CIRCULAR

SEBI/HO/MRD/MRD-PoD-2/P/CIR/2024/131 **October 01, 2024**

To

All Recognized Stock Exchanges
All Recognized Clearing Corporations

Sir/Madam,

Subject: Review of Stress Testing Framework for Equity Derivatives segment for determining the corpus of Core Settlement Guarantee Fund (Core SGF)

Background

1. SEBI vide Chapter 3 Master Circular No. SEBI/HO/MRD2/PoD-2/CIR/P/2023/171 dated October 16, 2023, has, *inter-alia*, laid down guidelines for determining the credit exposure of Clearing Corporations (CCs) towards its participants.

2. In this regard, SEBI has specified the stress testing methodologies to be adopted for determining the credit risk of a CC towards its participants. The current stress testing methodologies are grouped into hypothetical and historical scenarios.

3. For the equity derivatives segment, the stress testing methodologies prescribed by SEBI for determining loss on close-out of client/proprietary positions, under hypothetical and historical stress scenarios, comprising of price movement in respect of each underlying, are tabulated below:

Table-1

Scenario	Direction	Movement
1a	Up	PSR + 1.5[1] x sigma (λ=0.995) x $\sqrt{2}$
1b	Up	PSR + 1.5[1] x sigma (λ=0.94) x $\sqrt{2}$
2a	Down	– PSR – 1.5[1] x sigma (λ=0.995) x $\sqrt{2}$
2b	Down	– PSR – 1.5[1] x sigma (λ=0.94) x $\sqrt{2}$
3	Up	Max 1 day rise over past 10 years
4	Down	Max 1 day fall over past 10 years

1. Multiple of 1.5 for indices and 1.75 used stocks

Adoption of new stress testing methodologies

4. Taking into account the changing market dynamics of the equity derivatives segment, with a view to have a more comprehensive understanding of the prevalent tail risk in the equity derivatives segment, SEBI, after consultation with relevant market participants in its Risk Management Review Committee, has decided to introduce the following additional hypothetical stress testing scenarios/methodologies for determining the Minimum Required Corpus (MRC) of Core SGF in the equity derivatives segment:

4.1. <u>Stressed VaR</u>

4.1.1. Uses the variance-covariance matrix from a stress period to determine the price movements of the underlying.

4.1.2. Volatility observed during the stress period is to multiplied by a factor of 2.

4.1.3. Montecarlo simulations are carried out assuming multivariate normality of daily returns.

4.1.4. The resultant figure gives the price movement for each underlying.

4.1.5. For revaluing options, the volatility would be shocked by 100% for each underlying.

4.2. Filtered Historic Simulation

4.2.1. Adjust past data in a way so that it captures the prevailing volatility.

4.2.2. Historical returns are divided by contemporaneous estimated volatility and then multiplied by latest estimate of volatility.

4.2.3. For this purpose, volatility is calculated as Exponentially Weighted Moving Average (EWMA) with $\lambda = 0.94$.

4.3. Factor Model

4.3.1. Highest 3-day, close to close, movement of NIFTY, upwards and downwards, is to be considered based on historical data since 2000.

4.3.2. The said highest upwards and downwards movement of NIFTY are multiplied by the beta (β) of the stock from a stress period to arrive at a figure representing price movement for each underlying.

4.3.3. For revaluing options, the volatility would be shocked by 100% for each underlying.

5. **Choice of stress period**

5.1. For each of the above stress testing models, the data for modeling returns/movements in each underlying shall be based on stress period(s), as specified by the CCs.

5.2. Further, the CCs shall jointly frame a policy on updation and review of stress periods and get it approved by their respective Risk Committees.

5.3. Additionally, for the above models, a Stress Period of Risk (SPOR) of 3 days would be considered (i.e. non-overlapping return movements over a period of 3 days would be considered).

6. **Inter-segment transfer of funds from Core SGF**

6.1. With a view to cater to increase in the initial MRC requirement of equity derivatives segment after adoption of new stress testing methodologies, as outlined at para (4) above, a one-time inter-segment transfer of funds would be allowed to CC subject to the following framework:

6.1.1. If average stress loss applicable for the month < 50% of the applicable MRC of the month, in the equity cash segment for the last 12 months, then CCs can transfer upto 100% of the additional amount available over and above the MRC of the month, from the Core SGF of the equity cash segment (ECM) and transfer it to the Core SGF of equity derivatives segment (EDX).

6.1.2. For inter-segment transfer, CC's shall be required to maintain minimum 50% of MRC, exchanges shall be required to maintain 25% (as per their volume) and 25%-member contribution may be attributed to the Parent Exchange, in the remaining Core SGF of ECM, from which the money is being transferred. The amount remaining in ECM segment beyond the limits stated above, will be the excess money, available for transfer, for the respective Market Infrastructure Institution (MII).

6.1.3. This excess amount can be transferred from ECM segment to EDX segment and can be allocated to the contributions under the head of respective MIIs only.

6.1.4. In addition, since contribution requirements to ECM are irrespective of penalties, all CCs shall be permitted a one-time transfer of penalties and the interest accrued thereon in ECM to EDX segment. It will be transferred under Penalty head in the EDX segment.

<u>Illustration</u>

Table-2

MRC for current Month (A)	Total Core SGF in the segment (B)	Total SGF Corpus – MRC for the month (C=B-A)	Average stress loss for each month since past 12 months# (single figure shown for simplifying the example) (D)	Upper limit of the amount that can be transferred to Core SGF of equity derivatives segment, if (D) for each of the last 12 months < 50% (A) (E =100% of C)
100	200	100	30	100

CCs will have to check for each month for the last 12 months

6.2. Any inter-segment transfer of core SGF funds should be carried out after a CC has taken approval from its Risk Committee.

7. **Additional contribution to the Core SGF of equity derivatives segment:**

7.1. As per the extant directions, by 15th of every month, CC shall review and determine the MRC for next month based on the results of daily stress tests of the preceding month.

7.2. The MRC for next month shall be higher of the average of all daily worst case loss numbers arrived in at 7.1. above and the segment MRC as per any previous review. CCs shall also review and determine by 15th of every month, the adequacy of contributions made by various contributors and any further contributions to the Core SGF required to made by such contributors.

7.3. Initially, the additional contribution to Core SGF, based on the MRC requirements on an ongoing basis as per the stress testing methodologies stated at para (4) above, shall be brought in by the contributors, within 4 months from the month of issue of this circular (i.e. on or before February 01, 2025).

7.4. The initial additional contribution so required shall be based on highest average stress loss, as per all the stress testing methodologies, witnessed since the month of January 2024 till the preceding month of the issuance of this circular.

7.5. Additionally, for the purpose of one-time inter-segment transfer and for the purposes of making additional contributions to the Core SGF of equity derivatives segment, the penalties credited to the Core SGF and the interest accrued on such penalties, as on last day of month of issuance of this circular, shall also be taken into account. Therefore, additional contribution would have to be brought in if MRC of next month > [MRC of current month + Penalties credited (including one time penalties transferred from SGF of cash segment) and interest accrued on such penalties as on last day of the month of issuance of this circular].

8. **Staggered contributions to the Core SGF of equity derivatives segment:**

8.1. Further, on an ongoing basis, the subsequent contributions (after the initial contribution) to the Core SFG, based on monthly MRC requirements, can be made by the contributors in a staggered manner. CCs shall put in place a detailed framework in this regard.

8.2. It is clarified that the above provision, outlined at para 8.1. above, is only for the purpose of bringing in additional contribution for the Core SGF in a staggered manner. It is reiterated that the MRC requirement for the next month shall continue be based on provisions outlined at para 7.2. above.

8.3. Clearing Corporations would be required to display information on any difference between the required contribution for the month and the contribution actually made, along with their monthly Core SGF data on their websites.

9. **Coverage of stress losses**

9.1. The stress testing methodologies would be applied uniformly across all CCs providing clearing and settlement services in the equity derivatives segment.

9.2. However, for the purpose of applicability of a cover-n standard, the CCs offering clearing and settlement services in the equity derivatives, segment will be segregated into 2 categories:

9.2.1. Category A - CC having equal to or more than 40% of the share of clearing volumes in equity derivatives segment.

9.2.2. Category B - CC having less than 40% of the share of clearing volumes in equity derivatives segment.

9.3. For the purpose of above categorization, the clearing volumes shall be based on daily average value (in Rs. crores) of contracts cleared by the CCs in the equity derivatives segment for each financial year. Sum of futures turnover and notional options turnover will be considered for this purpose.

9.3.1. CCs offering clearing and settlement services in the equity derivatives segment, shall jointly decide on their categorization. Initially, CCs, by means of a joint communication, shall inform their respective categorization to SEBI within 7 days of issuance of this circular.

9.3.2. Subsequently, CCs offering clearing and settlement services in the equity derivatives segment shall, within 15 days from the end of each financial year, shall inform SEBI about their respective categorization, by means of a joint communication.

9.4. For CCs classified as Category B, as per the provisions of para 9.2. above, credit exposure shall be calculated by considering a simultaneous default of at least 2 clearing members (and associates) causing the highest credit exposure.

9.5. For a CC classified as category A, as per the provisions of para 9.2. above, credit exposure shall be calculated as follows:

9.5.1. By considering simultaneous default of at least 3 clearing members (and associates) causing the highest credit exposure, OR

9.5.2. INR 10,500 crores, whichever is higher.

10. The existing hypothetical and historical stress testing methodologies for determining the MRC of the Core SGF in the equity derivatives segment shall continue to exist along with the new stress testing methodologies introduced vide this circular.

11. Clearing Corporations and stock exchanges are directed to:

11.1. Formulate a joint (Standard Operating Procedures) SOP document, within 30 days from the date of issue of this circular, pertaining to the following aspects of the said circular and get it approved by their respective Risk Committees:

11.1.1. Specifying the initial stress period(s)

11.1.2. Specifying operational aspects and detailed implementation mechanism of the new stress testing models.

11.1.3. Specifying the framework for updation and revision of stress periods.

11.1.4. Specifying the methodologies to be adopted for calculating stress losses for stocks where data is not available for the chosen stress period(s)

11.1.5. Specifying the framework for making staggered contributions to the Core SGF.

11.1.6. Any other operational aspect of this circular.

11.2. Take necessary steps to put in place systems for implementation of the circular, including necessary amendments, wherever required, to the relevant bye-laws, rules and regulations.

11.3. Bring the provisions of this circular to the notice of their members and also disseminate the same on its website.

12. The circular is being issued in exercise of powers conferred under Section 11 (1) and Section 11(2)(a) of the Securities and Exchange Board of India Act, to protect the interests of investors in securities and to promote the development of, and to regulate the securities market and regulate business in stock exchanges and any other securities markets.

Yours faithfully,

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