TO ALL MEMBERS & OTHER INTERESTED PERSONS

PAPER ON CCIL'S PROPOSED SETTLEMENT OF FORWARD INR/US DOLLAR TRADES WITH GUARANTEE FROM THE TRADE DATES

1. CCIL has so far been settling INR/USD forward trades of its members by extending the guarantee to such trades from the entry of those trades into the Spot window. The terms of the Guarantee and the processes are governed by CCIL's Rules, Bye-laws and Regulations.

2. Member banks currently encounter problems in terms of huge outstanding forex exposures in their books and this comes in the way of their doing more trades in the market. Risk on such huge outstanding trades were found to be very high and so was the capital requirements for supporting such trades. These banks expressed the desire that CCIL may start extending its guarantee to these trades from the trade dates itself . An user group committee was formed in February '03 with the banks nominated by FEDAI. The under-noted banks were represented in the Committee:

Sl. No.	Name of the Bank	Name of the representatives
1.	Citibank N. A.	Ms. Mehernaaz Daroga / Mr. Harshawardhan Ramanathan,
2.	HDFC Bank Ltd.	Mr. Pravin Shirname / Mr. Anirudha Pete
3.	Punjab National Bank	Mr. D. V. S. S. V. Prasad / Ms. S. Shyamala
4.	ABN AMRO Bank N.V.	Mr. Nilesh Kothari / Mr. Thomas Raphael
5.	State Bank of India	Mr. N. Shridhar/ Mr. Rajesh Goirala / Ms Shibani Malik / *Mr. H. B. Vaidya*
6.	UCO Bank	Mr. S. V. Potnis,/Mr. R Gopalkrishnan

Mr. P.K. Pain, Chief Excecutive, FEDAI, Mr.Shivaji Sen and Mr. SGS Manian also participated in the meetings of the Committee at various stages.

3. The Committee looked into the various aspects relating to the proposed processes for settlement, margining etc. and have found those acceptable. CCIL also had discussions with FEDAI Technical Committee on the exchange rates to be used for day-end mark to market margining, for cash settlement for breach of exposure limit in INR/USD settlement segment and for allocation of trades of a defaulter member on account of persistent margin shortfall. It was decided that the rates could be arrived at through a pre-decided polling process. The detailed process is being worked out.

4. A detailed note indicating the proposed processes for CCIL's settlement of forward trades with guarantee from the trade dates, risk management for this settlement etc. is enclosed for the information of the members .

5. Incidentally, the User Group members also felt that on CCIL's acceptance of INR/USD trades for guaranteed settlement from the trade dates, the member banks should get the under-noted advantages :

i) As soon as CCIL accepts such trades for Guaranteed Settlement, counter-party members can view it as a reduction in bilateral exposure between them,

ii) Outstanding INR/USD forward contracts can be disclosed in the Balance Sheet on a net basis (as the exposure of a member is only to the extent of Net Value of the Contracts),

iii) Capital Adequacy requirement should also treat the exposure on outstanding forex forward trades as an exposure for the net amount only. and

iv) Sending separate trade confirmation by the counter party banks may not be necessary (as CCIL will get reporting from both counter-parties and would match such reportings electronically in terms of the key fields like counter-party, currencies, amounts, rates, settlement dates and would point out if any discrepancy is noticed, no separate deal confirmation is required)

6. This *new Forex Forward segment* as proposed would be *a separate segment* and *creation of this segment would not lead to any material change or any increase in risk to the existing INR/USD settlement segment* (as detailed in the enclosed note)

7. This note is being put up in our website for information of CCIL members and other interested persons. CCIL would consider it a privilege to get suggestions/ feedback from the members on the subject.

Encl.

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NOTE ON
FOREX FORWARD SEGMENT
CCIL'S PROPOSED SETTLEMENT OF FOREX FORWARD TRADES
WITH GUARANTEE FROM THE TRADE DATES

1. Objective: To offer settlement of INR/USD forward trades of the members with guarantee from the trade dates (after matching).

2. Process: A new Forex Forward segment would be created to offer guarantee on such trades from the trade date. Acceptance of such trades will happen through this segment and entire margining and risk management would be taken care of through a separate risk management process being proposed for this segment. Margin requirements for this segment are proposed to be covered through acceptance of Govt. securities and/or INR cash.

On these trades entering into spot window, the settlement would be through the existing INR/USD settlement segment.

3. Eligible Trades: Forward trades with residual maturity upto 13 months. Trades with maturity of more than 13 months would be taken up for guaranteed settlement when the residual maturity comes down to 13 months (there will be marking to market of such trades at this stage).

4. Trade reporting: Trade reporting by the members would continue to be through the present mechanism for reporting forward trades in INR/USD segment.

5. Trade Matching: This process also would remain the same as available presently in INR/USD segment.

6. Acceptance for guaranteed settlement: Matched trades would be taken to the proposed forex forward segment. Margin adequacy would be checked for both the counterparties and in case there are adequate margins in both accounts, the trade would be taken for guaranteed settlement.

To start with, the process for checking adequacy of margin would be run at the end of the day and CCIL would indicate acceptance of such trades for guaranteed settlement only after this check. The frequency of such exposure check would be increased progressively leading to on-line checking of adequacy of margins and acceptance of trades by CCIL.

7. Exposure Check Process: There will be two types of margins

a) *Initial margins* to take care of the risk of potential adverse price movement. Initial Margin is proposed to be computed based on a three day Value at Risk for the entire outstanding forward trade portfolio of the members. For arriving at Value at Risk, a hybrid Value at Risk methodology (modified version of Hull White Method) is proposed to be used. In addition, to take care of the risk from a sudden twist in the forward rate curve or from squaring up of a trade (which is providing offset to another trade in the opposite direction) from the outstanding trade portfolio of a member, an additional amount would be collected as *spread margin*. The spread margin would also be a part of initial margin.

b) *Mark to market margin* to take care of notional loss that has already been incurred. Value date–wise net outstanding positions (USD sale / USD buy) of a member would be valued at the end of the day using the prevailing forward rates. At the time of valuation, bid/offer spread would be accounted for appropriately so that the MTM value of the outstanding trade positions correctly reflect realizable values. Discounted values of the settlement date-wise net profit/loss, (subject to disallowance of part of notional profit for the trades with 7 day or less as residual maturity) would be aggregated to arrive at MTM margins.

c) If the above computation shows net MTM loss at an aggregate level, such amount would be collected as MTM margin. Any aggregate profit is ignored and no MTM margin is collected in such cases.

d) For the trades entering into the spot window, the mark to market margin would be retained by CCIL till the end of the settlement date (i.e. on completion of settlement) so as to ensure that in case of a failure on the part of any member to meet its USD or INR obligations in respect of such trades, these funds could be used for taking care of the risk arising out of price change between the date of forward trade and at the end of S-3 day.

e) There would be provision for imposition of volatility margin in case of sudden increase in volatility.

[***a separate note on the computation of Value at Risk, initial margin, spread margin and mark to market margin is enclosed***].

8. Settlement Process: Final settlement of the trades would continue to happen through the existing INR/USD segment. All outstanding forward trades on the account of a member would be transferred to INR/USD segment at the BOD of S-2 day and would be subjected to exposure check applicable for that segment.

9. Type of Collaterals: It is proposed that the members would deposit Government securities to meet the margin requirements in respect of this segment. A small portion of the margin (about 5% to 10%) would be collected in the form of INR cash so as to be able to meet the liquidity requirements.

10. Exception Handling:

a) Inadequacy of NDC on S-1 day to support the net position of forward trades:

Net US Dollar sale position of a member, out of the trades flowing in INR/USD settlement segment from the Forex Forward Segment, which fails to pass the exposure check in the INR/USD settlement segment till S-1 day morning batch, would be cash settled immediately after S-1 day morning batch processing by CCIL. The allocatee members would be selected based on their net US Dollar buy position on S-2 day BOD* from forward trades for the settlement day under consideration. First ten such members would be allocated the amount in proportion to their net USD buy position (in rounded lots of US Dollar 1 million - any fractional amount would accrue to a single member as part of the rounding off logic). The allocation advice would be sent to the allocatee members by CCIL by 12.00 noon of S-1 day (they would also have advance information of the possibility of such allocation on S-2 day BOD).

* Based on their net USD buy position on S-1 day, as far as possible.

The rate to be used for such cash settlement would be INR/USD value TOM rates prevailing at the time of allocation. The allocatee members would be free to buy US Dollars from the market to the extent of allocation and there would be provision for compensating such members for any loss suffered by them (difference between the purchase price and the allocation price) and an additional sum at the rate of Rs. 0.01 per USD as compensation.

b) Margin Shortfall

In case of a member's failure to meet its margin obligation, CCIL would identify the positions to be squared off to bring the margin liability of the member within the required level. Having decided on the settlement date(s) for which the positions are to be squared off and the amount of respective positions, CCIL would identify the bilateral counter parties having net positions in the opposite direction with such member for the said settlement date(s). Thereafter, the allocation of the squared off trades would happen, at the then prevailing forward rates, to the bilateral counter-parties, in proportion of their net positions vis a vis such member, for the respective settlement dates.

Encl

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FOREX FOWRARD SEGMENT
NOTE ON COMPUTATION OF VALUE AT RISK AND PROPOSED MARGINS

A. Value at Risk (VaR) computation: VaR would be computed for the outstanding trade portfolios of the members using Hybrid Method (Modified Hull-White) method. As the process stabilizes and it becomes possible to make an assessment regarding running Monte Carlo Simulation on an on-line basis and set boundary conditions for this purpose, CCIL proposes to shift to VaR based on Monte Carlo Simulation.

The observation period is proposed to be set at 500 days. For computation of EWMA volatility, data for 600 days would be used. Decay factor to be used would be 0.94. Detailed process would be as under:

i) Daily log normal returns are computed for each tenor point for the past 500 days. Tenor points used are 1 day, 7 days, 14 days, 1 month, 2 months, 3 months, 4 months, 5 months, 6 months, 7 months, 8 months, 9 months, 10 months, 11months, 12 months and 13 months.

ii) Using Non-recursive method, EWMA volatilities are computed for the forward rates at the tenor points, with 94% as decay factor.

iii) Daily log normal returns at each of these tenor points are multiplied by the ratio of *Reference EWMA volatility* and *EWMA volatility of the day* (i.e. of the log normal returns) (*Reference EWMA volatility* is taken as the *95th percentile of EWMA volatility over the observation period or the current volatility, whichever is higher* – proposed to be modulated in future based on back testing of Forex Forward Segment margining)

iv) Forward rate of the day [of computation of VaR] for each of the tenor point **(say K)** is multiplied by the Exponential of weighted log normal returns for the tenor point for each of 500 days to arrive at 500 simulated forward rate scenarios for the tenor point **[say F_1 to F_{500}]**

v) Theoretical net value of a position for each of these 500 days is computed by applying the following formula (by varying value of i from 1 to 500) –

[(F_i-K) * Exp (-r_i*t) * Net USD Sale/Buy Position], K where is Current forward rate for the respective maturity of the forward position, F_i is the Simulated forward rate for the said maturity, r_i is the applicable Simulated Zero Coupon Interest Rate for the same maturity and t is the period to maturity of the same forward position [Buy position can be taken at Negative value]. *Linear interpolation is used to derive the values of K, F, and r for each settlement date lying between the pre-specified tenor points.*

vi) Simulated value of the portfolio for all 500 days is then calculated by using the above-mentioned formula [by varying values of K, F, r and t for each of the settlement dates] and by taking the net USD Buy/Sale positions for the respective settlement dates.

vii) The differences between the current value and simulated values of the trade portfolio (net portfolio value) is sorted in descending order (500 such gains/losses).

viii) At 99% confidence level, extreme 1% observations from top & bottom are discarded. The higher of the maximum value of loss/gain after such exclusion is taken as the VaR.

ix) The value of the 1 day VaR so obtained is converted to that of the desired holding period by using the *Square Root of T Rule* where T is equal to the Holding Period in terms of number of days.

B. Initial margin computation: The initial margin on the outstanding trade portfolios of the members would be based on portfolio VaR. Portfolios would be split into three groups viz. trades due for settlement which are already in the spot window, trades which are beyond spot window but due for settlement within next seven working days and trades due for settlement beyond seven working days [the computation would actually happen based on settlement date-wise US Dollar net buy and net sale amounts].

For the first group i.e. trades within spot window, no initial margin is proposed to be retained [record of these trades are retained only as a reference].

For the trades which are outside spot window but are due for settlement within a period of seven working days, no offset would be provided while computing the initial margin (i.e. the initial margin liability for the members would be aggregate of the VaR numbers computed for net buy and net sale positions for each of these days).

The initial margin for the group comprising of trades due for settlement beyond seven working days would be equal to VaR for all settlement date-wise net US Dollar positions due for settlement beyond seven working days, as increased by a spread margin component as described below.

C. Spread margin computation: Spread margin is proposed to be taken at 20% of the higher of the difference between :

a) VaR computed considering all settlement date-wise net US Dollar positions due for settlement beyond seven working days and the VaR computed considering only net buy positions, and

b) VaR computed considering all settlement date-wise net US Dollar positions due for settlement beyond seven working days and the VaR computed considering only net sale positions.

Spread Margin would result in partial disallowance of the full offset between net USD buy and net USD sale positions provided through portfolio margining. 20% level indicated above for disallowance would be periodically reviewed through back-testing and modified, if required.

D. Volatility margin computation: It would be imposed in case of sudden unusual volatility in the market and would be computed as percentage of initial margin (excluding spread margin).

E. MTM valuation and MTM Margin computation : Separate rates would be used for valuing net buy and net sale positions for the same settlement date. The rates would be arrived at as under :

a) Forward Rates for the specified tenor points (calendar month ends and for other short tenors) would be taken as basis.

b) Forward Rates for other tenors would be arrived at through linear interpolation of the rates available for the tenor points immediately preceding and succeeding such tenor.

c) Rates arrived as above would be treated as mid-rates. Half of the bid-offer spreads for the respective tenor, would be added to such mid-rates to arrive at MTM rates for valuing sale positions. Similarly, half of the bid-offer spreads for the respective tenor, would be deducted from such mid-rates to arrive at MTM rates for valuing buy positions.

Settlement date-wise net outstanding US Dollar sale or buy positions of the members would be split into seven groups viz. Trades due for settlement on S-7, S-6, S-5, S-4 and S-3 days, trades due for settlement within spot window and trades due for settlement beyond 7 working days. For the last group (i.e. trades due for settlement beyond 7 working days) complete off-set is provided between MTM loss and MTM gain across all settlement dates. In case of other groups the treatment would be as under :

Days from Settlement Date	*Status of adjustment of MTM gains*
Within spot window	MTM margins would remain unchanged from the positions prevailing as at EOD of S-3 day
S-3 day EOD	No credit allowed for MTM gain; MTM loss is recovered in full
S-4 day EOD	Credit allowed for 20% of MTM gain; MTM loss is recovered in full
S-5 day EOD	Credit allowed for 40% of MTM gain; MTM loss is recovered in full
S-6 day EOD	Credit allowed for 60% of MTM gain; MTM loss is recovered in full
S-7 day EOD	Credit allowed for 80% of MTM gain; MTM loss is recovered in full

[above % figures would also be reviewed periodically and changed, if required]

For trades which have entered the Spot window, no recalculation of MTM margin would happen. MTM loss, if any, at the time of entering forex settlement segment would be carried forward till the end of the settlement date.

If the aggregate of MTM margin for all such groups shows MTM gain, MTM margin is taken at zero, else, aggregate of MTM loss would be collected as MTM margin from a member.

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