Report of the Working Group on Interest Rate Options

February 8, 2016

RESERVE BANK OF INDIA

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I. Summary of Recommendations

1	Product Types	To begin with, simple call and put Options, caps, floors, collars and swaptions may be permitted. Complex structures to be introduced subsequently.
2	Venue	Interest rate options may be permitted both on the currency and derivatives segment of stock exchanges as well as in the OTC market.
3	Exercise	While in the OTC segment only European options may be permitted, both American and European structures may be permitted on Exchanges.
4	Benchmarks	FIMMDA/FBIL to come out with the list of eligible domestic money or debt market rates as benchmarks like G-Sec, T-Bills, MIBOR,OIS MIFOR,IRF etc.
5	Participants – Market Makers	Banks & PDs. Mutual Funds, Insurance companies and other regulated entities having sound financials and prudent risk management may be allowed subject to the approval of concerned regulator.
6	Participants - Users	All domestic entities having underlying interest rate risk. • No documentation relating to underlying exposure may be required for exposures upto Rs. 5 cr. • Large corporates may be allowed to take hedging positions for their anticipated interest rate exposures.
7	Contract Size	• Exchanges: Minimum lot size to be kept as Rs. 2 lakhs. • OTC: Rs. 5 cr and in multiples of Rs. 5 cr thereof among market makers. Transactions between user and market maker may not be standardized.
8	Tenor	• OTC: For transactions among market makers, rolling 1,2,3,6,9,12 months and 2,3,5,7 and 10 years. To be reviewed periodically by FIMMDA • Exchanges: ▪ First phase: Three serial monthly contracts;

		▪ Second phase: Quarterly contracts upto one year
9	Reporting	• OTC transactions to be reported on existing centralised TR of CCIL. • Deals among market makers to be reported to TR within 30 min. • Client deals to be reported by close of business hours.
10	Settlement	• OTC transactions may be settled centrally at CCIL in a non-guaranteed manner on T+1 basis. • CCP clearing may be introduced after a critical level of trading activity is achieved. • FIMMDA/FBIL may be advised to publish prices for reference data to be used for deriving settlement value.
11	Documentation	• Existing ISDA Master Agreement used for IRS may be used for Interest Rate Options. • Market makers to have suitability and appropriateness policy for users and obtain an undertaking/certificate from authorised signatory.

II. Introduction

Background:

1. OTC derivatives are available in the Indian financial markets since 1999 when Reserve Bank of India (RBI) had introduced Interest Rate Swaps and Forwards Rate Agreements to enable market participants to hedge interest rate risk. Since then RBI has introduced host of instruments in the OTC derivatives market to enable market participants to manage market risk and credit risk. Currently, OTC derivative instruments permitted in India are as under:
   - Rupee interest rate derivatives – Interest Rate Swap (IRS) and Forward Rate Agreement (FRA)
   - Foreign Currency derivatives – Foreign Currency Spot - Forward (FX Swap), Cross Currency Swap and Currency Options
   - Credit Derivatives: Credit Default Swaps (CDS) on single name corporate bonds

OTC Derivatives Markets in India[1] - Brief Overview

2. The Reserve Bank of India, the primary regulator for the OTC derivatives market in India has allowed various OTC derivatives to be used by the market participants to hedge underlying risks in their portfolio. To ensure orderly development of the market, RBI has introduced these derivatives in a phased manner keeping in view the hedging needs of the real sector. The Indian OTC derivatives market is dominated by Forex derivatives, followed by interest rates. In the OTC Forex derivatives, FX Swaps have been the most widely used instrument, followed by currency options and cross currency swaps. The only OTC interest rate derivatives permitted are the Forward Rate Agreements (FRA) and Interest Rate Swaps (IRS). Most of the activity in the IRS market is in the Rupee overnight indexed swap (OIS) instrument. Scheduled commercial banks are the dominant players in the OTC derivatives market in India.

[1] Time series data on growth of OTC derivatives in India is given in Annex to the Report.

Interest Rate Swaps (IRS):

3. IRS was introduced in 1999 to enable market participants to hedge their interest rate risk. Further to promote liquidity in the market, market making was also permitted for the eligible entities subject to internal prudential limits. Currently, scheduled commercial banks (excluding Regional Rural Banks), PDs and all-India financial institutions (FIs) are allowed to undertake IRS contract for their own balance sheet management or for market making. Corporates are allowed to participate in IRS only for hedging purpose. Mutual Funds and Insurance companies have been permitted to participate in IRS for hedging purpose only.

4. The IRS market has evolved over the past decade and is fairly liquid. Though RBI has not prescribed use of any particular benchmark, market is primarily trading in three benchmarks used in Rupee IRS, viz. MIBOR, MIFOR, INBMK. Of the three benchmarks, Post crisis in 2007-08, total trading volume across all three benchmarks had reduced from Rs. 53,901 bn in 2007-08 to Rs.15,111 bn in 2009-10. However, IRS market had since recovered and achieved a volume of Rs. 23769 bn in 2013-14. Volume has again reduced in 2014-15 to Rs. 21,493 bn due to more certainty of the interest rate cycle in the economy.

5. The total outstanding in terms of notional amounts had also reduced drastically post financial crisis from Rs. 42,809 bn in 2007-08 to Rs. 18,807 bn in 2008-9. Subsequently outstanding notional amount has increased to Rs. 29,427 bn in 2010-11. In 2011, RBI allowed CCIL to introduce portfolio compression in IRS. This resulted in drastic reduction of outstanding volume in subsequent years to Rs. 18,416 bn (2014-15).

Foreign Currency Swaps (Spot-Forward or FX Swaps)*:*

6. Forex Swaps are the most actively traded OTC derivatives. After reaching a peak monthly volume of USD 111 billion in May 2014, the market has slowed down considerably and the monthly volume has fallen to USD 66 billion in August 2015. More than 90% of trades are executed in USD-INR pair.

Similarly, monthly trading volume in FCY-FCY forwards had increased from USD 7 billion in April 2013 to USD 16.5 billion in September 2014 and then reducing to USD 7.6 billion in December 2014.

7. The outstanding volume in FCY-INR forwards has increased by 30% during the FY 2014-15 from USD 333 billion in April 2014 to USD 434 billion in March 2015 reflecting increase in hedging activity in the forex market. Outstanding volume in FCY-FCY forwards have also increased from USD 35.7 billion in April 2014 to USD 42 billion in March 2015. CCIL has introduced CCP based guaranteed clearing for USD/INR forex forward which has helped banks in reducing the capital charge requirement for outstanding positions.

Swaps:

8. FCY-IRS is the second most actively traded instrument among OTC interest rate derivatives in India (after Rupee IRS which is the most active OTC interest rate derivative). Monthly trading volume has increased from USD 4 billion in January 2014 to USD 8.7 billion in August 2015. The number of trades executed during the month has also increased from 185 in January 2014 to 539 in August 2015. However, outstanding in FCY-IRS has reduced from USD 144 billion in April 2014 to USD 136 billion in August 2015.

Options:

9. Trading in forex options are very limited as compared to other forex derivatives. The monthly trading volume has varied across months during the FY 2014-15 reaching a peak of USD 6 billion in December 2014 and a low of USD 2.5 billion in November 2014 for FCY-INR options.

Market Infrastructure for OTC derivatives:

10. Reform of the OTC derivative markets has been an area of focus internationally in the aftermath of the global financial crisis. In India, however, steps were taken much before for improving transparency of the OTC markets and ensure that the activities in the OTC derivatives are subject to close regulatory oversight. Reporting platforms were developed and banks and PDs

which were the most active participants in the OTC derivatives were required to mandatorily report trades on the identified reporting platform managed by Clearing Corporation of India Limited (CCIL). Subsequently, central guaranteed clearing system has been put in place for USD/INR forex forward and Rupee IRS & FRA referenced to floating benchmarks MIBOR and MIOS.

11. India is fully compliant with regard to trade repository for OTC derivatives. Electronic trading platform and guaranteed central clearing facility are now available for FX Swap and IRS, which together constitute more than 80 per cent of daily trading volume and outstanding in the OTC derivatives in India.

Regulatory framework for OTC derivatives:

12. OTC Derivatives in India are under explicit regulation of RBI. Realising the fact that the OTC derivative products are prone to transparency and settlement risk, the following broad regulatory framework is in place:
    a. The overall framework within which derivative transactions are to be undertaken has to be guided by the Board approved policy. The risk management framework should lay down the procedures to deal with any violation of risk limits.
    b. There is a requirement that for an OTC derivative transaction to be legally valid, one of the parties to the transaction has to be a RBI regulated entity.
    c. There is a clear distinction between the roles of market makers and users for all OTC derivatives.
    d. The users, including financial entities, are permitted to transact in derivatives essentially to hedge an exposure to risk or a homogeneous group of assets and liabilities or transform an existing risk exposure.
    e. Derivative structured products (i.e. combination of cash and generic derivative instruments) are permitted as long as they are a combination of two or more of the generic instruments permitted by RBI and do not result into a derivative on another derivative as underlying(such as compound options for example).

f. All OTC forex and interest rate derivatives attract a much higher credit conversion factor (CCF) than prescribed under the Basel framework and all exposures are reckoned on a gross basis for capital adequacy purpose.

g. All permitted derivative transactions, including roll over, restructuring and novation are required to be contracted only at prevailing market rates.

h. The market maker has the responsibility for assessing customer suitability and appropriateness and they are required to fulfil the prescribed set of requirements while selling any product to a user.

i. All derivative products are required to be marked to market if a liquid market in the product exists or otherwise marked to model, provided all the model inputs are observable market variables and full particulars of the model, including the quantitative algorithm are documented.

III. Need for Interest Rate Options

13. Various interest rate derivatives (IRDs), both OTC and exchange traded, have been permitted in the past viz. interest rate swaps, forward rate agreements and interest rate futures, to enable banks and other entities to manage interest rate risks. IRS market has evolved over a period of time and is fairly liquid. Trading in IRF market has gradually increased in the last one year with wide participation by different categories of participants. These IRDs can be used by the banks and other market participants to manage market risk effectively in their books.

14. However, the financial entities, including banks, do not have any instruments to manage the embedded options on their balance sheets. For example, banks are faced with the risks of prepayment of floating rate housing loans and premature withdrawal of fixed deposits. If not adequately managed, such asymmetric payoffs can pose significant risk to the entities. Thus market participants in India, need a hedging instrument to manage interest rate option risk. With ensuing adoption of IFRS accounting by banks, assets and liabilities

would be restated at market determined rates and availability of interest rate option will help banks to manage their risk more effectively.

15. The Technical Advisory Committee (TAC) of the RBI on Financial markets, in its meeting held on April 21, 2015 had constituted a Working Group under Prof P.G. Apte to comprehensively look into all relevant issues and give recommendations on the framework for introduction of Interest Rate Options in India. The constitution of the Group is as follows:

SN	Name and Designation	
1	Prof. P.G Apte	Chairperson
2	Mr Sudarshan Sen, PCGM, Reserve Bank of India	Member
3	Mr N. Venkatesh, ED, IDBI Bank & Chairman, FIMMDA	Member
4	Mr B. Prasanna, MD,ISEC PD, Chairman, PDAI	Member
5	Mr C. Venkat Nageswar, Chief General Manager (Global Markets) State Bank of India	Member
6	Mr Ashok Gautam, Sr. VP & Head Global Markets, Treasury, Axis Bank	Member
7	Mr Ananth Narayan, Co-Head, Wholesale Banking, South Asia, Standard Chartered Bank	Member
8	Mr Anupam Mitra, AVP, Clearing Corporation of India Limited	Member
9	Ms. Huzan Mistry, National Stock Exchange	Member
10	Mr Nehal Vora, Chief Regulatory Officer Bombay Stock Exchange	Member
11	Mr R. Subramanian, CGM,FMRD	Member Secretary

Terms of reference for the Working Group:

16. The terms of reference for the Working Group were as under:

(i) To make specific recommendations on the product design, including the appropriate tenor and benchmarks;

(ii) To suggest a feasible market microstructure (including trading modes/ platforms) keeping in view the international experience and domestic regulatory and market imperatives;

(iii) To study the post-crisis regulatory reform measures being adopted internationally and recommend a prudential framework from a systemic risk perspective;

(iv) To consider and recommend appropriate guidelines for valuation, capital requirements, accounting etc.; and

(v) To consider any other issues germane to the subject matter.

17. The Group, over several rounds of meetings, discussed the various issues and modalities related to product design and other features. The broad approach of the Group was not to be too restrictive while ensuring robust risk management practices and adherence to the internationally accepted principles for strengthening OTC derivative markets.

18. The Group would like to thank H.R. Khan, Deputy Governor, RBI and Chairperson of the Technical Advisory Committee (TAC) on Financial Markets and all the TAC members for their guidance and valuable discussions on the draft recommendations. The Group was greatly benefited by the guidance of Shi Chandan Sinha, Executive Director, RBI in the final meeting when the recommendations were finalized. The Group would like thank Shri Puneet Pancholy and Shri Siddharth Mishra, RBI; Shri Siddharth Rath, Axis Bank; Shri Deepak Batra, Standard Chartered Bank, Shri Kuldeep Singh Jagtap, ICICI Securities Primary Dealership Ltd., Mr. Balasubramaniam V, Bombay Stock Exchange Ltd. for their valuable contributions during the meetings. The Group would like to place on record its appreciation of the secretarial support provided by Shri Vaibhav Chaturvedi and Shri Vivek Singh from RBI. The Group would like to make a special mention of Muskan Chawla, Summer

Intern at RBI who had done the background work on collecting international experience.

IV. Issues and Recommendations

(i) Types of Interest Rate Options

19. In the IRS market, RBI has only allowed plain vanilla products to be offered to the market participants. Swaps having explicit/ implicit option features such as caps/ floors/ collars are not permitted. The Group deliberated upon the pros and cons of existing restriction of not allowing caps/floors/Swaptions etc. Though existing plain vanilla products protect against the loss due to unfavorable movement in the interest rates, it also sacrifices the gain in the case of a favorable movement which could have been achieved through Swaptions. Similarly, caps and floors would provide protection against large movement in interest rate on either side.

20. It was opined that though complex option structures provide more flexibility for risk transfer and hedging and trading in new dimensions, they also entail more risk to the participating entities. Since market making in the OTC derivatives market is limited to banks and PDs and participation of other entities is only for the purpose of hedging underlying risk, it is recommended that to begin with interest rate options with call/put, caps/floors/collars and Swaptions may be permitted. Based on experience, more complex structures like Bermudan and barrier options may also be allowed at a later stage.

Recommendation

- *To begin with, simple call and put Options, caps, floors, collars and swaptions may be permitted Complex structures to be introduced subsequently.*

(ii) Forms of option trading

21. Interest rate options can be traded on an exchange or in an over the counter market. OTC derivative contracts have the advantages of being customised as per the user requirement. Such bespoke contracts help in better

management of risk especially for end users. They also overcome the problem of basis risk and loss of hedge accounting benefits encountered with standardised products. However, exchange traded options are standardised, easy to trade and provide both pre and post trade transparency. Such exchange traded contracts are settled through guaranteed settlement mechanism of their clearing houses. Pricing and risk management of exchange traded contracts are also simpler. Thus, there is a merit in introducing both OTC and exchange traded interest rate options. Accordingly, it is recommended to introduce interest options in both OTC and stock exchanges. The issue of transparency may be addressed through mandatory reporting of all trades including client trades to an identified trade repository.

Recommendation

- *Interest rate options may be permitted both on the currency and derivatives segment of stock exchanges as well as in the OTC market.*

(iii) Eligible exercise

22. With a European-style option, the contract terms allow the option to be exercised only on the expiration date. This differs from an American option, which can be exercised at any point during the contract period. European options are typically valued using the Black-Scholes or Black model formula which has a simple equation. Whereas there are no general formulas for valuing American options, but a choice of models to approximate the price is available (Binomial options model, Monte Carlo and others), although there is no consensus on which is preferable. While the ability to execute an American option at any time during the contract provides more flexibility, these options cost a bit more than European options, all else being equal. Determining the value of that flexibility makes pricing or valuing American options more complex. Accordingly, European options are usually traded OTC, although some European index options trade on exchanges. This differs from American options, which typically trade on exchanges. In some cases, such as the CBOE Index Flex options, both American- and European-style options are available. Currently, in India, only European options are permitted in the permitted option products.

23. The Group deliberated in detail and recommended that to begin with only European options may be permitted in the OTC market. American options may be allowed in next phase. However, as is the practice in the International market, stock exchanges may be allowed to introduce both European and American style options.

Recommendation:

- *While in the OTC segment only European options may be permitted, both American and European structures may be permitted on Exchanges.*

(iv) Eligible Benchmarks

24. Interest rate options derive value from change in underlying interest rate. Thus, Government of India securities, T-Bills, State development loans, MIBOR-OIS and interest rate futures can act as eligible benchmarks for interest rate option. Instead of prescribing any particular benchmark, market participants should have freedom to use any domestic money or debt market rate as benchmark rate for entering into option contracts provided methodology of computing the rate is objective, transparent and mutually acceptable to counterparties. It was recommended that FIMMDA in consultation with the market participants would come out with a list of eligible underlyings which can be used by the market participants for entering into interest rate option contracts in both OTC and stock exchanges.

Recommendation:

- *FIMMDA/FBIL to come out with the list of eligible domestic money or debt market rates as benchmarks like G-Sec, T-Bills, MIBOR,OIS MIFOR,IRF etc.*

(v) Eligible participants

25. Participants in the derivative markets are broadly classified into two functional categories, namely, market-makers and users. A user participates in the derivatives market to manage an underlying risk. A market-maker provides bid and offer prices to users and other market-makers. A market-maker need not

have an underlying risk. At least one party to a derivative transaction is required to be a market maker.

26. In terms of section 45 V of the Reserve Bank of India Act, 1934, notwithstanding anything contained in the Securities Contracts (Regulation) Act, 1956 (42 of 1956) or any other law for the time being in force, transactions in such derivatives, as may be specified by the Bank from time to time, shall be valid, if at least one of the parties to the transaction is the Bank, a scheduled bank, or such other agency falling under the regulatory purview of the Bank under the Act, the Banking Regulation Act, 1949 (10 of 1949), the Foreign Exchange Management Act, 1999 (42 of 1999), or any other Act or instrument having the force of law, as may be specified by the Bank from time to time. Accordingly, one counterparty to OTC derivative contracts shall be RBI regulated entity or any other entity as may be specified by the Bank.

27. Currently, only banks and PDs are permitted to act as market makers in the OTC derivatives. In order to diversify the participation base and increase trading activities in the OTC derivative markets, it is desirable to have more number of entities as market makers. Accordingly, it is recommended that in addition to scheduled commercial banks and PDs, financially sound NBFCs and UCBs with prudent risk management may also be allowed to act as market makers in the interest rate options and other OTC derivative products permitted in India. Mutual funds and insurance companies may also be permitted as market makers in the OTC derivatives market subject to approval from concerned regulators and adherence to the operational guidelines in place for each of the OTC derivative products. Participation on exchange platform would be as per their membership structure (trading member/clearing member/client).

28. Under user category, all domestic entities having underlying interest rate risk may be permitted in interest rate options. While dealing with users, market makers should exercise due diligence to ensure that they are undertaking interest rate options only for hedging interest rate risk exposures. Market makers may be required to obtain an undertaking/ certificate from the

authorised signatory of users/corporates to the effect that the transactions undertaken by them are meant for hedging their interest rate risk. Market-makers should have a 'Suitability and Appropriateness Policy' for users in respect of the interest rate option products offered.

29. In order to facilitate hedging of interest rate risk by retail participants (individuals) and small enterprises, the need of explicit underlying requirement may not be mandated for small threshold exposures. To begin with, the threshold limit may be kept at Rs 5 cr. This would help retail participants and small enterprises to hedge their risk without much documentation burden. For larger corporates, while the underlying exposure requirement may be necessary, but similar to forex hedging, they should be allowed to take hedging position in interest rate option for their anticipated interest rate exposures.

Recommendations

- *Market makers: Banks & PDs. Funds, Insurance companies and other regulated entities having sound financials and prudent risk management may be allowed subject to the approval of concerned regulator.*

- *Users: All domestic entities having underlying interest rate risk.*
  - *No documentation relating to underlying exposure may be required for exposures upto Rs. 5 cr.*
  - *Large corporates may be allowed to take hedging positions for their anticipated interest rate exposures.*

(vi) Contract size

30. Since standardisation improves market transparency and liquidity and facilitate central clearing, it is desirable to standardise the OTC contracts executed among market makers. This will also be in line with the recommendation made by the G-20 Group to reform the OTC derivatives market. In the Interest Rate Swaps market, FIMMDA in consultation with the market participants has prescribed minimum principal amount is Rs. 5 cr and in multiples of Rs. 5 cr for all transactions taking place among market makers.

The standardised contract has also facilitated the migration of IRS contracts to the recently launched guaranteed central clearing. Recognising the importance of standardisation of contracts, it is recommended that the minimum principal amount for transactions among market makers may be kept at Rs. 5 cr and in multiples of Rs. 5 cr thereof. Keeping in view the customized requirements of the clients, it was recommended that contract size of transactions between users and market makers may not be standardised.

31. Stock exchanges in India have contract size of Rs. 2 lakhs for various derivatives products offered on their platform. Members agreed to continue with the same unit of trading for interest rate option to be traded on stock exchanges in initial stages. Depending upon development of the market, stock exchanges may consider introducing separate contract size of Rs. 5 cr and in multiples thereof.

Recommendations

- *Exchanges: Minimum lot size to be kept as Rs. 2 lakhs.*
- *OTC: Rs. 5 cr and in multiples of Rs. 5 cr thereof among market makers. Transactions between user and market maker may not be standardised*

(vii) Tenor/Contract months

32. There is no restriction on the minimum or maximum tenor of the FRAs/ IRS. However, tenors have been standardised as rolling 1,2,3,6,9,12 months and 2, 3, 5, 7, and 10 years. It was recommended to standardise the tenor of contracts among market makers as rolling 1,2,3,6,9,12 months and 2, 3, 5, 7, and 10 years. The tenors may be periodically reviewed by FIMMDA in consultation with the market participants. Stock exchanges may introduce three serial monthly contracts in first phase and may consider introducing quarterly contracts upto one year in next phase.

Recommendations

- *OTC: For transactions among market makers, rolling 1,2,3,6,9,12 months and 2,3,5,7 and 10 years. To be reviewed periodically by FIMMDA*
- *Exchanges:*
  - *First phase: Three serial monthly contracts;*
  - *Second phase: Quarterly contracts upto one year*

(viii) Reporting of OTC transactions

33. Currently, all OTC derivative trades are reported on Centralised Trade Repository of CCIL. In order to ensure complete oversight over the activities in the interest rate option, contracts executed in the OTC market may also be reported on existing centralised repository for OTC derivatives. Deals executed among market makers to be reported within 30 minutes of execution of trade. Client trades to be reported on same day by close of business hours by the market maker(single sided reporting or unilateral reporting). Trades not confirmed by end of business hours may be rejected by TR with an appropriate advice to the participants. TR shall also disseminate relevant details of confirmed trades.

Recommendations

a. *OTC transactions to be reported on existing centralised TR of CCIL.*
b. *Deals among market makers to be reported to TR within 30 minutes.*
c. *Client deals to be reported by close of business hours.*

(ix) Trading hours

34. Trading hours may be same as it is for existing derivative products i.e. Monday-Friday, 9 AM-5 PM. Specifically for Exchange traded Options, last Thursday of the month shall be the expiry day.

(x) Settlement/Exercise

35. Currently, CCIL is providing clearing and settlement for all the OTC derivatives instruments permitted in India. MIBOR-OIS and Forex forward contracts are guaranteed by CCIL. G-20 has also recommended to mandate guaranteed central clearing of OTC derivative contracts. However, in order to

provide guaranteed central clearing, there should be a critical level activity to arrive at appropriate price and margin requirements. Accordingly, to begin with, OTC contracts may be settled centrally at CCIL in a non-guaranteed manner on T+1 basis. After a critical level of trading activity is achieved, guaranteed clearing may be introduced.

36. In order to facilitate settlement, FIMMDA/FBIL may be advised to publish prices for reference data to be used for deriving settlement value.

Recommendations

- *OTC transactions may be settled centrally at CCIL in a non-guaranteed manner on T+1 basis.*
- *CCP clearing may be introduced after a critical level of trading activity is achieved.*
- *FIMMDA/FBIL may be advised to publish prices for reference data to be used for deriving settlement value.*

(xi) Documentation

To minimse the risk of dispute among market participants in the OTC derivatives, globally, market participants enter into ISDA Master Agreement and the same are being used by the market participants in India. For interest rate options being executed in the OTC derivatives the same ISDA Master may be used.

Recommendations

- *Existing ISDA Master Agreement used for IRS may be used for Interest Rate Options.*
- *Market makers to have suitability and appropriateness policy for users and obtain an undertaking/certificate from authorised signatory.*

(xii) Capital Charge Requirement

37. Market participants taking position in interest rate options would be facing both counterparty credit risk and market risk. As part of new capital adequacy framework for banks, RBI has already issued capital charge guidelines for interest rate derivatives including options. In recognition of the wide diversity of banks' activities in options and the difficulties of measuring price risk for

options, existing guidelines provide two approaches for calculation of capital charge for option positions. First is ‘Simplified Approach’ which is applicable for banks which solely use purchased options. Second is ‘Alternate Approach’ applicable for banks which also write options. These guidelines are based on norms issued by Basel. It is recommended that the existing guidelines prescribed for banks may be made applicable for other RBI regulated entities participating in Interest Rate Options. Other regulators may also consider prescribing similar prudential guidelines for their regulated entities participating in interest rate options.

Annex 1

International Experience – Exchange Traded Interest Rate Options

I. Chicago Mercantile Exchange

Treasury options: These options are American thus can be exercised on or before expiration.

- Treasury options overview :

Around 539,000 contracts are traded per day.

They are traded electronically around 54% in 2013, remaining in ADV pit and ADV electronic.

- Weekly Treasury options

Available in all durations (2 year notes-ultra treasury bonds)

These are high gamma options that complement the standard and flexible options on US Treasury Futures. They offer unique opportunities to trade high impact economic events like treasury auctions and unemployment numbers. They were traded over 10.5 Million contracts.

Options on US Treasury Bonds and Notes are key tools for those who wish to manage their interest rate risk, as well as those who wish to take advantage of price volatility.

In 2010, Long Term "Ultra" T-Bond options were added. These new contracts aid hedgers, speculators and relative value investors who wish to manage the interest rate risk of longer duration market portfolio.

The weekly Treasury options provide opportunities to trade high impact events. Block trading is available for U.S Treasury options. (cmegroup.com, 2015)

	T BOND OPTIONS	**ULTRA T BOND OPTIONS**
Contract Size	One Treasury Bond futures contract of a specified delivery month.	One Ultra Treasury Bond futures contract of a specified delivery month.
Tick Size	1/64 of a point ($15.625 rounded up to the nearest cent per contract).	
Strike Price Interval	Strike prices will be listed in increments of one point. The minimum strike price range will include the at-the-money strike price closest to the current futures price, plus the next thirty consecutive higher and the next thirty consecutive lower strike prices.	
Contract Listings	The first three consecutive contract months (two serial expirations and one quarterly expiration) plus the next two months in the March, June, September and December quarterly cycle. Weekly Options: Weeks 1-5, corresponding to the Fridays of each month where there is not a serial or quarterly expiration. Quarterlies will exercise into futures contracts of the same delivery period. Serial and Weekly Options will exercise into the first nearby quarterly futures contract	

Last Trading Day	Options trading on the last Friday, which precedes by at least two business days, the last business day of the month preceding the Option month. Weekly Options: A given Friday that is not also the last trading day of a quarterly or serial option.
Exercise	American-style. The buyer of a futures option may exercise the option on any business day prior to expiration by giving notice to CME Clearing by 6:00 p.m. CT. Options that expire in-the-money are automatically exercised into a position, unless specific instructions are given to CME Clearing.
Expiration	Unexercised options shall expire at 7:00 p.m. CT on the last day of trading.
Trading Hours	Open Outcry: 7:20 a.m. – 2:00 p.m. CT, Monday – Friday CME Globex: 5:00 p.m. – 4:00 p.m. CT, Sunday – Friday Trading in expiring T-Bond and Ultra T-Bond options ceases at the close of the regular CME Globex trading session for the corresponding futures contracts.

	2 YEAR TREASURY NOTE OPTIONS
Contract Size	One 2-Year Treasury Note futures contract of a specified delivery month.
Tick Size	One-half of 1/64 of a point ($15.625 rounded up to the nearest cent per contract).
Strike Prices	Strike prices will be listed in increments of one-eighth of one point. The minimum strike price range will include the at-the-money strike price closest to the current futures price plus the next thirty consecutive higher and the next thirty consecutive lower strike prices.
Contract Listings	The first three consecutive contract months (two serial expirations and one quarterly expiration) plus the next four months in the March, June, September and December quarterly cycle. Weekly Options: Weeks 1-5, corresponding to the Fridays of each month where there is not a serial or quarterly expiration. Quarterlies will exercise into futures contracts of the same delivery period. Serial and Weekly Options will exercise into the first nearby quarterly futures contract.
Last Trading Day	Options cease trading on the last Friday, which precedes by at least two business days, the last business day of the month preceding the option month. Weekly Options: A given Friday that is not also the last trading day of a quarterly or serial option.

Exercise	American-style. The buyer of a futures option may exercise the option on any business day prior to expiration by giving notice to CME Clearing by 6:00 p.m. CT. Options that expire in-the-money are automatically exercised into a position, unless specific instructions are given to CME Clearing.
Expiration	Unexercised options shall expire at 7:00 p.m. CT on the last day of trading.
Trading Hours	Open Outcry: 7:20 a.m. – 2:00 p.m. CT, Monday – Friday CME Globex: 5:00 p.m. – 4:00 p.m. CT, Sunday – Friday Trading in expiring options ceases at the close of the regular CME Globex trading session for the corresponding 2-Year Treasury Note

	5 YEAR	**10 YEAR**
Contract Size	One 5-Year Treasury Note futures contract of a specified delivery month.	One 10-Year Treasury Bond futures contract of a specified delivery month.
Tick Size	One-half of 1/64 of a point ($7.8125 rounded up to the nearest cent per contract).	1/64 of a point ($15.625 rounded up to the nearest cent per contract).
Strike Price Interval	Strike prices will be listed in increments of one-quarter of one point. The minimum strike price range will include the at-the money strike price closest to the current futures price plus the next thirty consecutive higher and the next thirty consecutive lower strike prices.	Strike prices will be listed in increments of one-half of one point. The minimum strike price range will include the at-the-money strike price closest to the current futures price plus the next fifty consecutive higher and the next fifty consecutive lower strike prices.
Contract Listings	The first three consecutive contract months (two serial expirations and one quarterly expiration) plus the next four months in the March, June, September and December quarterly cycle. Weekly Options: Weeks 1-5, corresponding to the Fridays of each month where there is not a serial or quarterly expiration. Quarterlies will exercise into futures contracts of the same delivery period. Serial and Weekly Options will exercise into the first nearby quarterly futures contract.	
Last Trading Day	Options cease trading on the last Friday, which precedes by at least two business days, the last business day of the month preceding the option month. Weekly Options: A given Friday that is not also the last trading day of a quarterly or serial option.	

Exercise	American-style. The buyer of a futures option may exercise the option on any business day prior to expiration by giving notice to CME Clearing by 6:00 p.m. CT. Options that expire in-the-money are automatically exercised into a position, unless specific instructions are given to CME Clearing. Expiration Unexercised options shall expire at 7:00 p.m. CT on the last day of trading.
Trading Hours	Open Outcry: 7:20 a.m. – 2:00 p.m. CT, Monday – Friday CME Globex: 5:00 p.m. – 4:00 p.m. CT, Sunday – Friday Trading in expiring options ceases at the close of the regular CME Globex trading session for the corresponding Treasury note future contracts.

II. The ICE GROUP

1. EURIBOR FUTURES-1/2/3/4/5 YEAR MID CURVE OPTIONS

UNDERLYING	**One three month Euribor futures contract**
EXPIRY	March, June September, December and four serial months, such that eight expiry months are available for trading, with the nearest six expiry months being consecutive calendar months
SIZE OF THE CONTRACT	Assignment of one three month Euribor futures contract at the exercise price. The futures delivery month associated with each option expiry month shall be: March, the following four years, in respect of January, February and March expiry months; June, the following four years, in respect of April, May and June expiry months; September, the following four years, in respect of July, August and September expiry months; and December, the following four years, in respect of October, November and December expiry months.
LAST TRADING DAY	For options listed before 16 Feb 2015, two business days prior to the third Wednesday of the expiry month. On the Last Trading Day, trading in the expiring month will cease at 10:00. For options listed after 16 Feb 2015,

	Friday before the third Wednesday of the expiry month. On the Last Trading Day, trading in the expiring month will cease at 16:15.
LAST DELIVERABLE DATE	Delivery on the first business day after the exercise day.
EXERCIS PRICE	For all contract months: A minimum of 13 Strike Prices in increments of 0.125 above and below the at-the-money Strike Price. The "at-the-money" strike price is the closest interval nearest to the previous business day's settlement price of the corresponding underlying future. Strike Price boundaries are adjusted according to futures price movements. User-defined Strike Prices are allowed in 0.125 increments.
FORMULA FOR DETERMINIGN STANDARD DEVIATION	18. MODEL FOR DETERMING STANDARD DEVIATION
BLOCK TRADES	Block Trading, Guaranteed Cross
EXERCISE PRICE INTERVALS	0.125, (i.e. 0.125%) e.g. 94.00, 94.125, 94.25 etc for all expiry months.
MINIMUM PRICE MOVEMENTS	0.005 (€12.50)
EXERCIS DEADLINE	For options listed before 16 Feb 2015, exercise by 17:00 on any business day prior to the expiry day and until 10:45 on the Last Trading Day. For options listed after 16 Feb 2015, exercise by 17:00 on any business day including the expiry day.
ALGORITHM	Central order book applies a gradual time based pro-rata (GTBPR) matching algorithm with a time-weighting of 1 (ie the algorithm is effectively a priority pro-rata matching algorithm) with priority given to the first order at the best price subject to a minimum order size (collar) and limited to a maximum order size (cap).

PREMIUM	The contract price is not paid at the time of purchase. Option positions, as with futures position, are settled-to-market daily giving rise to positive or negative variation margin flows. When the Buyer exercises/abandons an option, the Buyer is required to pay the original contract price to the Exchange's Clearing Houser (CH) and the CH will pay the original option price to the Seller on the following business day. Such payments will be netted against the variation margin balances of Buyer and Seller by the CH.

2. **OPTIONS ON THREE MONTHS EURIBOR FUTURES**

UNIT OF TRADING	**One Three Month Euribor Futures Contract**
CONTRACT STANDARD	Assignment of one three month Euribor futures contract at the exercise price. The futures delivery month associated with each option expiry month shall be: March the same year in respect of January, February and March expiry months; June the same year in respect of April, May and June expiry months; September the same year in respect of July, August and September expiry months; and December the same year in respect of October, November and December expiry months
EXPIRY MONTHS	March, June, September, December, and four serial months, such that 28 delivery months are available for trading, with the nearest six delivery months being consecutive calendar months
EXERCISE DEADLINE	For quarterlies and for serials listed before 16 Feb 2015, exercise by 17:00 on any business day prior to the expiry day and until 10:45 on the Last Trading Day. For serials after 16 Feb 2015, exercise by 17:00 on any business day including the expiry day.
MINIMUM PRICE MOVEMENTS	0.005 (€12.50)
LAST TRADING DAY	for quarterlies and for serials listed before 16 Feb 2015, two business days prior to the third Wednesday of the expiry month.

	On the Last Trading Day, trading in the expiring month will cease at 10:00. For serials listed after 16 Feb 2015, Friday before the third Wednesday of the expiry month. On the Last Trading Day, trading in the expiring month will cease at 16:15.
EXERCIS PRICE	For all contract months: A minimum of 13 Strike Prices in increments of 0.125 above and below the at-the-money Strike Price. The "at-the-money" strike price is the closest interval nearest to the previous business day's settlement price of the corresponding underlying future. Strike Price boundaries are adjusted according to futures price movements. User-defined Strike Prices are allowed in 0.125 increments.
EXERCISW PRICE INTERVALS	0.125, (i.e. 0.125%) e.g. 94.00, 94.125, 94.25 etc for all expiry months.
ALGORITHM	Central order book applies a gradual time based pro-rata (GTBPR) matching algorithm with a time-weighting of 1 (ie the algorithm is effectively a priority pro-rata matching algorithm) with priority given to the first order at the best price subject to a minimum order size (collar) and limited to a maximum order size (cap).
BLOCK TRADES	Block Trading, Guaranteed Cross
PREMIUM	The contract price is not paid at the time of purchase. Option positions, as with futures position, are settled-to-market daily giving rise to positive or negative variation margin flows. When the Buyer exercises/abandons an option, the Buyer is required to pay the original contract price to the Exchange's Clearing Houser (CH) and the CH will pay the original option price to the Seller on the following business day. Such payments will be netted against the variation margin balances of Buyer and Seller by the CH.

OPTIONS ON LONG GILT FUTURES

UNIT OF TRADING	One Long Gilt Futures contract
CONTRACT STANDARD	Assignment of one Long Gilt futures contract for the expiry month at the exercise price. The futures delivery month associated with each option expiry month shall be: March in respect of January, February and March expiry months; June in respect of April, May and June expiry months; September in respect of July, August and September expiry months; and December in respect of October, November and December expiry months.
EXPIRY MONTHS	March, June, September, December, and four serial months, such that 28 delivery months are available for trading, with the nearest six delivery months being consecutive calendar months.
EXERCISE DEADLINE	Exercise by 17:00 on any business day, brought forward to 10:45 on the Last Trading Day.
MINIMUM PRICE MOVEMENTS	0.01
DELIVERY DATE	The first business day after the exercise day.
QUOTATION	Multiples of 0.01.
LAST TRADING DAY	Six business days prior to the first day of the expiry month. On the Last Trading Day, trading in the expiring month will cease at 10:00
EXERCIS PRICE	For all contract months: A minimum of 7 Strike Prices in increments of 0.50 above and below the at-the-money Strike Price. The "at-the-money" strike price is the closest interval nearest to the previous business day's settlement price of the corresponding underlying future. Strike Price boundaries are adjusted according to futures price movements. User-defined Strike Prices are allowed in 0.50 increments.
EXERCISW PRICE INTERVALS	£0.50 e.g. £102.00, £102.50 etc.

ALGORITHM	Central order book applies a gradual time based pro-rata (GTBPR) matching algorithm with a time-weighting of 1 (ie the algorithm is effectively a priority pro-rata matching algorithm) with priority given to the first order at the best price subject to a minimum order size (collar) and limited to a maximum order size (cap).
BLOCK TRADES	Block Trading, Guaranteed Cross.
PREMIUM	The contract price is not paid at the time of purchase. Option positions, as with futures position, are settled-to-market daily giving rise to positive or negative variation margin flows. When the Buyer exercises/abandons an option, the Buyer is required to pay the original contract price to the Exchange's Clearing Houser (CH) and the CH will pay the original option price to the Seller on the following business day. Such payments will be netted against the variation margin balances of Buyer and Seller by the CH.

III. JAPAN – JAPAN EXCHANGE GROUP

OPTIONS ON JGB FUTURES

Contracts	10-year JGB Futures
Opening Date	May 11, 1990
Trading Hours	8:45-11:02, 12:30-15:02, 15:30-3:00 (Note) An order acceptance period ("pre-closing") is established for 2 minutes (5 minutes in the Night session).
Contract Months	Two closest of March, June, September and December (quarterly months) plus one or two closest serial months (non-quarterly months).
Underlying JGB Futures Contract Month	Contract month for underlying shall be: March for January, February and March option contract months; June for April, May and June option contract months; September for July, August and September option contract months; and December for October, November

	and December option contract months.
Strike Price	21strikes with ¥0.50 intervals. Additional strikes will be set in conjunction with the underlying fluctuation.
First Trading Day	Quarterly Months: The first business day of the sixth prior month of the option contract month Non-quarterly Months: The first business day of the second prior month of the respective option contract month.
Last Trading Day	The last business day of the month prior to the option contract month.
Exercise Period	American type option (the buyer of option may exercise the option at any time from the first trading day to the last trading day.) All in-the-money options at the end of expiration date will be automatically exercised, unless otherwise instructed.
Contract Unit	1 option contract represents the right to buy or sell 10-year JGB futures of 100 million yen in face value.
Tick Size	¥0.01 per ¥100 in face value (¥10,000 per contract)
Daily Price Limits	Price Limits/ Circuit Breaker Rule
Circuit Breaker Rule(SCB)	Price Limits/ Circuit Breaker Rule
Strategy Trades	The calendar spread trading is available.
J-NET Trading	Available (Tick size: 1 yen, Minimum trading unit: 1 unit) J-NET Trading
Margin	Calculated by using SPAN® (Margin offsetting with other JGB futures and options contracts is allowed.)
Settlement Regarding Exercise	Futures transactions will be done by closing (15:15) of exercise day.
Give-Up	Available Give-Up System
Position-Transfer	Available Position Transfer System（JSCC）
Reporting of Large Positions	Applicable Reporting of large positions

IV. CANADA

Options on Ten-Year Government of Canada Bond Futures

Underlying	Ten year Government of Canada Bond futures
Trading unit	1 contract
Expiry cycle	Quarterlies – March, June, September and December Serials : Based on the next quarterly futures contract that is nearest to he options contract
Premium quotation	Quoted in points where each 0.005 point (0.5 basis point) represents C$5
Minimum fluctuation	0.005=c$5 per contract
Strike price	Set at a minimum of 0.5 points intervals per Ten year government bond futures
Contract type	American
Last trading day	Trading ceases on the third Friday of the month preceding the options contract month, provided however, that such Friday is a business day and that it precedes, by at least two business days, the first notice day of the underlying futures contract. If it is not a business day, trading will cease on the first preceding business day.
Expiration date	Expiration occurs on the last trading day.
Position re[porting threshold	250 options or equivalent futures contracts. For the purpose of calculating the reporting limit, positions in the options contracts are aggregated with positions in the underlying futures contracts. For aggregation purposes, the futures equivalent of one in-the-money option contract is one futures contract and the futures equivalent of one out-of-money option contract is half a futures contract.
Trading hours	Regular session: 6:00** a.m. to 4:00 p.m.

V. AUSTRALIA

Options on ASX 10 Year Treasury Bond Futures

Contract Unit	One A$100,000 face value, 6% coupon, 10 Year Treasury Bond Futures contract for a specified contract month on ASX 24.
Option Type	American
Contract Months	Put and call options available on futures contracts up to two quarter months ahead.
Minimum Price Movement	Quoted in yield per cent per annum in multiples of 0.005 per cent.

Exercise Prices	Set at intervals of 0.10 per cent per annum yield. New option exercise prices created automatically as the underlying futures contract price moves.
Contract Expiry	2 At 12.30pm on the business day prior to the last day of trading in the underlying futures contract.
Trading Hours	5.12pm – 7.00am and 8.32am – 4.30pm (For period from second Sunday in March to first Sunday in November) 5.12pm – 7.30am and 8.32am – 4.30pm (For period from first Sunday in November to second Sunday in March).
Settlement method	Options may be exercised on any business day up to and including the day of expiry. In-the-money options are automatically exercised at expiry unless abandoned. Upon exercise, the holder will receive a futures position at the option strike price. Buyers may exercise or abandon positions held by lodging a notice of manual exercise or abandonment with ASX Clear (Futures) prior to contract expiry. Settlement price is taken from the underlying futures market at 12.30pm obtained by taking the midpoint between the futures bid and ask quotations rounded up.

Intra-Day Options on ASX 10 Year Treasury Bond Futures

Contract Unit:	One A$100,000 face value, 6% coupon, 10 Year Treasury Bond Futures contract for a specified contract month on ASX 24.
Option Type	European Contract Months: Put and call options available on futures contracts for the nearest quarter month ahead.
Minimum Price Move	Quoted in yield per cent per annum in multiples of 0.005 per cent.
Exercise Prices	Set at intervals of 0.01 per cent per annum yield. Nine option exercise prices are available for trading with additional strike prices listed at the discretion of the Exchange.
Contract Expiry	At 4.10pm in the ASX Trade24® session in which the contract was listed for trading.
Last Day of Trading	The business day prior to the last day of trading in the underlying futures contract on the last day of trading of the underlying futures contract put and call options will be listed on the next quarter month.

Trading Hours:	8.32am – 4.10pm
Settlement Method	All options, which are in-the-money, are automatically exercised. Exercise of an option results in the holder receiving a futures position at the options strike price. The settlement price is the weighted average of trade prices executed in the underlying futures contract between 4.15pm and 4.25pm excluding any Exchange for Physical, Custom Market, and intra- and inter-commodity spread trades. Where the underlying futures contract minimum price increment is set to 0.0025 per cent, the weighted average of trade prices shall be calculated to 5 decimal places and rounded to the nearest multiple of 0.0025; if the 4th and 5th decimal places are 2 and 5 or 7 and 5 respectively, the weighted average shall be rounded to the next highest multiple of 0.0025. Where the underlying futures contract minimum price increment is set to 0.005 per cent the weighted average of trade prices shall be calculated to 4 decimal places and rounded to the nearest multiple of 0.005 per cent per annum; if the 3rd and 4th decimal places are 2 and 5 or 7 and 5 respectively, the weighted average shall be rounded to the next highest multiple of 0.005 per cent per annum. Trading hours: Australian Eastern Standard Time / Australian Eastern Daylight Time.

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Annex 2

International Experience – OTC Interest Rate Options

I. AUSTRALIA

INSTRUMENTS:

(i) SWAPTIONS

(ii) CAPS/FLOORS

(iii) BOND OPTIONS

The Australian financial markets report states that ”Overnight interest rate swaps and interest rate option trading is growing, driven by foreign participation**.** Also, foreign direct investment in Australia is driving the use (by foreign corporates) of FX options as a hedge against rapid movements in AUD exchange rates.” (Australian Financial Markets Report, 2014). Thus the Aggregate turnover in interest rate options increased 19% over 2013-14, against a backdrop of a stable official cash rate and a relatively stable interest rate swap curve compared to prior years. “The bulk of the trading was in swaptions, which saw turnover increase 20%, with caps/floors also gaining, notwithstanding the sense that corporates were less inclined to hedge given the relative stability of the markets. “ (Australian Financial Markets Report, 2014)

Over-the-counter (OTC) bond option volumes declined, albeit from a low base. The main story over the year was a steady fall in implied volatilities across the surface. 1year swaption volatility fell from around 90 basis points to 55 basis points. 5year swaption volatility fell from 90 basis points to 77 basis points. These declines were roughly in line with the changes in realised volatility over the period. Market liquidity and integrity was strong over the year with good transparency and orderly pricing being a key feature. “Greater than 90% of interbank transactions are now executed on a forward premium basis, with the resulting swap at expiry being nominated to clear on one of the three established exchanges (LCH, CME, ASX). “ (Australian Financial Markets Report, 2014)

II. HONG KONG

Hong Kong has one of the most active OTC derivatives markets in Asia. Foreign exchange derivatives are the largest market by turnover followed by interest rate. In 2012, Hong Kong was the sixth largest FX market in the world and the third largest in Asia. There are a number of trading platforms operating in Hong Kong, such as FXall. Hong Kong is a market with no regulatory or artificial restrictions to foreign participants in the trading of OTC derivatives. “Besides, the turnover of OTC interest

rate derivatives in Hong Kong grew more rapidly than that of the global results. In particular, interest rate derivatives contracts denominated in Japanese yen and Australia dollar exhibited a strong growth in the 2013 survey. **"**(The Asian OTC Derivatives Market, 2013). The growth in FX and OTC interest rate derivatives turnover demonstrated that Hong Kong continues to be well positioned as a major centre for FX trading and OTC interest rate derivatives.

III. SOUTH KOREA

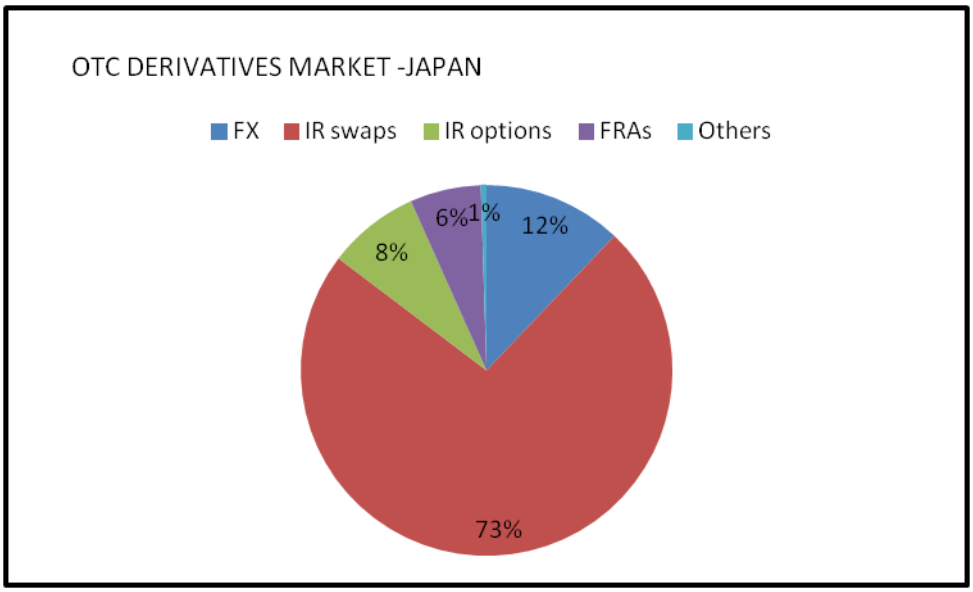
By investor type, banks made up 90.0% of the trading, followed by securities firms (6.9%), insurance companies (0.3%), trusts (2.7%), and others (0.1%). The higher creditworthiness of banks contributed to their dominance because of the importance of credibility in a market where transactions are directly entered between counterparties. Due to the continuing low interest rate environment in 2013, OTC derivatives trading between financial companies showed lacklustre performance amid the lingering impact of the global financial crisis**.** (The Asian OTC Derivatives Market, 2013)

With low interest rates being a global trend, the domestic interest rate derivatives market also lowered the benchmark rate by 25bp in May. This triggered an increase in volatility, which led to a rise in interest rate swap trading among banks and securities companies as the demand for speculation and hedging jumped.

IV. JAPAN

The notional amounts outstanding of derivatives transactions by major Japanese financial institutions at end-December 2014 were equivalent to 54.3 trillion U.S. dollars for over-the-counter (OTC) contracts3 and 4.9 trillion U.S. dollars for exchange-traded contracts, decreasing by 1.1 percent and increasing by 17.7 percent, respectively, from the previous survey as of end-June 2014. A breakdown of OTC contracts by risk category shows that the amounts outstanding of single currency interest rate (IR) contracts were 47.4 trillion U.S. dollars

A breakdown by instrument type shows that IR swaps continued to hold the largest share of OTC contracts, accounting for 73.2 percent. In terms of exchange-traded contracts, IR futures accounted for the largest share of 77.8 percent.



With regard to IR contracts of OTC derivatives, transactions with "other financial institutions" (up 7.5 percent) and with "non-financial customers" (up 2.5 percent) increased from end-June 2014, while those with "reporting dealers"4 decreased (down 22.7 percent). As for FX contracts of OTC derivatives, transactions with "reporting dealers" (up 5.8 percent), "other financial institutions" (up 8.4 percent), and with "non-financial customers" (up 2.4 percent) increased. (Results of the Regular Derivatives Market Statistics in Japan, 2014).

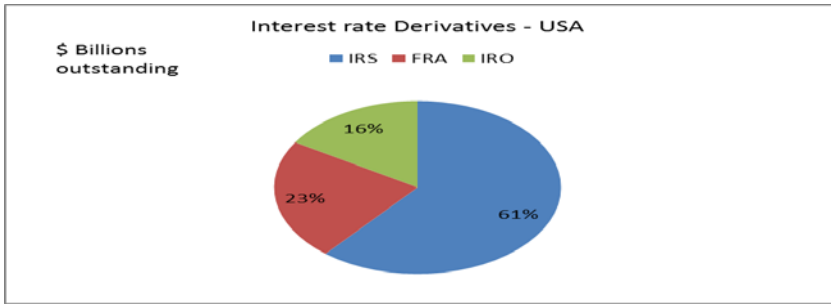
Transactions with "other financial institutions" accounted for 72.6 percent in IR contracts of OTC derivatives, increasing from 66.0 percent at end-June 2014. Regarding FX contracts of OTC derivatives, transactions with "reporting dealers" accounted for 71.8 percent. (Results of the Regular Derivatives Market Statistics in Japan, 2014).

With regard to IR contracts of OTC derivatives, transactions of over five years increased (up 1.3 percent) from end-June 2014, while those of one year or less (down 8.2 percent) and of over one year and up to five years (down 0.5 percent) decreased. As for FX contracts of OTC derivatives, transactions of one year or less (up 8.1 percent), over one year and up to five years (up 0.3 percent), and of over five years (up 5.0 percent) increased.

Among OTC contracts, IR derivatives with remaining maturities of over one year and up to five years continued to occupy the largest share, at 44.2 percent. With respect to FX derivatives, contracts with remaining maturities of one year or less were dominant, accounting for 68.2 percent.

V. UNITED STATES OF AMERICA

Turnover in these instruments, including forward rate agreements (FRAs), interest rate swaps, and interest rate options averaged $628 billion per day in the United States during April 2013. (The Foreign Exchnage and Interest Rate Market : Turnover in United States, April, 2013)

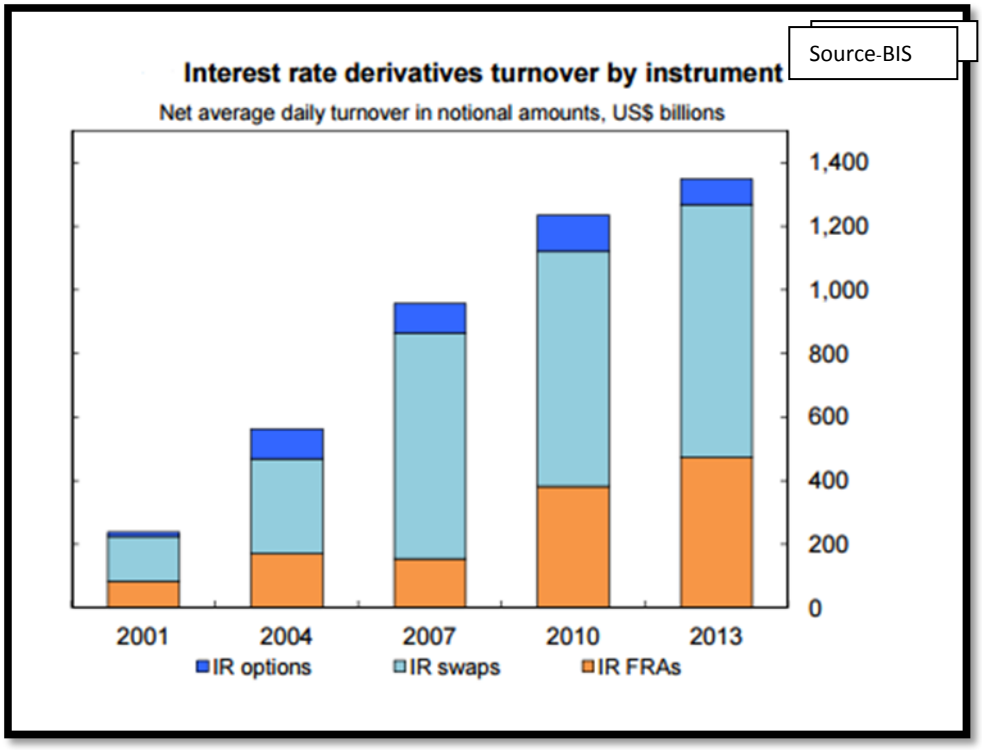


With respect to Counterparty Location: For all contracts, 68 percent of trading during April was conducted with a market participant outside the United States. Among instruments, this percentage varied between 59 percent for interest rate options, 69 percent for interest rate swaps, and 72 percent for FRAs. This distribution is close to the 2010 results when 69 percent of turnover was conducted cross-border.

Counterparty: The trades with other financial institutions were maximum while with the reporting dealers were slightly less than them. However trades with non-financial customers occupied a relatively smaller role in the interest rate derivatives sector.

VI. UNITED KINGDOM

In the United Kingdom, the average daily turnover for OTC interest rate derivatives was US$1,348 billion in April 2013, a 9% increase since April 2010.



As can be seen from above, the turnover in Interest rate swaps was the highest followed by the forward rate agreements and interest rate options. The forward rate agreements had the largest increase between the two surveys i.e. 24%.

Interest rate swaps turnover increased by 8% while there was a significant drop in the interest rate options turnover keeping with the global results of about 30%. It fell from US$ 114 billion to US$ 80 billion in 2013.

The United Kingdom remained the main centre for OTC interest rate derivatives trading, increasing its share of the global market to 49%, compared with 47% in 2010. (The foreign exchange and Over-the-counter Interest rate derivatives market in the United Kingdom, 2013). The next largest centre was the United States (23%), followed by France (7%).

The local trades outsized the cross-border trades and accounted for 54% of the total turnover. Euro was the dominant currency in the OTC interest rate derivatives market, accounting for 69% of total turnover.

The increase in activity was more than accounted for by customer business, up by 40% since April 2010. This was driven by increased activity with other financial institutions which now account for 54% of the interest rate derivatives market, slightly greater than in the foreign exchange market (53%). Factors contributing to the growth in customer business could include the growing prime brokerage business. In contrast, turnover with other reporting dealers declined by 17% since April 2010 and now account for only 41% of total turnover.

Annex 3
Trade details of OTC derivatives in India

Table 1: IRS Trade Summary

(Rs. in bn)

Period	MIBOR		MIFOR		INBMK		Total	
	Trades	Notional Amnt	Trades	Notional Amnt	Trades	Notional Amnt	Trades	Notional Amnt
2007-08	79495	47,281	18139	6,476	385	144	98019	53,901
	81.10%	87.72%	18.51%	12.01%	0.39%	0.27%		
2008-09	40912	26,448	4,799	2,237	132	66	45843	28,751
	89.24%	91.99%	10.47%	7.78%	0.29%	0.23%		
2009-10	20,352	14,521	1,050	539	77	51	21479	15,111
	94.75%	96.10%	4.89%	3.56%	0.36%	0.34%		
2010-11	33,057	23,597	1,291	749	150	88	34498	24,434
	95.82%	96.58%	3.74%	3.07%	0.43%	0.36%		
2011-12	33,642	24,510	2,101	1,100	14	9	35757	25,619
	94.09%	95.67%	5.88%	4.29%	0.04%	0.03%		
2012-13	22,713	20,216	1,252	754	11	6	23976	20,977
	94.73%	96.37%	5.22%	3.60%	0.05%	0.03%		
2013-14	25514	22967	1437	798	1	4	26952	23769
	94.67%	96.63%	5.33%	3.36%	0.00	0.01%		
2014-15	21153	20292	1932	1198	5	3	23090	21493
	91.61%	94.42%	8.37%	5.57%	0.02%	0.01%		

Table 2: Outstanding volume in IRS for various benchmarks

(Rs. in bn)

Period	MIBOR		MIFOR		INBMK		Total	
	Trades	Not. Amnt	Trades	Not. Amnt	Trades	Not. Amnt	Trades	Not. Amnt
2007-08	61,665	36,556	16,528	6,116	368	137	78,561	42,809
2008-09	23,732	13,940	11,803	4,680	461	187	35,996	18,807
2009-10	29,853	17,488	8,201	3,269	450	204	38,504	20,961
2010-11	43,197	26,457	6,357	2,701	542	269	50,096	29,427
2011-12	27,613	19,751	6,402	2,965	520	259	34,535	22,975
2012-13	20958	15,542	6017	2,949	489	248	27,464	18,740
2013-14	17782	14,473	5,566	2,763	445	224	23,793	17,460

2014-15	17279	14,956	6,222	3,267	387	193	23,888	18,416

Source: CCIL's Rakshitra, July 2015

Table 3: Trading Volume-FORWARDS

MONTH	FCY - INR FORWARDS		FCY - FCY FORWARDS	
	Trades	Volume (USD in mio)	Trades	Volume (USD in mio)
Apr-13	7787	80,728.40	3368	7,252.23
May-13	9368	77,614.20	8020	14,663.59
Jun-13	9651	81,656.37	7582	13,020.27
Jul-13	10386	94,228.65	6719	13,302.41
Aug-13	9717	77,455.12	6343	13,125.53
Sep-13	7992	68,652.59	6082	16,336.15
Oct-13	7051	65,858.35	5468	11,966.13
Nov-13	7124	60,143.06	5122	11,430.65
Dec-13	7336	73,729.0	5660	15,658.09

		2		
Jan-14	8691	82,106.58	5911	13,791.30
Feb-14	6107	58,966.51	5576	13,414.41
Mar-14	9243	94,701.40	6084	16,362.68
Apr-14	7512	67,983.79	6198	16,384.61
May-14	12748	111,328.24	5675	14,845.93
Jun-14	12577	110,286.64	4813	13,044.52
Jul-14	10138	91,889.88	4974	13,747.31
Aug-14	6998	63,889.11	4790	14,671.10
Sep-14	8348	82,077.69	4907	16,485.72
Oct-14	8188	74,883.10	4498	12,682.06
Nov-14	9036	78,532.78	3387	8,665.97
Dec-14	9175	82,592.10	2088	7,621.90

Jan-15	8948	85,049.36	6035	15,516.98
Feb-15	7633	72,391.52	5669	12,693.98
Mar-15	10094	99,873.78	7937	16,362.01
Apr-15	8829	98,363.87	7523	15,132.59
May-15	7466	76,822.76	6168	13,771.63
Jun-15	8660	85,848.32	6566	14,187.39
Jul-15	8653	78,374.07	6092	13,521.28
Aug-15	7996	66,256.46	7806	13,347.23

MONTH	Table 4: Outstanding-FORWARDS			
	FCY - INR FORWARDS		FCY - FCY FORWARDS	
	Trades	Volume (USD in mio)	Trades	Volume (USD in mio)
Apr-14	41783	333,304.94	17053	35,712.16
May-14	46802	374,745.35	17804	37,240.06
Jun-14	50727	400,031.42	18045	35,873.52
Jul-14	53064	422,799.16	18329	37,200.36
Aug-14	52224	419,401.35	18074	41,221.77
Sep-14	52999	429,043.58	18978	45,292.06
Oct-14	54017	436,463.57	19505	41,612.91
Nov-14	55815	448,753.50	18743	40,553.52
Dec-14	55726	446,243.38	21071	40,585.72
Jan-15	56087	450,169.59	19546	39,189.55

Feb-15	55786	449,058.91	20076	41,303.97
Mar-15	54628	434,076.35	21841	42,003.78
Apr-15	52874	425,317.59	25815	43,938.26
May-15	50710	407,851.79	23081	50,680.36
Jun-15	49955	401,964.26	23403	42,428.52
Jul-15	50921	408,943.01	23527	43,753.88
Aug-15	50934	401,602.87	24873	44,735.54

MONTH	Table 5: Trading Volume-INTEREST RATE SWAPS	
	FCY - IRS	
	Trades	Volume (USD in mio)
Jan-14	185	4,053.62
Feb-14	131	3,375.66
Mar-14	168	3,933.38
Apr-14	163	5,170.99
May-14	228	5,993.87
Jun-14	264	4,142.71
Jul-14	179	2,896.52
Aug-14	185	4,038.19
Sep-14	299	6,347.38
Oct-14	371	8,986.37
Nov-14	205	5,775.00
Dec-14	325	7,094.08
Jan-15	390	7,390.92
Feb-15	268	6,513.39
Mar-15	343	7,509.83
Apr-15	235	4,725.38
May-15	261	5,317.48
Jun-15	347	6,777.66
Jul-15	503	8,153.35
Aug-15	539	8,773.46

MONTH	Table 6: Outstanding-INTEREST RATE SWAPS	
	FCY - IRS	
	Trades	Volume (USD in mio)

Apr-14	7887	144,191.45
May-14	7877	144,756.01
Jun-14	7557	137,637.25
Jul-14	7726	138,086.36
Aug-14	7686	136,920.64
Sep-14	7727	140,891.73
Oct-14	7770	139,000.04
Nov-14	7722	136,294.19
Dec-14	7802	136,476.06
Jan-15	7988	138,239.26
Feb-15	8018	138,161.95
Mar-15	8094	137,365.15
Apr-15	8083	137,775.11
May-15	8039	136,229.60
Jun-15	8062	135,362.50
Jul-15	8281	136,303.43
Aug-15	8442	135,921.56

MONTH	Table 7: OPTIONS			
	FCY-INR OPTIONS		FCY-FCY OPTIONS	
	Trades	Volume (USD in mio)	Trades	Volume (USD in mio)
Apr-13	389	2,817.76	80	473.18
May-13	589	3,882.72	132	895.90
Jun-13	417	2,446.20	37	283.33
Jul-13	420	1,761.36	37	355.81
Aug-13	273	1,490.69	32	354.08
Sep-13	426	1,845.22	42	559.92
Oct-13	283	1,632.59	38	466.73
Nov-13	184	997.40	60	841.24
Dec-13	357	1,922.48	65	859.60
Jan-14	496	2,723.25	23	229.03
Feb-14	360	1,781.83	29	267.17
Mar-14	617	3,559.30	43	595.74
Apr-14	705	3,662.93	46	717.03
May-14	688	4,397.73	88	906.26
Jun-14	543	2,959.87	89	758.62
Jul-14	411	3,568.87	27	494.79
Aug-14	492	3,499.66	38	690.95
Sep-14	475	4,601.81	102	1,149.26
Oct-14	403	2,845.10	47	407.54
Nov-14	398	2,515.86	58	548.76
Dec-14	559	5,976.25	34	547.89
Jan-15	532	4,486.68	58	1,575.41
Feb-15	393	3,663.93	33	481.56
Mar-15	445	3,287.30	77	897.33
Apr-15	671	4,300.64	111	1,064.03
May-15	393	2,861.35	69	688.58

Jun-15	627	3,755.00	93	906.22
Jul-15	732	5,206.40	212	1,846.80
Aug-15	659	4,679.45	144	1,333.67

MONTH	Table 8: Outstanding-OPTIONS			
	FCY-INR OPTIONS		FCY-FCY OPTIONS	
	Trades	Volume (USD in mio)	Trades	Volume (USD in mio)
Apr-14	2666	11,316.76	226	1,012.68
May-14	2523	10,180.34	245	1,013.34
Jun-14	2503	9,877.85	248	1,204.20
Jul-14	2399	9,955.68	281	1,251.81
Aug-14	2379	9,758.80	282	1,270.23
Sep-14	2130	9,696.77	314	1,853.89
Oct-14	2138	8,867.74	314	1,548.45
Nov-14	2250	9,485.57	310	1,399.40
Dec-14	2218	11,631.65	280	1,491.03
Jan-15	2264	12,054.21	302	2,763.43
Feb-15	2218	12,430.88	302	2,825.48
Mar-15	2026	10,888.63	289	1,772.76
Apr-15	2309	12,071.67	301	1,625.01
May-15	2250	11,345.06	324	1,740.77
Jun-15	2337	11,089.29	300	1,530.18
Jul-15	2600	13,010.45	380	2,268.52
Aug-15	2759	14,450.41	340	1,693.51