles below.

I. Sound Risk Management Practices for Each Type of Risks

I.1 *Credit Risk*

6.5 Credit risk is the risk that a counterparty may fail to fully perform on its financial obligations. In this context, it is important to distinguish between the credit risk of exchange-

traded and OTC derivative instruments. This is because risk reduction measures performed by organised exchanges and clearing houses through such procedures as novation, netting, continuous marked to market system, etc. (discussed above under Section III) reduce the credit risks of exchange-traded derivative instruments as compared to those for OTC contracts. Accordingly, credit risk associated generally with OTC derivative contracts is discussed below.

6.6 Credit risk associated with OTC contracts cannot be measured merely by looking at the gross notional outstanding amount as hitherto. Rather, it is the sum of the gross current credit exposure (i.e., replacement cost) to the counterparty and potential future credit exposure that may result from changes in the market value underlying the derivative contract. Since replacement cost is the marked to market value of a derivative contract at a particular point in time, credit exposure during the remaining life of the derivative contract is captured through potential future credit exposure. Potential credit exposure is, however, the function of the time remaining to maturity and expected volatility of price, rate or index underlying the contract. Smaller end-users may measure this exposure by using "add-ons" for measuring their risk-based capital which is calculated by multiplying the contract's gross or effective notional principal (i.e., after adjusting suitably for the exposure of the contract) by a conversion factor that is based on the price volatility of the underlying contract, as indicated in the 1988 Basle Capital Accord. In this context, it may be mentioned here that RBI has recently issued a circular vide DBOD.BP.BC.48/21.03.054/ 2002-2003 dated December 13, 2002 after taking into account these principles. Such information should, however, include notional amounts by product category (e.g., interest rate, foreign exchange, etc.) as well as by remaining maturity. However, more sophisticated and large derivatives users may assess potential future credit risk through probability analysis for estimating the volatility of underlying variables and its expected impact on the future contract value over time. Under the both "add-ons" and probability based approaches, the Board and the management should periodically check the validity of the underlying assumptions to ensure that exposure is consistent with the organisation's risk management policy.

6.7 Master netting agreements and various credit enhancements, e.g., collaterals, third-party guarantees, etc. reduce credit risk exposure to counterparties under OTC derivatives transactions. However, this not only requires legal enforceability of netting agreements, the quality and marketability of collaterals thus obtained, continuous marking to market, margin calls, custodial risk, etc. are also equally critical for effective reduction in credit risk.

6.8 Concentration of credit risk in respect of significant counterparty OTC credit exposures as also on a particular underlying of instruments, e.g., swaps or options is another critical area for proper evaluation of an organisation's potential credit risk. In this regard, it is essential that the organisation should monitor credit risk on an integrated basis taking into account both cash and off-balance sheet relationships with various counterparties. Credit limits, considering both current and potential credit exposures should be established for counterparties with whom the organisation may conduct business. The Group recommends that such credit limits should be determined by persons not handling derivatives activities and those limits should be consistent with organisation's overall policies and consolidated exposures. In this connection, the Board as well as the regulator could identify the ten largest counterparties to which an organisation is exposed to subject to some minimum threshold level which has to be decided for this purpose.

1.2 *Liquidity Risk*

6.9 There are two types of liquidity risk, viz., i) market liquidity risk and ii) funding liquidity risk.

Market Liquidity Risk

6.10 Market liquidity risk is the risk that an institution may not be able to, or cannot easily, liquidate or offset a particular position at or near previous market price because of inadequate market depth or disruption in the market place. In order to appreciate the comparative difficulty in offsetting exposures with other instruments, particularly under OTC segment, an institution should have a break-up of notional amount and market value of exchange-traded and OTC contracts by market type (e.g., interest rate, foreign exchange, equities etc.) and product (e.g., swaps, futures etc.). Further, an institution and the regulator may gain insight by examining the aggregate size of the market in which the institution is active. An approximation of aggregate size of operation of an institution and its concentration could also be obtained by assessing the gross positive and gross negative market value of contracts by market type and product.

Funding Liquidity Risk

6.11 Funding liquidity risk is the risk that an institution will be unable to meet its payment obligation on settlement dates or in the event of margin calls. Here analysis of expected settlement amount separately under exchange-traded and OTC instruments may provide the extent of funding risk that an institution is exposed to. This is because higher the proportion of exchange-traded instruments relative to OTC instruments, higher could be the funding risk arising from margining and daily cash settlement of the former. In this regard, institutions may keep in view the "Contingency Funding Plan" (Section 4.11) as detailed in the "Guidance Note on Market Risk" by RBI in October 2002.

I.3 Market Risk

6.12 Market risk is the risk to an institution's financial condition resulting from adverse movement in the level or volatility of market prices.

Factor Sensitivity

6.13 The sensitivity of the present value of an institution's positions to changes in *market factors* (MF) is a generic definition of market risk. *Market factors* include foreign exchange spot rates, interest rates, equity spot prices, commodity futures prices, bond yields, implied volatilities, etc. Shifts in market factors are usually specified in either absolute terms or relative terms. Factor sensitivities are sometimes referred to as "greeks" after the greek letters used to define them, e.g. delta, gamma, vega (or kappa), rho, etc. The institution should determine which "greeks" are necessary to measure the market risk of the market factors being transacted and should set internal limits for each of them.

Value-at-Risk Estimates

6.14 Market risk is increasingly measured by market participants using a value-at-risk (VaR) approach, which measures the potential gain or loss in a position, portfolio or institution that is associated with a price movement of a given probability over a specified time horizon. The institution should revalue all trading portfolios and calculate its exposures on a daily basis though the RBI circular referred to above has made it monthly.

Stress Test Information

6.15 Institutions with significant trading activities should subject their portfolios on a regular basis to stress tests using various assumptions and scenarios. These analyses of the portfolio

under "worst-case" scenarios should preferably be performed on an institution-wide basis and should include an identification of the major assumptions used. Quantitative information on the results of stress scenarios coupled with qualitative analyses of the actions that management might take under particular scenarios, would be very useful for supervisory purposes.

I.4 Earnings

6.16 As with cash market instruments, the profitability of derivatives activities and related on-balance sheet positions may be of interest to RBI as also the separate effects on the income of trading activities and activities other than trading. The Group recommends that marking to market should be done on a daily basis.

Trading Purposes

6.17 Many sophisticated market participants view cash and derivative instruments as ready substitutes. The Group felt that the decomposition of trading revenues (from cash and derivative instruments) according to broad risk classes - interest rate risk, foreign exchange risk, commodities and equities exposures, or other risks to the firm - without regard to the type of instrument that produced the trading income, may better describe the outcome of overall risk-taking by the organisation.

Purposes Other Than Trading

6.18 Information about derivatives held for purposes other than trading (end-user derivatives holdings) can also be useful. When combined with information on other factors affecting net interest margins and interest rate sensitivity, this could provide insight into whether derivatives were being used to reduce interest rate risk or to take positions inconsistent with this objective.

Derivatives Valuation Reserves and Actual Credit Losses

6.19 The Group recommends that supervisors should assess information on the valuation reserves that an institution has established for its derivatives activities and on any credit losses on derivative instruments that the institution has experienced during the period.

I.5 Legal Risk

6.20 Legal risk is the risk that contracts are not legally enforceable or documented correctly. The Group recommends that, at a minimum, there should be guidelines and processes in place to ensure the enforceability of counterparty agreements.

I.6 Operational Risk

6.21 BCBS has adopted a common definition of operational risk as "the risk of direct loss resulting from inadequate or failed internal processes, people and systems or from external events." The Board of directors and senior management should ensure proper dedication of resources (financial and personnel) to support operations and systems development and maintenance.

6.22 The Group recommends that the operations unit for derivatives activities, consistent with other trading and investment activities, should report to an independent unit and should be managed independently of the business unit. The sophistication of the systems support and operational capacity should be commensurate with the size and complexity of the derivatives

business activity. Segregation of operational duties, exposure reporting and risk monitoring from the business unit is critical to proper internal control. The institution should monitor the consistency between the terms of a transaction as they were agreed upon and the terms as they were subsequently confirmed.

II. Common Minimum Information Framework

6.23 The Basel Committee on Banking Supervision and The Technical Committee of the IOSCO in their joint Report in September 1998 have revised the common minimum information framework for large internationally active banks and securities firms with significant derivatives activities which supervisors should have access. This framework represents a baseline information that the two Committees have identified as important for supervisors to assess the nature and scope of an institution's derivative activities and how derivatives contribute to an institution's overall risk profile. The two Committees have felt that the common minimum framework may need to be revised periodically to reflect the current status of derivatives market activity in the country. The Group felt that this common minimum information framework as provided in **Annex VI.1 to VI.5** may be adopted for the Indian market as part of introducing best practices here. The Group has also proposed a sub-set of this data-set that could be disclosed to public by all organisations dealing with derivatives activities.

III. Public Disclosure

6.24 To facilitate effective market discipline and sound and efficient functioning of financial markets, institutions should provide financial statement users with a clear picture of their trading and derivatives activities.

6.25 Institutions should provide meaningful summary information on the scope and nature of trading and derivatives and illustrate how these activities contribute to their earnings profile. They should disclose information on the major risks associated with their trading and derivatives activities including credit risk, market risk, liquidity risk, operational risk, earnings risk and legal risk. In addition, institutions should disclose information on their performance in managing these risks, particularly with regard to exposure to market and credit risks.

6.26 In this regard, the following parameters should constitute the minimum that should be disclosed to the public.

- Provide a clear picture of the scope and nature of derivatives activities.
- Provide an overview of key aspects of the organisational structure central to the risk management and control process for derivative activities.
- Discuss the structure of internal controls, risk limits and limit monitoring.
- Provide summary information on how derivatives activities contribute to an institution's earnings profile.
- Notional amount outstanding on interest rate options. Total notional value for purchased options and written options should be shown separately.
- Notional value of the written options, being a commitment, should also be shown under "Contingent Liabilities".
- Provide information on the major risks (credit, market, liquidity, operational, legal and earning risk) associated with these activities and the method of aggregating risk exposures.
- Collateral required by the entity upon entering into options.

- Any concentration of credit risk arising from the options.
- Fair value of the total options book.
- Provide the average VaR results for the year as well as the year's high.
- Discuss the accounting policies and methods of income recognition for derivative activities.
- Mention the stand of the organisation on enforceability.
- Discuss the cumulative credit exposure in respect of derivatives.

Section VII

Recommendations

7.1 The Group, while appreciating that the OTC derivatives market in FRAs and IRS has shown healthy growth under extant regulations in a relatively short period of time, felt that it is important to move to the next stage of development by introducing option products.

7.2 The Group recommends a phased introduction of the rupee option products with further product enhancements in stages. Since options are being introduced for the first time in India, the Group recommends that the same be introduced in the local market in a phased manner so as to avoid any unwarranted shocks. It is suggested that relatively less complex interest rate options may be permitted in the first phase. These products could include:

- Vanilla caps, floors and collars
- European Swaptions
- Call and put options on fixed income instruments or benchmark rates

7.3 While unleveraged structured swaps based on overnight indexed swaps (OIS) and FRAs where the risk profile of such structure is similar to that of the building blocks could simultaneously be introduced, the Group recommends that more sophisticated products may be introduced in the next phase which may include American and Bermudan swaptions, Digital options, Barrier options, Index Amortising caps, floors and other complex structures.

7.4 The Group recommends that scheduled commercial banks (excluding RRBs), financial institutions and primary dealers should be allowed to both buy and sell options for hedging balance sheet related exposures and market making, albeit with appropriate safeguards. These entities may also offer these products to corporates to help them hedge their balance sheet exposures. Corporates may, however, sell options to hedge their balance sheet exposures initially without being net receivers of premium. Such transactions should be monitored by banks. Mutual funds and insurance companies may also buy and sell options as and when their respective regulators allow them.

7.5 The Group recommends that in view of the need to adopt certain best practices banks could internally institute a procedure to enter into derivative transactions, particularly option-based structures, only with those counterparties that clearly understand the benefits and potential risks. In order to determine the same, some very basic criteria like an external risk rating or a minimum net worth could be employed by the bank as the first level check.

7.6 The Group recommends that banks should clearly delineate risks and benefits of the suggested derivatives strategies in their term-sheet/offer letter to clients. Wherever possible this should be corroborated with a sensitivity analysis of the changes in the payoff of such strategies

with respect to changes in the underlying to clearly demonstrate the risks and rewards of the strategy.

7.7 While it is relatively simpler for banks in the foreign currency products to examine the underlying, the task becomes extremely difficult when the underlying is a rupee exposure. Hence, the Group recommends that a corporate buying a rupee derivative structure should certify in writing that the same is being used to hedge balance sheet exposures.

7.8 The Group recommends that there must be a formal credit clearance sought internally, either for the specific transaction or for a derivative facility, for every client that deals in derivatives.

7.9 With the current ban on short selling, “received” risks in the books of the dealers can only be hedged on a portfolio basis, which is inefficient and risky. Permitting short sale would reduce such risks. Therefore, the definition of short sale, as currently used, may be reviewed and modified so that it conforms to both practical and prudential requirements. The Group recommends that regulatory guidelines for short selling may be put in place as per international best practices.

7.10 The Group felt that there is a need for exchange-traded interest rate derivatives (IRDs) instruments as debt market volumes grow rapidly because exchange-traded products would reduce risk substantially. The Group recommends trading in IRDs through the anonymous order-driven screen-based trading system of the stock exchanges which will facilitate participation by all classes of investors and increase market access across the country.

7.11 The Group recommends that interest rate futures, interest rate options, interest rate swaps – both plain vanilla swaps as well as swaps with embedded options like caps/floors/collars, as well as standardised repos - may be allowed to be traded on the stock exchanges in a phased manner starting with Futures contract and followed by Option contracts.

7.12 After assessing the present state of underlying debt market, the Group recommends that four contracts, viz., a) Short-term MIBOR Futures Contracts, b) MIFOR Futures Contract, c) Bond Futures Contract and d) Long-term Bond Index Futures Contract could be considered for trading on exchanges at this stage. Of them, Bond Futures Contract could be launched where settlement should be done on the basis of delivery of securities for ensuring better integration between spot market and futures market. On other contracts, settlement could be done on cash basis.

7.13 The Group recommends that the market regulator should lay down only broad eligibility criteria and the Exchanges should be free to decide on the underlying stocks and indices on which futures and options could be permitted depending upon the preferences of market participants. The broad eligibility criteria should focus on the issues of risk containment and manipulability.

7.14 The Group recommends that netting should be allowed on intra-day basis at client level positions. However, the case of cross-margining with underlying market would be considered at a later stage.

7.15 The Group recommends that ICAI could be requested to develop guidelines for accounting of exchange-based transactions in IRDs. The tax issues incidental to derivative transactions in the equity market could also be applicable to IRDs transactions.

7.16 The OTC derivatives market is highly concentrated among selected foreign banks, private sector banks and a PD. To broad-base the market in terms of different classes of participants in it, the Group recommends that measures be undertaken by all regulators seeking greater participation from target segments such as public sector banks, mutual funds (MFs), insurance companies (ICs) and primary dealers (PDs).

7.17 With a view to enhancing the level of transparency in derivatives market in order to encourage active participation, the Group recommends that RBI may consider mandatory anonymous disclosure of deals done, in a standardised manner, on the negotiated dealing system (NDS) platform. Publication of such figures on a consolidated basis would give the current as well as prospective participants a better picture of market liquidity and provide the much-needed historical data for analysis.

7.18 In order to enhance familiarisation and expertise among participants, the Group recommends that FIMMDA may arrange to impart training in derivative products covering various aspects such as pricing, valuation, risk, documentation and back office functions. The approach could be two-pronged: one directed towards the senior management and the other at the level of dealers. The training programs for the dealers should be more intensive.

7.19 With a view to bringing about the required depth and liquidity in derivatives market, the Group recommends the introduction of brokers with due caution and allowing only the brokers accredited by FIMMDA, as per the framework in "Handbook of Market Practices", to act as authorised intermediaries in derivatives market. Brokers should function only as intermediaries with no proprietary involvement, to limit the probability of fraud. The Group recommends stringent regulation of the FIMMDA-accredited derivative market brokers with proper institution of systems of accountability and responsibility for these intermediaries as per international best practices.

7.20 With regard to participation of mutual funds (MFs), in the interest of abundant clarity, the Group recommends that SEBI may consider issuing guidelines in regard to products that MFs can trade in, the purpose for which MFs can enter into these transactions and any other related regulatory aspects.

7.21 In respect of insurance companies, the Group recommends that IRDA should come out with guidelines for participation of insurance companies in derivatives market.

7.22 With a view to making the OTC derivatives contracts legally enforceable, the Group recommends that the following amendment to Section 18A may be now followed up vigorously with the Ministry of Finance by RBI:

“Notwithstanding anything contained in any other law for the time being in force or *the provisions of section 28 of this Act*, the following contracts shall be legal and valid:

- (i) if such contracts in derivatives are:
 - (a) traded on a recognised stock exchange;
 - (b) settled on the clearing house of the recognised stock exchange in accordance with the rules and bye-laws of such stock exchange.

(ii) if such contracts are of the class and nature as notified by the Reserve Bank of India or the Securities and Exchange Board of India or the Central Government from time to time and entered into by persons or entities as may be authorised as ‘eligible persons/entities’ by

the Reserve Bank of India or the Securities and Exchange Board of India or the Central Government from time to time.”

7.23 Additionally, since derivative trading is implicitly allowed by banks under Banking Regulation Act, 1949, the Group recommends that, in the meantime, to clarify the status of derivatives contracts in India undertaken by banks/FIs/PDs, the Banking Regulation Act, 1949 may be amended stating that notwithstanding anything contained under Section 30 of Contracts Act, 1872, if any such derivative contracts are of the class and nature as notified by the Reserve Bank of India from time to time and entered into by persons or entities as may be authorised as ‘eligible persons/entities’ by the Reserve Bank of India, they will be legally valid.

7.24 The Group recommends that a centralised clearing system for OTC derivatives may be introduced through CCIL.

7.25 A draft legislation on payment and settlement has been forwarded to the Government by RBI. With a view to ameliorating the problem arising from the lack of limits that counter-parties would have for one another as volumes expand in the derivatives market, the Group recommends that a suitable clause which will permit netting of derivative contracts may be incorporated in the above-mentioned draft legislation.

7.26 With a view to reducing liquidity risk and counterparty credit risk, the Group recommends that till such time as the legislation on netting is passed, bilateral netting by novation, on similar lines as done by FEDAI for foreign exchange contracts, may be operationalised by FIMMDA for the derivatives market.

7.27 The Group recommends that multilateral netting by novation for derivatives market may be operationalised by CCIL with well-defined procedures of management of credit and liquidity risks that specify the responsibilities of each of the participants with CCIL. Detailed guidelines would have to be issued in regard to netting by novation through CCIL.

7.28 The Group recommends that the OTC derivatives contracts should be governed by an approved ISDA Master agreement executed between two Indian counterparties who would be free to choose the governing law to be Indian Law or otherwise. The terms of each transaction should be recorded in a written confirmation. The Group also felt that the stress should be placed upon timely exchange of deal confirmations.

7.29 The Group recommends that market-makers desirous of transacting in derivatives should obtain requisite permissions from their management (Board/Risk Management Committee) specifying various issues including the nature of risks it wishes to take upon its books including:

- Nature of Products
- Various risks involved
- Methodology adopted for estimation of such risks
- Appropriate risk limits
- Pricing methodology
- Hedging mechanism
- Adequacy of Procedures at front, middle and back offices with regard to documentation, dealing, confirmation and settlement
- Stop losses etc. for open positions

7.30 The Group recommends that market-makers should put in place appropriate risk management systems and have *inter alia* the following on daily basis:

- MTM of the portfolio
- MTM of various Greeks
- Value at Risk

7.31 The Group recommends that market-makers could also be required to report to their Board/Risk Management Committees/ALCO at regular intervals about the activities undertaken on various products.

7.32 The Group recommends that before entering into an option contract, for the first time, with a corporate, the bank/FI/PD needs to explain to the counterparty the risks and benefits of entering into such transactions. Such communication should be a part of the documentation of the transaction(s).

7.33 The Group recommends that banks/FIs/PDs should ensure that the Board of Directors of the corporate has:

- Drawn up a risk management policy for the corporate.
- Laid down clear guidelines for concluding the transactions.
- Institutionalised arrangements for a quarterly review of operations and annual audit of transactions to verify compliance with the regulations.
- Put in place a board resolution authorising the corporate to enter into derivative transactions.
- Named the authorised signatories who would be allowed to transact on behalf of the corporate.

7.34 The Group recommends that with a view to standardisation of confirmations of option contracts to the extent possible, FIMMDA may be requested to suggest the minimum requirements in respect of a confirmation for an option. FIMMDA may also be requested to suggest the documentation for the settlement of the premium and the documentation for exercise and settlement of the option, depending upon the products and the participants.

7.35 With a view to mitigating credit risk on very long tenor exposures, the Group recommends the use of collateral that may be based on the MTM values of counterparty contracts compared with the threshold limit on exposure that each counterparty may choose to have on the other.

7.36 The Group recommends that participants may adopt suitable norms for accounting of interest rate options after the approval of their respective Boards keeping in view the following principles:

- In case the option contract has been entered into for the purpose of hedge, the premium paid/received on such option contract shall be apportioned over the period of the option, i.e., from the date of entering into the contract to the date of expiration of the option.
- In case the option contract has been entered into for other than hedge then:
 - the premium paid/received should be immediately accounted for;
 - the option should be marked to market on a periodical basis and the resultant gain/loss should be booked in the profit and loss account.
- On exercise of an option the amount receivable/payable under the option will be apportioned over the period for which the amount is so receivable/payable.

- In case an option contract has been terminated/cancelled, the resultant gain/loss will be accounted for immediately irrespective of whether the transaction was entered into for hedge or otherwise.

7.37 With a view to adopting international best practices in accounting for derivatives, the Group recommends that ICAI may be approached to lay down detailed accounting and disclosure guidelines for derivative transactions in line with the principles put forth under FAS 133 and IAS 39.

7.38 The Group recommends that the credit conversion factors on the purchased options, based on original maturity or the current exposure method, as laid down by the RBI vide its circular DBOD.BP.BC.48/21.03.054/2002-2003 dated December 13, 2002 may be used to compute capital adequacy.

7.39 The taxes applicable in respect of an option contract will be the income tax and the stamp duty. Since the chargeability of tax would depend on the facts and circumstances of each case and the nature of transaction between hedge and speculation, the Group recommends that the market participants take the opinion of tax experts on the same.

7.40 The Group recommends that derivative dealers can choose the pricing and valuation model for interest rate options according to their opinion on the suitability of the models.

7.41 The Group recommends that FIMMDA should publish the prices to be used by the banks/PDs/FIs for the valuation after polling sufficient number of market participants who are quoting the prices. Moreover, it should also publish the volatilities using a suitable model. Banks are free to use the volatilities or the prices as per their requirement. The broad policies regarding calibration of model parameters and other features like stress-testing and back-testing should follow the internationally accepted best practices as laid down by BIS.

7.42 RBI, after taking into account the Core Principles for Effective Banking Supervision of the BCBS as well as its Consultative Paper on the New Capital Adequacy Framework issued in January 2001, has prepared a comprehensive Guidance Note on Market Risk Management in October 2002 for facilitating introduction of best practices for management of liquidity risk and market risk for banking organisations in India. In this context, while appreciating the fact that the basic risks associated with derivatives transactions are not new to any banking organisation, the Group recommends that there is a need to underscore separately the risks arising out of the use of OTC instruments.

7.43 Though RBI has recently issued a circular vide DBOD.BP.BC.48/21.03.054/ 2002-2003 dated December 13, 2002 after taking into account relevant BIS principles, more sophisticated and large derivatives users may assess potential future credit risk through probability analysis for estimating the volatility of underlying variables and its expected impact on the future contract value over time. The Group recommends that under both "add-ons" and probability based approaches, the Board and the management should periodically check the validity of the underlying assumptions to ensure that exposure is consistent with the organisation's risk management policy.

7.44 Master netting agreements and various credit enhancements, e.g., collaterals, third-party guarantees, etc. require legal enforceability of netting agreements. The Group recommends that parameters such as the quality and marketability of collaterals, continuous marking to market, margin calls, custodial risk, etc. should be kept in view while managing collateral.

7.45 The Group felt that concentration of credit risk in respect of significant counterparty OTC credit exposures as also on a particular underlying of instruments are other critical areas for proper evaluation of an organisation's potential credit risk. Credit limits, considering both current and potential credit exposures should be established for counterparties with whom the organisation may conduct business. The Group recommends that such credit limits should be determined by persons not handling derivatives activities and those limits should be consistent with organisation's overall policies and consolidated exposures. In this connection, the Board as well as the regulator could identify the ten largest counterparties to which an organisation is exposed to subject to some minimum threshold level which has to be decided for this purpose.

7.46 The Group recommends that the institutions should determine which “greeks” are necessary to measure the market risk of the market factors being transacted and should set internal limits for each of them. The institutions should revalue all trading portfolios and calculate its exposures daily. Institutions with significant trading activities should subject their portfolios on a regular basis to stress tests also using various assumptions and scenarios.

7.47 The Group recommends that marking to market should be done on a daily basis. The Group felt that the decomposition of trading revenues (from cash and derivative instruments) according to broad risk classes without regard to the type of instrument that produced the trading income should be practised to capture the outcome of overall risk-taking by the organisation.

7.48 The Group recommends that supervisors should assess information on the valuation reserves that an institution has established for its derivatives activities and on any credit loss on derivative instruments that the institution has experienced during the period.

7.49 The Group recommends that, at a minimum, there should be guidelines and processes in place to ensure the enforceability of counterparty agreements.

7.50 The Group recommends that the Board of directors and senior management should ensure proper dedication of resources (financial and personnel) to support operations and systems development and maintenance. The Group recommends that the operations unit for derivatives activities, consistent with other trading and investment activities, should report to an independent unit and should be managed independently of the business unit.

7.51 The Group recommends that a common minimum information framework as provided in **Annex VI.1 to VI.5** in this Report to be adopted for the Indian market as part of introducing best practices here.

7.52 The Group recommends that a sub-set of data-set, as provided in common minimum information framework, could be disclosed to public by all organisations dealing in derivatives activities to facilitate effective market discipline and sound and efficient functioning of financial markets.

Glossary

Back office: the part of a firm that is responsible for post-trade activities. Depending upon the organisational structure of the firm, the back office can be a single department or multiple units (such as documentation, risk management, accounting or settlements). Some firms have combined a portion of these responsibilities, usually found in the back office, particularly those related to risk management, into what they term a middle office function. See front office.

Broker: a firm that communicates bid and ask levels to potential principals and otherwise arranges transactions as agent for a fee, without acting as counterparty in the transactions.

Clearing house: a department of an exchange or a separate legal entity that provides a range of services related to the clearance and settlement of trades and the management of risks associated with the resulting contracts. A clearing house is often central counterparty to all trades, that is, the buyer to every seller and the seller to every buyer.

Close-out: acceleration and termination of a contract prior to its maturity.

Close-out-netting: an arrangement to settle all contracted but not yet due obligations to and claims on a counterparty by one single payment, immediately upon the occurrence of one of the defined events of default. See netting and payment netting.

Collateral: an asset that is delivered by the collateral provider to secure an obligation to the collateral taker. Collateral arrangements may take different legal forms; collateral may be obtained using the method of title transfer or pledge. Typically, government securities and cash are used as collateral in the context of OTC derivatives transactions. See pledge and title transfer.

Collateral management service: a centralised service that may handle any of a variety of collateral-related functions for a client firm, including valuation of collateral, confirmation of valuations with counterparties, optimisation of collateral usage, and transfer of collateral.

Confirmation process: the procedure for verifying trade details with a counterparty. This is generally done by exchanging via fax or mail a document (i.e. a confirmation) identifying the trade details and any governing legal documentation and verifying the accuracy of the information provided by the counterparty (i.e. matching).

Credit risk: the risk that a counterparty will not settle an obligation for full value, either when due or at any time thereafter. Credit risk includes pre-settlement risk (replacement cost risk) and settlement risk (Principal risk).

Current exposure: the loss that would be incurred today on a contract or set of contracts if a counterparty failed to perform on its obligations. Also known as replacement cost, current exposure is what it would cost to replace a given contract if the counterparty default now. See potential future exposure.

Custody risk: the risk of loss of securities held in custody occasioned by the insolvency, negligence or fraudulent action of the custodian or of a sub-custodian.

Dealer: a firm that enters into transactions as a counterparty on both sides of the market in one or more products. OTC derivatives dealers are primarily large international financial institutions - mostly commercial banks but also some securities firms and insurance companies - as well as a few affiliates of what are primarily non-financial firms. See end-user.

Default: generally, failure to satisfy an obligation when due, or the occurrence of one of the defined events of default agreed by the parties under a contract.

Derivative: a financial contract the value of which depends on the value of one or more underlying reference assets, rates or indices. For analytical purposes, all derivatives contracts can be divided into basis building-blocks of forward contracts, options or combination thereof.

Exchange-traded derivative: a derivative which is listed and traded at an organised market-place. Derivatives exchanges generally provide standardised contracts and central clearing facilities for participants.

Forward contract: a contract in which one party agrees to buy, and the other to sell, a specified product at a specified price on a specified date in the future.

Forward rate agreement: a forward contract on interest rates in which the rate to be paid or received on a specific obligation for a set period of time, beginning at some time in the future, is determined at contract initiation.

Front office: a firm's trading unit and other areas that are responsible for developing and managing relationships with counterparties. See back office.

Haircut: the difference between the market value of a security and its value when used as collateral. The haircut is intended to protect a collateral taker from losses due to declines in collateral values.

Legal risk: the risk of loss because a law or regulation is applied in an unexpected way or because a contract cannot be enforced.

Liquidity risk: the risk that a counterparty will experience demands for funds (or collateral) that are too large to meet when due.

Market value (replacement value): the cost that would be incurred or the gain that would be realised if an outstanding contract were replaced at current market prices.

Marking to market: the revaluation of open positions in financial instruments at current market prices and the calculation of any gains or losses that have occurred since the last valuation.

Master agreement: an agreement that sets forth the standard terms and conditions applicable to all or a defined subset of transactions that the parties may enter into from time to time, including the terms and conditions for close-out-netting.

Multilateral netting: netting on a multilateral basis is arithmetically achieved by summing each participant's bilateral net positions with the other participants to arrive at a multilateral net position. Such netting is conducted through a central counterparty (such as a clearing house) that is legally substituted as the buyer to every seller and the seller to every buyer. The multilateral net position represents the bilateral net position between each participant and the central counterparty. See netting.

Netting: an offsetting of positions or obligations by counterparties. See close-out netting and payment netting.

Operational risk: the risk that deficiencies in information systems or internal controls could result in unexpected losses.

Option contract: a contract that gives the buyer the right, but not the obligation, to buy or sell an underlying asset by (or on) a specific date for a specific price. For this right the purchaser pays a premium.

Out-of-the-money: a term used to describe an option contract that would produce a negative cash flow for the holder if it were exercised now.

Over-the-counter (OTC): a method of trading that does not involve an exchange. In over-the-counter markets, participants trade directly with each other, typically by telephone or computer links.

Payment netting: settling payments due on the same date and in the same currency on a net basis.

Plain vanilla transactions: the most common and generally the simplest types of derivatives transaction. Plain vanilla is a relative concept, and no precise list of plain vanilla transactions exists. Transactions that have unusual or less common features are often called exotic or structured.

Settlement risk (principal risk): the risk that the seller of a security or funds delivers its obligation but does not receive payment or that the buyer of a security or funds makes payment but does not receive delivery. In this event, the full principal value of the securities or funds transferred is at risk. See credit risk.

Straight-through processing: the capture of trade details directly from front-end trading systems and complete automated processing of confirmation and settlement instructions without the need for rekeying or reformatting data.

Swap: an agreement for an exchange of payments between two counterparties at some point(s) in the future and according to a specified formula.

Systemic risk: the risk that the failure of one participant in a payment or settlement system, or in financial markets generally, to meet its required obligations when due will cause other participants or financial institutions to be unable to meet their obligations (including settlement obligations in a payment and settlement system) when due. Such a failure may cause significant liquidity or credit problems and, as a result, might threaten the stability of financial markets.

Annex

Annex I.1	:	Transactions in Forward Rate Agreements/Interest Rate Swaps
Annex I.2	:	Memorandum
Annex I.3	:	List of Sub-Groups
Annex II.1	:	Definition/Illustration of Various Option Products
Annex III.1	:	Contract Specifications
Annex V.1	:	Extant Legislation on Derivatives under Banking Regulation Act, 1949
Annex V.2	:	Details of Services Offered to Derivative Market Participants in G-10 Countries
Annex V.3	:	Proposed Adaptation through CCIL in India of the SwapClear Facility of the London Clearing House (LCH)
Annex V.4	:	Accounting And Valuation Methods For Market Makers
Annex V.5	:	Some Salient Features of the International Accounting Standards – FAS 133 and IAS 39
Annex V.6	:	Issues in Valuation of Options
Annex VI.1	:	Notional Amounts by Underlying Exposures

Annex VI.2	:	Information on Credit Quality of OTC Derivative Contracts
Annex VI.3	:	Risk Measures for OTC Derivatives Contracts by Tenor
Annex VI.4	:	Information about Past-due OTC Derivatives and Credit Losses
Annex VI.5	:	Strike Concentration Report

Annex I.1

Transactions in Forward Rate Agreements/Interest Rate Swaps

Participants	(Outstanding in Rs. Crore)			
	24-Mar-00		29-Dec-02	
	No. of Outstanding Contracts	g	No. of Outstanding Contracts	g
I. Major Participants				
Canara Bank			1	200
American Express I B C	24	384	330	7477
Bank Of America			334	3023
Barclays Bank				
Citi Bank N.A.	11	223	433	11647
Credit Lyonnais			193	4668
Deutsche Bank	25	595	511	13996
Hong Kong Bank	31	738	743	18498
Standard Chartered Bank	35	564	1231	31389
The Chase Manhattan Bank			194	4538
HDFC Bank	24	444	392	9610
ICICI Banking Corporation			954	23241
ICICI Sec & Finance	9	105	548	12835
II. Sub-Total	159	3053	5864	141122
III. Total	216	4249	6418	150712

Relative Shares

I. Major Participants	Relative Shares			
	No. of Outstanding Contracts	g	No. of Outstanding Contracts	g
Canara Bank	0	0	0	0
American Express I B C	11	9	5	5
Bank Of America	0	0	5	2
Barclays Bank	0	0	0	0
Citi Bank N.A.	5	5	7	8
Credit Lyonnais	0	0	3	3
Deutsche Bank	12	14	8	9
Hong Kong Bank	14	17	12	12
Standard Chartered Bank	16	13	19	21
The Chase Manhattan Bank	0	0	3	3
HDFC Bank	11	10	6	6
ICICI Banking Corporation	0	0	15	15
ICICI Sec & Finance	4	2	9	9
Total	74	72	91	94

MEMORANDUM RESERVE BANK OF INDIA

Working Group on Over-the-Counter Rupee Derivatives

In the Governor's Statement on Mid-term Review of Monetary and Credit Policy for the Year 2002-03 of October 29, 2002, it was stated in Paragraph 88 that a Working Group is being set up with appropriate representations from the market to look into, *inter alia*, the possible ways of developing a market for over-the-counter (OTC) rupee derivatives. The Group will also review the existing guidelines for OTC rupee derivatives in India.

Accordingly, it has been decided to constitute a Working Group under the Chairmanship of Shri Jaspal Bindra, CEO, Standard Chartered Bank. The Working Group will comprise:

Shri Jaspal Bindra, Standard Chartered Bank – Chairman
Shri Sanjay Nayar, Citibank
Shri B.D. Sumitra, State Bank of India
Shri Nachiket Mor, ICICI Bank
Shri Sudhir Joshi, FIMMDA
Shri Arun Kaul, PDAI, New Delhi
Shri S.A. Bhat, Bank of India
Shri Ajay Mahajan, Bank of America

Shri D. Anjaneyulu, Ad-in-C, MPD will be the Convenor of the Group.

The Terms of Reference of the Working Group are as under:

- (i) To suggest the modalities for introducing dealing in derivatives having explicit/implicit option features such as caps/floors/collars in the rupee derivatives segment.
- (ii) To suggest norms for capital adequacy, exposure limits, swap position, asset-liability management, internal control and other risk management methods for these derivatives.
- (iii) Any other related issue.

The Working Group may invite members of the Financial Markets Committee, officials of other Departments of RBI and representatives from corporate sector for wider participation and interaction.

The Working Group may submit its report by December 31, 2002.

(Rakesh Mohan)
Deputy Governor

November 7, 2002

- I. Increasing Participation in OTC Derivative Market Co-ordinator - Shri Chetan Shah (Deutsche Bank) Members: SEBI, FIMMDA, PNB Gilts, BOI, Prudential ICICI Mutual Fund and RBI
- II. Exchange-traded Derivatives Co-ordinator - Shri N. Parakh (SEBI) Members: HSBC, NSE, ICICI Bank and RBI
- III. Accounting, Valuation, Legality of OTC Derivatives and Master Agreement Co-ordinator - Shri Sudhir Joshi (FIMMDA) Members: Citi Bank, SBI and RBI
- IV. Board Policies, Regulatory Requirement and Risk Management Policies Co-ordinator - Shri B.D. Sumitra (SBI) Members: Citi Bank, ICICI Bank and RBI
- V. Products that can be allowed without short selling Co-ordinator - Shri A. Mahajan (BOA) Members: Deutsche Bank, Standard Chartered Bank, Reliance Industries and RBI.

Annex II.1

Definition/Illustration of Various Option Products

Interest Rate Cap

Interest Rate Caps are designed to provide insurance against rising interest rates by payment of a premium to the other party, who promises to make interest payments on specified future dates based on the excess, if any, of interest rates above a certain specified rate.

Interest Rate Floor

Interest Rate Floor is opposite of an interest rate cap agreement. It refers to the purchase of insurance against falling interest rates by payment of a premium to another party who promises to make a payment if a specified floating rate falls below a specified floor rate.

Interest Rate Collar

Collars are the combined purchase and sale of an interest rate cap and an interest rate floor so as to keep interest rate exposure within a defined range. One party agrees to make interest payments to the other party if interest rates exceed a certain rate (i.e. "sells" a cap) and the other party agrees to make interest payments if interest rates drop below a certain rate (i.e. "sells" a floor).

Interest Rate Swaption

Swaptions are options on forward-starting interest rate swaps. A swaption gives the buyer the right, but not the obligation, to enter into an interest rate swap at a specific date in the future, at a particular fixed rate (the strike rate), and for a specified term. The option is called a receiver swaption if the buyer has the right to receive fixed interest in the swap, and is called a payer swaption if the buyer has the right to pay fixed and receive floating interest in the swap.

Call/Put options on bonds/interest rates

A bond call/put option is an option to buy or sell a bond for a certain price on a certain date. In an interest rate call/put option, the underlying is a floating interest rate.

Interest Rate Futures

Interest rate futures are forward contracts on a benchmark interest rate traded on a stock exchange. A typical example is the futures contract on 3-month sterling Libor traded on the London International Futures & Options Exchange (LIFFE), which is known as a short sterling future.

Option Styles

- (a) **American.** "American" means a style of Option Transaction pursuant to which the right or rights granted are exercisable during an Exercise Period that consists of a period of days.
- (b) **Bermuda.** "Bermuda" means a style of Option Transaction pursuant to which the right or rights granted are exercisable only during an Exercise Period which consists of a number of specified dates.
- (c) **European.** "European" means a style of Option Transaction pursuant to which the right or rights granted are exercisable only on the Expiration Date.

European Swaption: Illustration

Suppose a corporate has a rupee liability maturing in the next three months. The corporate Treasurer is confident of funding this liability through an issue of 5-year paper around the same time. But the Treasurer wants to hedge the rate of this debt placement now. This rate would be composed of the "Treasury" rate and a "corporate spread" representing the credit risk charge. Suppose for the moment, that the corporate wants to hedge the "Treasury" risk only. Once options are permitted, the corporate could hedge the downside risk of rates moving sharply higher by buying a payer's swaption on 5-year G-Sec rates expiring in 3 months. This product is nothing but a European swaption.

Barrier Option

An option, which is only exercised when the underlying item reaches a predetermined price.

Digital Option

These options are only exercised when the underlying item reaches a pre-determined price and then only pay a fixed amount regardless of how far in-the-money the option settles.

Index Amortizing caps, floors

A cap, floor with a notional principal amount that declines as a function of a short term money rate such as Libor. The use of an index protects the client from unanticipated or erratic prepayment risks.

Efficacy of Short Sales – An Illustration

Suppose that a bank offers an option, expiring in 3 months time, on a 5-year swap to a client (having a floating rate liability) where the client has the right to receive the prevailing one year government security yield from the bank on every interest payment date (say, annual) and pay a fixed rate, say, 6% on those dates for a certain notional principal. Also suppose a case where this is the only transaction outstanding in the bank's books. Assuming that the "delta" of this swap is, say, 50%, i.e., the bank needs to hedge 50% of the notional amount of the 5-year received risk immediately. The ideal way, perhaps, would be to short the 5-year G-sec. However, the current regulations do not allow short selling. Therefore, the bank has to find some other way to pay the 5-year fixed rate, which may be done by looking for a counterparty that may want to hedge a fixed rate liability and hence receive a fixed rate from the bank. Alternatively, the bank may decide to hedge by selling some securities in the discretionary portfolio of similar duration to hedge the swap. But this portfolio approach of hedging is fraught with different kind of risks, particularly "basis risks" as "like for like" hedging is not achieved.

Annex III.1

Contract Specifications

	Short term MIBOR Futures Contract	MIFOR Futures Contract	Bond Futures Contracts	Long-term Bond Index Futures Contracts
Contract Size	INR 1,00,000	INR 1,00,000	INR 1,00,000	INR 1,00,000
Underlying asset	FIMMDA-NSE Overnight Daily MIBOR	6-month LIBOR and Rupee-Dollar 6-month forward rate provided by FEDAI for the expiration date.	Bond-specific(Central Government bonds)	Index based on liquid security maturing not before 8 years and not after 12 years. (Calculated on the basis of Actual traded price.)
Fixation	Daily at 9.40 AM	Based on LIBOR and the Rupee-US\$ forward premia provided by FEDAI for the expiration date.		
Contract months	1-month, 2-month, 3-month, ..., 12-month (12 contracts)	3-month contracts of March, June, September and December.	3-month, 6-month, 9-month and 12-month contracts.	3-month, 6-month, 9-month and 12-month contracts
Price Quotation	100-MIBOR	100-MIFOR	Quoted clean price	The price quote shall be clean composite price
Tick Size	Rs. 0.0050	Rs. 0.0050	Rs. 0.0050	Rs. 0.0050
Maximum daily price fluctuation	It will be +/- 2% over the base price (Previous days close price).	It will be +/- 2% over the base price (Previous days close price).	It will be +/- 2% over the base price (Previous days close price).	It will be +/- 2% over the base price (Previous days close price).

Expiration date	Last business day of the month.	Last business day of the month.	Last business day of the month.	Last business day of the month.
Netting of transactions	Netting of transactions at client level in the same contract would be permitted	Netting of transactions at client level in the same contract would be permitted.	Netting of transactions at client level in the same contract would be permitted.	Netting of transactions at client level in the same contract would be permitted.
Initial Margins	Initial Margins would be required based on exposure / risk factors	Initial Margins would be required based on exposure / risk factors.	Initial Margins would be required based on exposure / risk factors.	Initial Margins would be required based on exposure / risk factors.
Daily settlement	Settlement is to be done at the close price of the Futures contracts. Closing price would be at last 30 minutes weighted average prices of the deals reported on the system. If it is not traded in last half an hour then last traded price should be considered as closing price.	Settlement is to be done at the closing price of the Futures contracts. Closing price would be at last 30 minutes weighted average prices of the deals reported on the system. If it is not traded in last half an hour then last traded price should be considered as closing price.	Settlement is to be done at the closing price of the Futures contracts. Closing price would be at last 30 minutes weighted average prices of the deals reported on the system. If it is not traded in last half an hour then last traded price should be considered as closing price.	Settlement would be done every day at closing price.
Settlement conditions on expiration	Cash Settlement. On expiration day the final settlement would be on the simple average MIBOR fixations for the tenor of the contract. The fixation for the day prior to a holiday would be considered as the MIBOR fixation for the holiday for a	Cash Settlement. On expiration day the final settlement would be on the basis of either average MIFOR that will be polled on the expiration date or the MIFOR rate that will be polled on the expiration date.	Settlement on physical delivery basis. On expiration day the final settlement would be on the basis of closing price.	Cash Settlement. On expiration day the final settlement would be on the basis of closing index.

	contract.			
Assets eligible to meet margin requirements	Cash, FD, G-secs and bank guarantee	Cash, FD, G-secs and bank guarantee	Cash, FD, G-secs and bank guarantee	Cash, FD, G-secs and bank guarantee
Open position limit	As may be prescribed by the exchange.	As may be prescribed by the exchange.	As may be prescribed by the exchange.	As may be prescribed by the exchange.
Turnover limit	As may be prescribed by the exchange.	As may be prescribed by the exchange.	As may be prescribed by the exchange.	As may be prescribed by the exchange.

Annex V.1

Extant Legislation on Derivatives under Banking Regulation Act, 1949

1. Section 6(1) of the Banking Regulation Act, 1949 (BR Act), inter alia, states as under:
 “In addition to the business of banking, a banking company may engage in any one or more of the following forms of business, namely:-
 - (a) the acquiring, holding, issuing on commission, underwriting and dealing in stock, funds, shares, debentures, debenture stock, bonds, obligations, securities and investments of all kinds; the purchasing and selling of bonds, scrips or other forms of securities on behalf of constituents or others;
2. From the above it is clear that a banking company can deal in obligations. Derivatives, being in the nature of obligations, will be covered within the ambit of “obligations” and hence a banking company will be able to deal in derivatives.
3. Alternatively, the above section also permits a banking company to purchase and sell “other forms of securities”. The term “security” has not been defined under the BR Act. Therefore, it may be pertinent to look into the definition of security under the Securities Contract (Regulation) Act, 1956 (SCRA). Section 2(h)(ia) specifically includes “derivative” under the definition of “securities”. Whilst OTC derivatives may not strictly be ‘securities’ or ‘derivatives’, as defined under SCRA 2(aa), it may be germane, given some of the views in the market, to rely upon the same in regarding dealing in OTC derivatives as permissible for banking companies to engage in.
4. Lastly, section 6(1) (m) of the BR Act also states as under:

“Doing all such other things as are incidental or conducive to the promotion or advancement of the business of the (banking) company;”

In terms of the same, engaging in buying, selling or otherwise dealing in OTC derivatives may be regarded as within the scope of permissible activities for banking companies to engage in/undertake.

ANNEX V.2

Details of Services Offered to Derivative Market Participants in G-10 Countries

A wide range of services is offered to the OTC derivatives markets to facilitate the trading and settlement of transactions. This annex lists six services and their providers that have been mentioned by market participants as potentially significant: two matching services, two collateral management services and two clearing services.

1. S.W.I.F.T. (Society for Worldwide Interbank Financial Telecommunication)

S.W.I.F.T. is a major provider of secure messaging services for use in interbank communications. Its services are extensively used in the foreign exchange, money and securities markets for confirmation and payment messages in the OTC derivatives market. It establishes standards for messages that can be used to confirm transactions to counterparties via the S.W.I.F.T. network. It provides a matching service called “Accord”, which receives messages from the two counterparties to a transaction, identifies where the fields match (or fail to match) and reports back.

2. Londex International: OPEX

OPEX (Open exchange) is a confirmation matching and collateral reconciliation service developed by Londex International Limited. OPEX offers two main services to subscribers: trade matching and collateral reconciliation. It will match confirmation messages sent between dealers according to tolerances agreed by dealers. It will also enable subscribers to send documents, either in conjunction with a confirmation or separately.

The system will also provide for collateral reconciliations – both of the individual transactions covered by a collateral agreement and of the mark-to-market value of each trade. There will be scope for matching on the basis of agreed tolerances on an automatic basis (e.g., where counterparties have agreed to match each day at a specific time) or on a manual basis, enabling them to match as often as they choose, including matching the whole portfolio or parts of the portfolio more than once intraday.

3. Cedel Bank: Global Credit Support Service (GCSS)

Global Credit Support Service (GCSS), launched in September 1996, is Cedel Bank’s current collateral management service for the OTC derivatives market. Under the fiduciary agreement with Cedel Bank, a GCSS participant transfers assets from/to the fiduciary (Cedel Bank). All cash and securities lodged in GCSS are held in the GCSS’s omnibus account at Cedel Bank. Transfers into and out of GCSS are made through Cedel Bank’s clearing and settlement system using its normal depositories and cash correspondents. In GCSS, collateral management operates on a bilateral basis. GCSS participants calculate their bilateral net exposures and send the information to Cedel Bank. The system then calculates the collateral amount to be

transferred, referring to the terms of the agreement between the parties. Deliveries may be executed in real time. Alternatively, collateral may be moved in the daily batch processing cycle.

4. Euroclear: Integrated Triparty Derivatives Support (ITDS)

This new service, launched in 1997, is one of a series of settlement-integrated collateral management arrangements developed by Euroclear for different markets, including repo and securities lending. ITDS is designed to facilitate the collateralisation of net exposures resulting from OTC derivatives transactions. A Derivatives Service Agreement is executed between two parties, both of which must be Euroclear participants, and the Morgan Guaranty Trust Company of New York, Brussels Office (MGTC), acting as collateral agent. Under the Derivatives Service Agreement, the two parties can request MGTC to calculate the amount of collateral to be transferred (the credit support amount), based on data for current net exposures reported by the two parties and on the terms of the agreement (e.g., the threshold): on receipt of the collateral taker's and collateral giver's notifications indicating their net credit exposures, MGTC matches them, calculates the credit support amount and notifies both sides. Alternatively, the two parties may agree on the credit support amount and notify MGTC, which then matches the two notifications.

5. OM Stockholm

OM Stockholm (OM) operates a centralised clearing system for both exchange-traded and OTC derivatives. OTC-traded instruments cleared by OM fall into three categories:

- (i) off-exchange transactions in standardised instruments that could be traded on OM Stockholm as an exchange but which are matched outside the exchange and later sent to OM Stockholm for clearing;
- (ii) fixed income derivatives, including FRAs, Treasury bond and bill futures and interest rate swaps; and
- (iii) tailor-made derivatives (the "Tailor-made Clearing" service – TMC): a wide range of OTC contracts for which stocks, currencies, bonds or commodities may be the underlying asset.

As with off-exchange trades, fixed income and tailor-made contracts are matched between counterparties and then sent to OM, electronically in the case of fixed income derivatives, for matching and registration. Off-exchange and fixed income trades eligible for clearing can be divided into cross-trades (internal trades among end-users, or internal trades between a clearing member and its client) and interbank trades (trades among clearing members).

OM's clearing of OTC derivative contracts is the same as its clearing of exchange-traded business. OM guarantees the performance of contracts by substituting itself as counterparty to both sides of the transaction – i.e., as a seller to the original buyer and a buyer to the original seller - on registration of the contract. Participants must provide initial margin and variation margin requirements which are calculated and collected daily. Counterparty losses not covered by margin requirements are met from OM's own resources.

Under the TMC facility, OM accepts contracts for clearing only after the customised financial instrument has been subject to risk analysis. The majority of business consists of "Plain vanilla" contracts and the service is not used for exotic derivatives. This is due to the significant margins required for these products.

6. The London Clearing House Ltd. (LCH): SwapClear

The London House (LCH) introduced clearing of certain widely-traded OTC derivatives from August 1999. There are two types of SwapClear user: SwapClear Dealers (SDs) and SwapClear Clearing Members (SCMs). For a trade to be cleared through SwapClear, both counterparties must be approved by LCH as SDs. An SD has arrangements for clearing its business through an SCM (an SD could be its own SCM). Margin, reset amounts and coupon flows will be determined by the clearing house. All payments, including those arising on contracts that have been traded on the exchanges for which LCH clears, are netted into a single payment flow per currency with each member each day. Exposures to members are monitored intraday and additional intraday margin may be collected. In the event of a member default, LCH is able, under its default rules, to terminate all outstanding transactions with that member and enter into replacement transactions or hedge its resulting exposure as necessary. Any losses are offset against the defaulting member's margin and other LCH resources, including the member Default Fund, as necessary.

Source: BIS (1998) - Report on OTC Derivatives : Settlement Procedures and Counter party Risk Management.

Annex V. 3

Proposed Adaptation through CCIL in India of the SwapClear Facility of the London Clearing House (LCH)

LCH's SwapClear which was introduced in 1999 offers an interesting model for clearing and settlement of OTC swap contracts through the clearing house. A similar facility may be introduced in India through CCIL. Key aspects of this model are highlighted below.

Documentation

All swaps cleared by LCH are governed by its rules and byelaws. SwapClear is essentially an inter-bank facility meant to clear trades of banks and investment banks who are members of LCH. LCH becomes the central counterparty to each transaction. SwapClear also accommodates existing swap contracts. A swap contract can initially be entered into with bilateral ISDA documentation. At any time during the currency of the swap, it can be registered with LCH with the consent of both parties in which case the bilateral ISDA document will be replaced by the terms and conditions of LCH.

CCIL should consider introducing a clearing system for swap contracts. Any existing CCIL member would have the facility to enter into contracts with CCIL becoming the central counterparty. This would obviate the need for bilateral documentation between parties. Unlike in the case of LCH, where such clearing is optional, RBI may consider making clearing of swap contracts through CCIL mandatory (for such products as are cleared by CCIL) in view of the several advantages of such a facility.

Products cleared

Due to central clearing, the products need to have some standardisation. LCH clears all plain vanilla swaps up to 30 years' maturity in five major currencies. Several benchmarks are supported. While technically OTC products are non-standard, most contracts entered into carry standard terms that can be cleared through a clearing house. As seen in the case of LCH, a fairly large universe of contracts can be cleared, the only major exceptions being ones with embedded options, which could also be standardised.

Daily Mark-to-market Settlement

LCH collects initial margin on contracts, usually in the form of approved securities. LCH also conducts daily mark-to-market settlement of all outstanding contracts to manage its counterparty risk. The amounts are paid by members in the form of variation margin. The result is that LCH has only intra-day risk, which is managed through initial margin and exposure limits. LCH also reserves the right to make intra-day margin calls if required. LCH further operates a Settlement Guarantee Fund from members' contributions which is another source of risk containment. These margining arrangements protect the clearing house from defaults. Risk to the system as a whole from counterparty defaults is reduced as there is daily settlement of profits and losses. CCIL may implement a similar margining system and use the existing Settlement Guarantee Fund for swap contracts as well.

Multilateral netting

Settlement on payment or reset dates as well as mark-to-market settlements are made using multilateral netting. Every counterparty thus makes or receives a single payment to or from the clearing house. This obviates the risks and costs of bilateral settlement.

Trading

Deals continue to happen in the OTC market in the case of LCH and are registered with LCH (using SWIFT messaging) for settlement. Such deals may be reported over the NDS in India so that it brings transparency. NDS may download trades to CCIL, just as in the case of government securities.

Clearing for other participants

LCH allows clearing members to clear swap contracts for non-members, such as their clients, in a system analogous to the CSGL system or the PCM system in equity derivatives markets in India. Thus corporates and other participants who are not members of CCIL may participate in the clearing system through other clearing members.

ACCOUNTING AND VALUATION METHODS FOR MARKET MAKERS

Model accounting entries for interest rate options for the trading portfolio:

Purchase of Cap / Floor

↘ ***On Purchase of Cap / Floor***

Dr. Interest Rate Cap/ floor Purchase
Cr. Interest Rate Cap/ floor Purchase Offset

This will be the entry passed on the trade date of the cap purchase.

↘ ***For recording of Premia on deal date***

Dr. Premia on Interest Rate Options
Cr. Premia payable

This will be the entry passed on the trade date of the cap purchase.

↘ ***On Payment of Premia***

Dr. Premia Payable
Cr Cash/RBI

This will be the entry passed on the settlement date of the Premia.

↘ ***On MTM of the interest rate options book***

Dr. MTM loss on Interest Rate Options
Cr. Unrealised MTM of options book

OR

Dr. Unrealised MTM of options book
Cr. MTM gain on Interest Rate Options

All option deals will be revalued on a daily basis. Any differential gains/losses (i.e. MTM net of Premia received/paid) on the option portfolio shall be recognised immediately. These entries will be reversed on a daily basis and a fresh one will be passed daily.

↘ ***On maturity settlement of the Option contract***

If not exercised

Dr. Interest Rate Cap/ floor Purchase Offset
Cr. Interest Rate Cap/ floor Purchase

The off-balance sheet entries will be reversed.

If exercised on maturity

Dr. Interest Rate Cap/ floor Purchase Offset
Cr. Interest Rate Cap/ floor Purchase

The off-balance sheet entries will be reversed.

↘ ***For recognition of Premia as income/expense***

The balance in the Premia on Interest Rate Options a/c will be transferred to the P/L a/c at the period end.

If cancelled before maturity

Dr. Interest Rate Cap/ floor Purchase Offset

Cr. Interest Rate Cap/ floor Purchase

The off-balance sheet entries will be reversed.

↘ ***For recognition of Premia as income/expense***

Dr. Premia Receivable

Cr Premia on Interest Rate Options

The balance in the Premia on Interest Rate Options a/c will be transferred to the P/L a/c at the period end.

Sale of Cap / Floor

↘ ***On Sale of Cap / Floor***

Dr. Interest Rate Cap/ floor Sold Offset

Cr. Interest Rate Cap/ floor Sold

This will be the entry passed on the trade date of the cap / floor sale.

↘ ***For recording of Premia on deal date***

Dr. Premia receivable

Cr. Premia on Interest Rate Options

This will be the entry passed on the trade date of the cap / floor sale.

↘ ***On receipt of Premia***

Dr Cash/RBI

Cr. Premia receivable

This will be the entry passed on the settlement date of the Premia.

↘ ***On MTM of the interest rate options book***

Dr. MTM loss on Interest Rate Options

Cr. Unrealised MTM gain of options book

OR

Dr. Unrealised MTM gain of options book

Cr. MTM gain on Interest Rate Options

All option deals will be revalued on a daily basis. Any differential gains/losses (i.e., MTM net of premia received/paid) on the option portfolio shall be recognised immediately. These entries will be reversed on a daily basis and a fresh one will be passed daily.

↘ ***On maturity settlement of the Option contract***

If not exercised

Dr. Interest Rate Cap/ floor Sold

Cr. Interest Rate Cap/ floor Sold Offset

The off-balance sheet entries will be reversed.

If exercised on maturity

Dr. Interest Rate Cap/ floor Sold
Cr. Interest Rate Cap/ floor Sold Offset

The off-balance sheet entries will be reversed.

↘ ***For recognition of Premia as income/expense***

The balance in the Premia on Interest Rate Options a/c will be transferred to the P/L a/c at the period end.

If cancelled before maturity

Dr. Interest Rate Cap/ floor Sold
Cr. Interest Rate Cap/ floor Sold Offset

The off-balance sheet entries will be reversed.

↘ ***For recognition of Premia as income/expense***

Dr Premia on Interest Rate Options
Cr. Premia Payable

The balance in the Premia on Interest Rate Options a/c will be transferred to the P/L a/c at the period end.

Annex V.5

Some Salient Features of the International Accounting Standards – FAS 133 and IAS 39

Fair Value Accounting

The basic premise is that derivatives create assets and liabilities that should be captured on the balance sheet at fair value. However, they do allow historical cost or other specific accounting treatment in many circumstances. Thus fair value treatment will apply to Interest-Rate / Currency Swaps, Purchase / Written Options, Futures / Forwards, Free standing credit derivatives – permissible exclusions are financial guarantees, climactic variable contracts, equity indexed contracts, traditional insurance, etc.

Hybrid contracts (e.g., debt with call / put options, or with cap / floor feature) comprising both a standard host contract and an embedded derivative must be bifurcated with the derivative portion being fair valued. If the embedded derivative cannot be reliably identified and measured then the entire hybrid contract must be fair valued. As an exemption from this treatment, embedded derivatives that do not materially alter the nature of the host contract are deemed “clearly and closely related” and may be excluded from the scope of fair value accounting.

In essence, all derivatives within the scope of the standard must be fair valued at least on a quarterly basis. The changes in fair value must be reported in current earnings unless hedge accounting is allowed in which case some or all of the change in the value of the hedging instrument should be posted directly to the Other Income (OI) account on the balance sheet. This amount would be reversed out of OI and matched in earnings with the impact of the offsetting hedged exposure.

Achieving Hedge Accounting Treatment

In order to qualify for hedge accounting treatment, a hedge must be classified as an allowable hedge type (i.e., cash flow hedge in the form of floating rate assets / liabilities or fair value hedge in the form of fixed rate assets / liabilities, firm commitments or foreign currency hedge, etc.) In addition, an exposure and relationship with the hedging instrument must be documented. Hedge strategies for which premium is received (e.g., option sold) cannot qualify for hedge accounting. However, forwards, futures, purchased options and zero cost structures explicitly qualify. The hedging instrument must be shown prospectively to be “highly effective” in offsetting the change in value of the underlying exposure. Effectiveness is defined as the hedge instrument’s ability to generate offsetting changes in the Cash Flow or Fair Value of the hedged exposure; time value of the option is to be excluded from effectiveness tests leaving only intrinsic value for consideration. Some other conditions should also be met to qualify for this treatment. Along with this, requirement for disclosure have increased substantially and the following information needs to be disclosed as footnote to the financial statement – amount of hedge ineffectiveness, amount excluded from effectiveness testing, amount recognised in P&L due to failure to pass the effectiveness test or due to forecast errors or failed firm commitments, etc.

Annex V.6

Issues in Valuation of Options

The following issues were discussed with regard to the valuation of options:

1. Likely Benchmarks
2. Information about spot rates and forward rates and its sources.
3. Information about the term structure of volatilities
4. The interest rate model to be used

Likely Benchmarks

The benchmarks, which will be used for interest rate options such as caps and floors, will depend on where the activity takes place in the market. As such the following types of benchmarks are available in the Indian context

- a. The Government Securities curve, notably the one-year T-bill yield

- b. Interest rate curve derived from currency forwards and their corresponding long term swap rates, notably Mumbai Inter-Bank Forward Offer Rate (MIFOR) and Mumbai Inter-Bank Offered Currency Swaps (MIOCS).
- c. Overnight rates and the OIS curve.

Each of these types have different behavioral characteristics and these curves will require their own interest rate models. Information about forward rates can be determined from the corresponding swap rate curve.

Information Sources for Benchmarks

The sources of these curves will be as follows:

1. The GOI-Sec curve used will be the FIMMDA-PDAI-Bloomberg yield curve. There are some conceptual difficulties with the implementation of an interest rate model based on this curve. These arise because of jumps in forward rates determined from this curve. These will be addressed subsequently in the section on volatility.
2. The MIFOR and MIOCS curves used will be the FIMMDA-Reuters MIFOR and MIOCS benchmarks.
3. The overnight benchmark used will be the FIMMDA-NSE MIBOR and the FIMMDA-Reuters MIOIS curve will be the benchmark for overnight swap curve.

Information about the Term Structure of Volatilities

There are several ways of getting information about the term structure of volatilities.

Historical Volatilities

Historical volatilities of forward rates can be determined from a database of historical forward rate curves. Some kind of a weighing scheme such as the Exponentially Weighted Moving Average method can be used to give greater weight to recent changes in the underlying rate. However, this approach is flawed for three reasons:

What drives option valuation is not the volatility that the market has experienced but volatility that the market is expecting in future. In this sense, using historical volatilities is conceptually unsound.

Time dependence of the volatility of the forward rate cannot be explicitly modeled using information about historical vols.

Most of the benchmarks that are used in the Indian Market are “Fitted” curves. Forward rates determined from these tend to jump a lot because of large kinks in the underlying zero coupon curve. Many forward rates are not accessible because a forward market does not exist. Because of this, using these rate to determine volatilities is likely to significantly overestimate the volatilities.

Polling of Volatilities

An alternative to historical volatilities is polling the term structure of volatilities for each of these individual benchmarks. The time-dependence of forward rate volatilities can be

explicitly modeled or fitted in this case and this information can be used in the implementation of an interest rate model.

Polling prices of standard caps and floors

FIMMDA would publish the prices to be used by the Banks/PD for the valuation. Moreover it will also publish the volatilities using a suitable model. Banks are free to use the volatilities or the prices as per their requirement.

The most commonly followed approach in the international context for the implementation of interest rate models for option pricing is to use *traded prices* of caps and floors in the market to calibrate the model. This eliminates the need to get explicit volatilities because the implied volatilities in the traded options give information about the term structure of volatility, as long as there exist sufficiently traded options across the spectrum for which the model has to be implemented. This model can then be used for the valuation of other options.

If a polling process is followed, FIMMDA will ensure that there are sufficient number of market participants who are quoting the pricing. As in the case of other polling process, the outliers will be discarded at the time of arriving at the average.

Crucial to this approach is the presence of a market. However, in the absence of a market, it should be possible to *poll prices* of certain standard options and use this information. This only requires that a sufficient number of market participants be present. The advantage of this method is that it can be used even after the market develops fully. Its robustness increases as the market develops and as the polled prices converge with actual traded prices.

Model for calculation of volatilities

Since the Indian market is not likely to involve exotic options at inception, it is suggested that a model similar to the LIBOR Market Model (LMM) suggested by Brace, Gatarek and Musiela (1997) be used, with day-count conventions appropriate to the benchmark for which it is being implemented. The model makes several assumptions which include the presence of a complete forwards market and log-normality in forward rates. While most of these assumptions hold true in developed liquid markets and while market practice in developed markets has been to use the valuation formulae of this model (which are the same as the formulae given by the Black model developed in 1975), it has not yet been tested whether many of these are applicable in the Indian market. In view of the popularity and conceptual soundness of the LMM model, FIMMDA suggested using it for calculation of implied volatilities.

On estimation of volatilities for pricing and valuation, it was seen that OTC interest rate derivatives will be mostly customised products. Thus, pricing of these will require market makers to have sufficient expertise to estimate volatilities to be used for pricing these products. For some standard maturities and standard benchmarks, market makers can quote volatility estimates. Gradually the growth in the volumes will see products becoming standardised. As OTC markets develop, the extent to which market participants engage in large numbers of transactions with similar terms increases, because certain instruments serve the risk-management needs of a large number of market participants. At this stage of development, for valuation or

marking to market purpose an independent agency like FIMMDA could publish on a regular basis, the volatility matrix for different maturities for different benchmarks with the different strikes based on the market poll.

The market participants will be free to use any model for marking to market / model of their option portfolio, provided the regulatory guidelines (for market risk management) in respect of management and internal controls of models are adhered to.

Annex VI.1

Notional Amounts by Underlying Exposures

Notional amounts	Interest rate contracts	Foreign exchange	Equity-linked contracts
OTC contracts			
Forwards			
Swaps			
Purchased options			
Written options			
Exchange-traded contracts			
Futures - long positions			
Futures - short positions			
Purchased options			
Written options			
Memo Item : -			
Total Contracts held for trading			
Total contracts held for other than trading			

1. This does not include spot foreign exchange, which may be assessed as a separate item.

Annex VI.2

Information on Credit Quality of OTC Derivative Contracts

Counterparty credit quality *	Exposure before collateral and guarantees		Potential credit exposure	Credit equivalent amount after collateral & guarantees
	Gross positive market value	Current credit exposure		
1				
2				
3				
Total				

Credit quality*	Collateral	Guarantees
1		
2		
3		

*Credit quality categories would be defined as follows

1. For banks, category 1 identifies counterparties given a 0% risk weight under the Basel Capital Accord or counterparties rated AA and above.
2. For banks, category 2 identifies counterparties given a 20% risk weight under the Basel Capital Accord or counterparties rated BBB and above.
3. For banks, category 3 identifies counterparties given a 50% risk weight under the Basel Capital Accord or counterparties rated below BBB.

Note: When basing the above categories on rating, an institution's equivalent internal credit grade ranking may be used when investment ratings are not available.

Annex VI.3

Risk Measures for OTC Derivatives Contracts by Tenor

Type of Risk	Details of Underlying (as applicable)	One year or less	Greater than one year and up to five years	Greater than five years and up to ten years	Greater than ten years
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Interest Rate

Risk

Sensitivity to par YTM scaled to +1bp:

Currency of rate
Yield Curve
Security ID (CUSIP)
Issuer name
Issuer type
Issue risk rating
Issuer industry sector

Sensitivity to Interest Rate Vega scaled to +100 bps

as above

FX Risk

FX Delta scaled to 100%

Currency 1

Sensitivity to FX Currency Pair
Vega scaled to
+100 bps

Sensitivity to absolute changes in the 25D risk-reversal.
(The 25D risk reversal is the difference between the implied volatility of a call with delta=0.25 and the implied volatility of a put with delta=0.25.)

Sensitivity to absolute changes in the 25D strangle.
(The 25D strangle is the average of the implied volatility of a call with delta=0.25 and the implied volatility of a put with delta=0.25.)

Other Risks will be added as institutions are permitted to transact different derivative types

Annex VI.4

Information about Past-due OTC Derivatives and Credit Losses

Book value of derivatives past-due 30-89 days
Book value of derivatives past-due 90 days or more \$
Gross positive market value of derivatives past-due 30-89 days
Gross positive market value of derivatives past-due 90 days or more
\$

\$ Information about derivatives that are past due 90 days or more should also include information include information about derivatives that, while not technically past-due, are with counterparties that are not expected to pay the full amounts owed to the institution under the derivative contracts.

**Strike Concentration
Report
Interest Rate Options Strike Concentration
Risk**

	Maturity Tenor Intervals									
Caps and Floors (by underlying)	Up to 1 week	Greater than 1 week and up to 2 weeks	Greater than 2 weeks and up to 1 month	Greater than 1 month and up to 2 months	Greater than 2 months and up to 3 months	Greater than 3 months and up to 6 months	Greater than 6 months and up to 1 year	Greater than 1 year and up to 2 years	Greater than 2 years	
Strike in multiples of 25 basis points, starting with lowest whole percentage point to which the institution is exposed	Exposure in notional amounts, netting long (positive) and short (negative) positions									
European Swaptions (by underlying)										
Strike in multiples of 25 basis points, starting with lowest whole percentage point to which the institution is exposed	Exposure in notional amounts, netting long (positive) and short (negative) positions									

FX Option Strike Concentration Risk

Up to 1 week	Greater than 1 week and up to 2 weeks	Greater than 2 weeks and up to 1 month	Greater than 1 month and up to 2 months	Greater than 2 months and up to 3 months	Greater than 3 months and up to 6 months	Greater than 6 months and up to 1 year	Greater than 1 year and up to 2 years	Greater than 2 years
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By Currency Pair

Strike in multiples of 25 paise, starting with the lowest whole Rupee to which the institution is exposed

Once digital options are permitted, a separate format will be provided for reporting this risk