Risk Management Department

This has been Superseded by Notification No. RMD-FX-FF-20-71 dated 30-Dec-2020 on Risk Management Process and Margin Methodology

No. RMD/FX-FF/20/02 **Date: 22/Jan/2020**

FOR INFORMATION OF ALL MEMBERS

Forex Forward Segment

Risk Management Processes and Margining Methodology

In terms of the provisions of chapter V "Margins" of the regulations of the Forex Forward Segment, the Clearing Corporation prescribes requirements of margins for the segment.

In this regard, we invite your attention to our Notification No. RMD/FX-FF/19/01 dated 01/Jan/2019 which details the risk management process and margining methodology in this segment. Members are advised to take note of the enhancements / modifications in the risk management process. Accordingly, the afore-mentioned notification stands revised as below with the enhancements / modifications underlined therein.

I: Initial Margin

Portfolio for computing Value at Risk (VaR), and Spread Margin shall comprise of all settlement date wise net US Dollar positions (including positions in Spot Window to the extent not accepted in the USD/INR settlement segment on account of inadequate Exposure Limits).

1. VaR is computed by simulating 1000 price scenarios as under:

Historical returns series of forward exchange rates for the past 1000 days are worked out for standard tenor points. This includes

a) 750 consecutive volatility scaled (EWMA) returns from the most recent period. These returns are the rolling period return, where scaling is as under

- Exponentially Weighted Moving Average (EWMA) volatilities are calculated for each standard tenor point.
- For each tenor point, Historical return series of these 750 days are scaled by multiplying each return by the ratio of current EWMA volatility and the historical EWMA volatility.

AND

b) 250 consecutive un-scaled returns from the period with the high market volatility termed as “stress period”. These returns are identified from the past 10 years historical period and are reviewed on a monthly basis.

Computations detailed in para (a) to (b) above is also repeated for Clearing Corporation’s sovereign Zero Coupon Yield Curve for the standard tenors.

c) Hypothetical values of the portfolio of outstanding trades are then simulated using the modulated returns and un-scaled returns, as mentioned above.

d) The hypothetical values of the portfolio as above are then compared with the current MTM value of the portfolio to arrive at a notional profit and loss series.

e) Value at Risk is derived from the above series at 99% Confidence level using a holding period of 2 days[1].

2. Spread margin as a component of Initial Margin is equal to 20% of difference between portfolio VaR (i.e. the VaR computed considering all settlement date-wise net US Dollar positions) and the higher of (a) The VaR computed considering only settlement date-wise net USD buy positions and (b) The VaR computed considering only settlement date-wise net USD sell positions. In case the portfolio VaR exceeds both (a) and (b), no Spread margin is charged.

3. **Minimum Initial Margin** at the portfolio level is computed at the rate of 2% of the net currency position (i.e. considering all settlement date-wise net US Dollar positions)

Spread margin as a component of Minimum Initial Margin is equal to 20% of the difference between minimum Initial Margin at the portfolio level and the higher of:

a) The Minimum Initial Margin computed considering only net USD buy positions, and

b) The Minimum Initial Margin computed considering only net USD sale positions.

For both (a) and (b) above, the rate applied for the Initial Margin computation would be 2%.

The Sum of “Portfolio Minimum IM” and “Spread Margin” (as above) is the applicable Minimum Initial Margin.

[1] With implementation of the revised Default Handling process as detailed in our notification RMD/FX-FF/19/44 dated 9th Sep 2019, the holding period for Value at Risk computations will be revised to 5 days.

4. Initial Margin charged to the member is **higher** of the VaR based margin (including spread margin) and the applicable minimum initial margin as per para 5 above.

5. Step up in Initial Margin for weaker entities: In terms of para A(4) of Chapter VIII of the Regulations of the Forex Forwards Segment, CCIL may collect higher Initial Margin from members having lower credit ratings.

II: Volatility Margin

In terms of Chapter **V (B) (3)** of CCIL's regulations for the Forex Forward segment, Clearing Corporation is entitled to impose volatility margin in case of significant volatility in Rupee/US Dollar Forward exchange rate. The process for Imposition of Volatility Margin in Forex Forward Segment is already in place w.e.f. 01 December'09. The detailed methodology followed for tracking the applicability, imposition and withdrawal of volatility margin is given hereunder for the information of Members.

A) ***Applicability of Volatility Margin:***

i. One day's change in the forward rates for standard tenor's viz. 1 Month, 3 Month, 6 Month, 9 Month and 12 Month will be assessed on an online basis during market hours.

ii. Forward rates, for current day, for aforesaid tenors, will be arrived dynamically during the market hours by using two components namely

   a) Spot rate from traded quotes on Fx Clear Platform available on real-time basis and
   b) Forward premia's from Reuters page INR=1F sourced at 9 AM, 10 AM, 12 noon, 2 PM and 4 PM.

   Thus, for the period from 9.00 AM to 10 AM, the forward rates will be derived using latest available spot rate from Fx Clear and Premia sourced at 9.00 AM and likewise for the other time slots till end of market hours.

iii. One day's change in the forward rates (i.e. 1 day return) will be arrived at by calculating the logarithmic returns of current day rates as arrived above to the EOD MTM forward rate of the previous business day.

iv. One day's return as arrived above will then be compared with the trigger level of respective tenor set at the beginning of every month [i.e. 99th percentile highest return from past 1000 days unscaled returns (this include 250 consecutive returns representing most volatile days over the period of past 10 years)].

v. In case the current day's return is greater than respective trigger level for at least 2(two) out of the 5(five) tenors, volatility margin will be treated as applicable.

B) ***Imposition of Volatility Margin:***

If imposition of VM is triggered as per the process mentioned above, the highest of such ratio out of the ratios for five above mentioned tenors will then be identified and rounded up to the next higher multiple of 5%. The quantum of Volatility Margin (%) for the members will be set as under:

Volatility Margin % = 50% of (Highest percentage minus 100%).

Illustration: Let us say that the highest percentage out of 5 tenors is ***132.26 %*** and is rounded up to next higher multiple at 5% i.e. ***135.00%.*** Then, the volatility margin applicable will be at 50% of ***35.00%*** (135% - 100%) i.e. ***17.50 %*** of Initial margin.

C) Complete Withdrawal of volatility margin

i. 95th percentile highest returns (from the 1000 returns as stated in para A (iv) above) are identified for each of the tenors mentioned above as trigger levels at the beginning of the month.

ii. Volatility margin, already in force, is withdrawn if returns for all tenors on a day are below their respective trigger level till the end of the business day. Volatility margin in force is withdrawn at the end of the day.

D) ***Partial Withdrawal of volatility margin***

i. Required Volatility Margin levels will be re-assessed for the current date and immediately previous business date as per the process detailed in para 'II-A' above. Higher of the two values will be taken as reference level.

ii. If the Volatility Margin already imposed is higher than the reference level as per (i) above, the Volatility Margin will be reduced to the reference level subject to a minimum of 2.5% of Initial Margin

iii. Partial withdrawal is done at the end of the day.

Illustration for partial withdrawal:

Day 1 - VM imposed @ 15%
Day 2 - Notional VM applicable @ 10%
Day 3- Notional VM applicable @ 5%

At the end of Day 3, the higher of the values on day 2 & day 3 was 10%, Hence, Volatility Margin will be reduced to 10% of Initial Margin.

Illustration: 2

Day 1 - VM imposed @ 15%
Day 2 - Notional VM applicable @ 10%
Day 3- Notional VM applicable @ 15%

At the end of Day 3, the higher of the values on day 2 & day 3 was 15%; it is same as the Volatility Margin in place. Hence, there will be no reduction in Volatility Margin

Illustration: 3

Day 1 - VM imposed @ 15%
Day 2 - Notional VM applicable @ 10%
Day 3- Notional VM applicable @ 20%

At the end of Day 3, the higher of the values on day 2 & day 3 was 20%; it is higher than Volatility Margin in place. Hence, Volatility Margin will be increased to 20% of Initial margin.

E) Volatility margin is charged as percentage of Initial Margin collected from the member and is blocked from members securities segment SGF. If applicable, it is imposed immediately, after notifying the members. Imposition of Volatility Margin may result in margin shortfall in the accounts of the members if available SGF balance is inadequate to cover the margin requirements. Member shall be required to meet the shortfall within one hour from the time of imposition; else penal charges will be levied as applicable.

III: MTM valuation and MTM Margin computation

i. The Spot USDINR Exchange rate used for the end of the day MTM margining in Forex Forwards Segment will be the rate of the last Inter-bank trade (of value USD One Million or more) concluded till 5-00 PM on the Fx Clear Dealing Platform operated by Clearcorp Dealing Systems (India) Limited. In case the afore-mentioned spot rate is identified as an outlier or is not available on the aforesaid source latest by 5.10 PM, the rate available on Reuter's page "INR1F" at such time will be taken as applicable end of the day (EOD) MTM spot rate under intimation to the members of this segment.

ii. Forward rates are arrived at by adding Forward Premia's of respective tenors available on Reuters page "INR 1F" at above time to the spot rate derived as per para III (i) above.

iii. Forward Rates for other tenors are arrived at through linear interpolation / extrapolation of the rates available for the tenor points immediately preceding and succeeding such tenor.

iv. If rates from above sources are unavailable or there is a valid reason to believe that any such rate available, do not represent the rate prevailing in the market, CCIL may use any or all rate (/s) from any other source. Use of any such rate (/s) will however be informed by CCIL to its members in this segment with the reason for such deviation.

v. Rates arrived as above are treated as mid-rates. Half of the bid-offer spreads for the respective tenor is 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, is deducted from such mid-rates to arrive at MTM rates for valuing buy positions. At present, bid offer spread is treated as NIL.

vi. Complete off-set is provided between MTM loss and MTM gain across all settlement dates.

vii. If the aggregate of MTM value for a member for all such settlement date-wise positions shows MTM gain, then the member's margin account (securities SGF) is credited with the MTM gain amount reduced by a prescribed haircut and the same is allowed to be treated as Margin Made Available by the member. The hair-cut on MTM gains will be 5% and the same may be revised in the future after due notification. Such margin made available can be used against margin requirements in the Forex Forwards segment as well as in any other segment which draws margins from Securities Segment SGF.

viii. If the aggregate of MTM value for a member for all such settlement date-wise positions shows MTM loss same is to be collected as MTM margin from member by blocking his free balance in securities SGF to the extent required.

ix. If the total MTM Margin payable by a member on any given day is less than the MTM Margin for positions that will be in the spot window on the next day, then the MTM margin charged to such member will be equal to the MTM margin payable on the aforesaid positions.

x. Any increase in MTM margin termed as **'Incremental MTM margin'** or reduction in MTM gain is effected immediately on assessment of the same at the end of the day, in case of a resultant shortfall in margin, Members are required to fund their margin account by 9-00 AM on the next business day.

xi. Failure to replenish the margin shortfall by 9-00 AM on the next business day will attract penalty in terms of para C(2) of Chapter V of the Regulations of the Forex Forwards Segment.

IV: Intraday MTM Margin collection / Gain Reduction

i. All outstanding trades at the time of computation of intraday MTM margin are considered for assessing applicability of intraday MTM margin. Any intra-day reduction in MTM gain on a member portfolio is also treated as intraday MTM loss.

ii. If the loss in portfolio value of a member is higher than 30% of sum of Initial Margin, volatility margin and concentration margin collected from the member, such loss is collected as intraday MTM Margin or intraday MTM gain reduction or both.

iii. The processes of assessing applicability of intraday MTM margin as explained above is carried out at **12.00 Noon and at 03:00 PM.**

iv. Forwards rates used for Intraday MTM Margin computation shall be arrived in the same manner as described in para III(i &ii) above

v. If applicable, the Intra-day MTM margin/Gain reduction shall be collected immediately. Upon imposition, if there is margin inadequacy/shortfall in securities SGF of concerned member, it shall be the responsibility of such member/s to replenish the shortfall within one hour from the time of imposition; else penal charges shall be levied as applicable.

vi. In case the intra-day MTM margin payable by a member as per the assessment at 03.00 PM is lower than the intra-day MTM margin already collected from the members based on prices at 12.00 noon, such excess intra-day MTM margin will be released by CCIL.

V: Concentration Margin

i. Concentration Margin shall be levied on a member in the event of:

a. Initial Margin of the member exceeding the Initial margin threshold; and/or
b. Gross position of the member exceeding the gross positions threshold.

ii. Initial Margin threshold will be set equal to 8% of the average daily total initial margin requirement of all members in the segment in the preceding month.

iii. Similarly, gross position threshold will be set equal to 8% of the average daily total gross position of all members in the segment in the preceding month.

iv. Concentration margin will be collected at 15% of initial margin. Concentration margin shall continue to be in force till the initial margin requirement and/or the gross position of the member, as the case may be, falls below the respective threshold for withdrawal of Concentration Margin.

v. The initial margin threshold for withdrawal of Concentration Margin shall be 6% of the average daily total initial margin requirement of all members in the segment in the preceding month.

vi. The gross position threshold for withdrawal of Concentration Margin shall be 6% of the average daily total gross position all members in the segment in the preceding month.

vii. At the end of each month, the threshold values in money terms, applicable for subsequent month shall be determined and intimated to the members through a report.

viii. In the event, Portfolio Compression exercise is carried out for the segment, the threshold levels for remaining days in the month (after Portfolio Compression day) shall be revised based on Initial Margin and gross position levels at the EOD of Portfolio Compression exercise. Similarly, month end (month end following the Portfolio Compression day) computations of thresholds for imposition and withdrawal of concentration margin will be based on the values post Portfolio Compression date.

ix. The above-mentioned threshold rates and the rate at which the Concentration Margin is collected shall be reviewed by CCIL on an annual basis or more frequently, if required, and the same will be advised to members.

x. Concentration margin shall be blocked from securities segment Settlement Guarantee Fund (SGF) after advising the concerned members. Imposition of Concentration Margin may result in margin shortfall if available SGF balance is inadequate to cover the increased margin requirements. Failure to replenish such shortfall within one hour from the time of imposition shall invite levy of penal charges as applicable.

VI: Replenishment Level and Rejection Level

[Reference Chapter V (A) (3) of the Regulations] Clearing Corporation shall make a margin call to the member when the margin utilisation exceeds 90% of the SGF made available for this segment. (i.e. if the available SGF is lower than the amount of Total Margin x 100 / 90) Moreover, Clearing Corporation will stop acceptance of further trades if such trades will cause the margin utilisation to exceed 95% of SGF made available for this segment.

The revised approach, as above shall be effective from **27-Jan-2020**

For The Clearing Corporation of India Ltd

Sd/-

Managing Director

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