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MRD/DoP/SE/Cir-07/2005
February 23, 2005

The Executive Directors/Managing Directors/Administrators
of All Stock Exchanges

Dear Sir / Madam,

**Sub: Comprehensive Risk Management Framework for the cash market**

1. SEBI has, from time to time, put in place various risk containment measures to address the risks involved in the cash and derivatives market. These measures have successfully and efficaciously addressed the market risks. However, to keep pace with the dynamic state of the markets, risk management systems cannot remain static and has to constantly address the changing risk profile of the market. Further, there were also certain differences observed between the risk management systems in the cash and derivatives market.

2. With an objective of aligning and streamlining the risk management framework across the cash and derivatives markets and to consolidate all the existing circulars on risk management for the cash market, the Advisory Committee of Derivatives and Market Risk Management of SEBI (RMG), in its various meetings reviewed the extant provisions relating to margins and risk management framework in the cash market. After detailed deliberations, the RMG has recommended a comprehensive risk management framework for the cash market. The comprehensive risk management framework has been finalised after a due consultative process with the public. The revised framework for risk management in the cash market is placed in Annexures I & II.

3. The Stock Exchanges shall put in place the necessary systems to ensure the operationalization of the comprehensive risk management framework with effect from **May 18, 2005** and that they have tested the software and removed any glitches in its operation well before the above mentioned date to avoid any problems in the live environment.

4. While the comprehensive risk management framework is expected to contain risk in the system, the efficacy of the same will be dependent on monitoring, surveillance and timely collection of margins by the Stock Exchanges. The Stock Exchanges, are, therefore advised to strengthen their monitoring and surveillance systems and take such timely actions as and when necessary.

5. The Stock Exchanges are also advised to:
   - 5.1 ensure that their risk management framework is in line with the provisions contained in the annexure and take steps to make necessary amendments to the relevant bye-laws, rules and regulations for the implementation of the above decision immediately.
   - 5.2 bring the provisions of this circular to the notice of the member brokers/clearing members of the Exchange and also to disseminate the same on the website.
   - 5.3 communicate to SEBI, the status of the implementation of the provisions of this circular in Section II, item no. 13 of the Monthly Development Report.
6. This circular is being issued in exercise of powers conferred under Section 11 (1) of the Securities and Exchange Board of India Act, 1992, to protect the interests of investors in securities and to promote the development of, and to regulate the securities market.

Yours faithfully,

**V S SUNDARESAN**

**Encl:**

1. **Annexure- I – Comprehensive Risk Management Framework for the cash market**
2. **Annexure- II - Methodology for computation of MTM Margin.**

# Comprehensive Risk Management Framework for the cash market

## 1 Overview

The core of the risk management system is the liquid assets deposited by members with the exchange/clearing corporation. These liquid assets shall cover the following four requirements:

a. ***MTM (Mark To Market) Losses:*** Mark to market losses on outstanding settlement obligations of the member.

b. ***VaR Margins:*** Value at risk margins to cover potential losses for 99% of the days.

c. ***Extreme Loss Margins:*** Margins to cover the expected loss in situations that lie outside the coverage of the VaR margins.

d. ***Base Minimum Capital:*** Capital required for all risks other than market risk (for example, operational risk and client claims).

At all points of time, the liquid assets of the member shall be adequate to cover all the above four requirements. There are no other margins in the risk management system.

## 2 Liquid Assets

The acceptable liquid assets and the applicable haircuts are listed below:

| Item | Haircut (see Note A) | Limits |
|---|---|---|
| | ***Cash Equivalents*** | |
| Cash | 0 | No limit |
| Bank fixed deposits | 0 | No limit |
| Bank guarantees | 0 | Limit on exchange's exposure to a single bank (see Note B) |
| Securities of the Central Government | 10% | No limit |

| | | |
|---|---|---|
| Units of liquid mutual funds or government securities mutual funds (by whatever name called which invest in government securities) | 10% | No limit |
| ***Other Liquid Assets***<br>1. Cannot be used for mark to market losses (see Note C)<br>2. Total of Other Liquid Assets cannot exceed total of Cash Equivalents (see Note D) | | |
| Liquid (Group I) Equity Shares (see section 3 for classification of equity shares on the basis of liquidity) | Same as the VaR margin for the respective shares (see section 5.1 below) | Limit on exchange's exposure to a single issuer (see Note E) |
| Mutual fund units other than those listed under cash equivalents | Same as the VaR margin for the units computed using the traded price on stock exchange, if available, or else, using the NAV of the unit treating it as a liquid security (see section 5.1 below). | |
| Card value of eligible exchanges (see Note F) | 50% if the last sale or auction of card in the exchange took place during the last six months.<br>75% if the last sale or auction of card in the exchange took place during the last twelve months but not within the last six months.<br>100% if no sale or auction of card in the exchange has taken place during the last twelve months. | Eligible only for Extreme Loss Margin |

***Notes:***

A. The valuation of the liquid assets shall be done on a daily basis except for the card value which shall be taken on the basis of the last sale or auction.

B. The exchanges shall lay down exposure limits either in rupee terms or as percentage of the Trade Guarantee Fund (TGF) / Settlement Guarantee Fund (SGF) that can be exposed to a single bank directly or indirectly. The total exposure would include guarantees provided by the bank for itself or for others as well as debt or equity securities of the bank which have been deposited by members towards total liquid assets.

   Not more than 5% of the TGF/SGF or 1% of the total liquid assets deposited with the exchange, whichever is lower, shall be exposed to any single bank which has a net worth of less than Rs 500 Crores and is not rated P1 (or P1+) or equivalent, by a RBI recognized credit rating agency or by a reputed foreign credit rating agency, and not more than 50% of the TGF/SGF or 10% of the total liquid assets deposited with the exchanges, whichever is lower, shall be exposed to all such banks put together.

C. Mark to market losses shall be paid by the member in the form of cash or cash equivalents.

D. Cash equivalents shall be at least 50% of liquid assets. This would imply that Other Liquid Assets in excess of the total Cash Equivalents would not be regarded as part of Total Liquid Assets.

E. The exchanges shall lay down exposure limits either in rupee terms or as percentage of the Trade Guarantee Fund (TGF)/Settlement Guarantee Fund (SGF) that can be exposed to a single issuer directly or indirectly and in any case the exposure of the TGF/SGF to any single issuer shall not be more than 15% of the total liquid assets forming part of TGF/SGF of the exchange.

F. As a transitional arrangement pending demutualization of stock exchanges, the value of the membership card in eligible stock exchanges may be included as part of the member's liquid assets only to cover Extreme Loss Margin. To be eligible for this treatment, the exchange shall maintain an amount equivalent to at least 50% of the aggregate card value of all members in the form of cash and liquid assets.

## 3 Liquidity Categorization of Securities

The securities shall be classified into three groups based on their liquidity:

| **Group** | **Trading Frequency (over the previous six months – see Note A)** | **Impact Cost (over the previous six months – see Note A** |
|---|---|---|
| Liquid Securities (Group I) | At least 80% of the days | Less than or equal to 1% |
| Less Liquid Securities (Group II) | At least 80% of the days | More than 1% |

| Illiquid Securities (Group III) | Less than 80% of the days | N/A |
|---|---|---|

Notes:

A. For securities that have been listed for less than six months, the trading frequency and the impact cost shall be computed using the entire trading history of the scrip.

### *3.1 Monthly Review*

The trading frequency and impact cost shall be calculated on the 15th of each month on a rolling basis considering the previous six months for impact cost and previous six months for trading frequency. On the basis of the trading frequency and impact cost so calculated, the securities shall move from one group to another group from the 1st of the next month.

### *3.2 Categorisation of newly listed securities*

For the first month and till the time of monthly review as mentioned in section 3.1, a newly listed stock shall be categorised in that Group where the market capitalization of the newly listed stock exceeds or equals the market capitalization of 80% of the stocks in that particular group. Subsequently, after one month, whenever the next monthly review is carried out, the actual trading frequency and impact cost of the security shall be computed, to determine the liquidity categorization of the security.
In case any corporate action results in a change in ISIN, then the securities bearing the new ISIN shall be treated as newly listed scrip for group categorization.

### *3.3 Calculation of mean impact cost*

The mean impact cost shall be calculated in the following manner:

a. Impact cost shall be calculated by taking four snapshots in a day from the order book in the past six months. These four snapshots shall be randomly chosen from within four fixed ten-minutes windows spread through the day.
b. The impact cost shall be the percentage price movement caused by an order size of Rs.1 Lakh from the average of the best bid and offer price in the order book snapshot. The impact cost shall be calculated for both, the buy and the sell side in each order book snapshot.
c. The computation of the impact cost adopted by the Exchange shall be disseminated on the website of the exchange.
d. The exchanges shall use a common methodology for carrying out the calculations for mean impact cost. The stock exchanges which are unable to compute the mean impact cost calculations at their exchanges shall use the impact cost calculations of BSE/NSE. Such stock exchanges shall enter into a formal legal agreement with the relevant stock exchanges for liquidating

the positions of their members if necessary, on that stock exchange. If a Stock Exchange is unable to compute the mean impact cost of the scrips traded at the Exchange, as well as not been able to enter into a formal arrangement for liquidation of positions, it shall levy margins on the scrips as applicable to Group II or Group III as explained above, as classification between scrips in Group I or Group II would not be possible at that Exchange.

e. The details of calculation methodology and relevant data shall be made available to the public at large through the website of the exchanges. Any change in the methodology for the computation of impact cost shall also be disseminated by the exchange.

## 4 Mark to Market Losses

Mark to Market Losses shall be collected in the following manner:

a. The Stock Exchanges shall collect the mark to market margin (MTM) from the member/broker before the start of the trading of the next day.
b. The MTM margin shall also be collected/adjusted from/against the cash/cash equivalent component of the liquid net worth deposited with the Exchange.
c. The MTM margin shall be collected on the gross open position of the member. The gross open position for this purpose would mean the gross of all net positions across all the clients of a member including his proprietary position. For this purpose, the position of a client would be netted across his various securities and the positions of all the clients of a broker would be grossed. Further, there would be no netting across two different settlements.
d. There would be no netting off the positions and setoff against MTM profits across 2 rolling settlements i.e. T day and T-1 day. However, for computation of MTM profits/losses for the day, netting or setoff against MTM profits would be permitted.
e. The methodology for computation of MTM margin is also illustrated by way of an example which is placed in Annexure II.
f. The margin so collected shall be released along with the pay-in, including early pay-in of securities.

## 5 VaR Margin

### *5.1 Computation of VaR Margin*

The VaR Margin is a margin intended to cover the largest loss that can be encountered on 99% of the days (99% Value at Risk). For liquid stocks, the margin covers one-day losses while for illiquid stocks, it covers three-day losses so as to allow the clearing corporation to liquidate the position over three days. This leads to a scaling factor of square root of three for illiquid stocks.

For liquid stocks, the VaR margins are based only on the volatility of the stock while for other stocks, the volatility of the market index is also used in the computation. Computation of the VaR margin requires the following definitions:

- ***Scrip sigma*** means the volatility of the security computed as at the end of the previous trading day. The computation uses the exponentially weighted moving average method applied to daily returns in the same manner as in the derivatives market.
- ***Scrip VaR*** means the higher of 7.5% or 3.5 scrip sigmas.
- ***Index sigma*** means the daily volatility of the market index (S&P CNX Nifty or BSE Sensex) computed as at the end of the previous trading day. The computation uses the exponentially weighted moving average method applied to daily returns in the same manner as in the derivatives market.
- ***Index VaR*** means the higher of 5% or 3 index sigmas. The higher of the Sensex VaR or Nifty VaR would be used for this purpose.

The VaR Margins are specified as follows for different groups of stocks:

| **Liquidity Categorization** | **One-Day VaR** | **Scaling factor for illiquidity** | **VaR Margin** |
|---|---|---|---|
| Liquid Securities (Group I) | Scrip VaR | 1.00 | Scrip VaR |
| Less Liquid Securities (Group II) | Higher of Scrip VaR and three times Index VaR | 1.73 (square root of 3.00) | Higher of 1.73 times Scrip VaR and 5.20 times Index VaR |
| Illiquid Securities (Group III) | Five times Index VaR | 1.73 (square root of 3.00) | 8.66 times Index VaR |

### *5.2 Collection of VaR Margin*

a. The VaR margin shall be collected on an upfront basis by adjusting against the total liquid assets of the member at the time of trade. Collection on T+1 day is not acceptable.
b. The VaR margin shall be collected on the gross open position of the member. The gross open position for this purpose would mean the gross of all net positions across all the clients of a member including his proprietary position.
c. For this purpose, there would be no netting of positions across different settlements.
d. The VaR margin so collected shall be released along with the pay-in, including early pay-in of securities.

## 6 Extreme Loss Margin

The term Extreme Loss Margin replaces the terms “exposure limits” and “second line of defence” that have been used hitherto. It covers the expected loss in situations that go beyond those envisaged in the 99% value at risk estimates used in the VaR margin.

a. The Extreme Loss Margin for any stock shall be higher of:
   - 5%, and
   - 1.5 times the standard deviation of daily logarithmic returns of the stock price in the last six months. This computation shall be done at the end of each month by taking the price data on a rolling basis for the past six months and the resulting value shall be applicable for the next month.

b. The Extreme Loss Margin shall be collected/ adjusted against the total liquid assets of the member on a real time basis.

c. The Extreme Loss Margin shall be collected on the gross open position of the member. The gross open position for this purpose would mean the gross of all net positions across all the clients of a member including his proprietary position.

d. For this purpose, there would be no netting of positions across different settlements.

e. The Extreme Loss Margin so collected shall be released along with the pay-in.

## 7 Exemption from margins

a. Institutional businesses i.e., transactions done by all institutional investors shall be exempt from margin payments. For this purpose, institutional investors shall include
   - Foreign Institutional Investors registered with SEBI.
   - Mutual Funds registered with SEBI.
   - Public Financial Institutions as defined under Section 4A of the Companies Act, 1956.
   - Banks, i.e., a banking company as defined under Section 5(1)(c) of the Banking Regulations Act, 1949.
   - Insurance companies registered with IRDA.

b. In cases where early pay-in of securities is made, the outstanding position to the extent of early pay-in shall not be considered for margin purposes.

c. There shall be no other margin exemptions other than those mentioned above.

## 8 Shortfall of Margins / Pay-in of funds

a. Margin shortfall

   In case of any shortfall in Margin, the terminals of the broker shall be immediately deactivated.

b. Pay-in shortfall

i. In cases where the amount of shortage in a settlement for a trading member is in excess of the base minimum capital (BMC) prescribed, the trading facility of the member shall be withdrawn and the securities pay-out due to the member shall be withheld.

ii. In cases where the amount of shortage exceeds 20% of the BMC but less than the BMC on six occasions within a period of three months, then also the trading facility of the member shall be withdrawn and the securities pay-out due to the member shall be withheld.

iii. Upon recovery of the complete shortages, the member shall be permitted to trade subject to his providing a deposit equivalent to his cumulative funds shortage as the 'funds shortage collateral'. Such deposit shall be kept with the Exchange for a period of ten rolling settlements and shall be released thereafter. Such deposit shall not be available for adjustment against margin liabilities and also not earn any interest. The deposit may be by way of cash, fixed deposit receipts or bank guarantee.

iv. The exchange may levy a penal interest of not less than 0.07% per day on the pay-in shortage of the member.

## 9 Base Minimum Capital

**A.** The Stock Exchanges shall have the BMC requirements as provided below:-

| BSE, NSE and Calcutta Stock Exchange | Rs. 10 lakhs |
|---|---|
| Ahmedabad Stock Exchange & Delhi Stock Exchange | Rs. 07 lakhs |
| Other Stock Exchanges | Rs. 04 lakhs |

provided that the Stock Exchanges shall maintain the BMC at Rs. 1 lakh if the average daily turnover is less than Rs.1 crore for any three consecutive months.

### B. Refund of excess BMC over Rs. 1 lakh

The excess of the BMC over Rs 1 lakh may be refunded to the members of the exchange subject to the following conditions:

a. The member has been inactive at the stock exchange for the past 12 months, i.e. he has not carried out any transaction on that stock exchange during the past 12 months.
b. There are no investor complaints pending against the member.
c. There are no arbitration cases pending against the member.
d. The exchange shall retain/deduct/debit from the BMC to be refunded, the amount of any complaints/claims of the investors against the member and for dues crystallized and contingent to the exchange/SEBI arising out of pending arbitration cases, appealed arbitration awards, administrative expenses, SEBI turnover fees, e.t.c.

e. The exchange shall ensure that the member has paid the SEBI turnover fees and has obtained a No-Objection Certificate (NoC) from SEBI in this regard.

### C. Re-enhancement of BMC

If the average daily turnover of the exchange exceeds the prescribed level of Rs.1 crore for a period of one month at any time, the exchange shall enhance the requirement of the BMC of the members back to the level as prescribed in Para A above and shall obtain undertaking to this effect from the members.

## 10 Additional Margins

Exchanges/clearing corporations have the right to impose additional risk containment measures over and above the risk containment system mandated by SEBI. However, the Stock Exchanges should keep the following three factors in mind while taking such action:

a. Additional risk management measures (like ad-hoc margins) would normally be required only to deal with circumstances that cannot be anticipated or were not anticipated while designing the risk management system. If ad-hoc margins are imposed with any degree of regularity, exchanges should examine whether the circumstances that give rise to such margins can be reasonably anticipated and can therefore be incorporated into the risk management system mandated by SEBI. Exchanges are encouraged to analyse these situations and bring the matter to the attention of SEBI for further action.
b. Any additional margins that the exchanges may impose shall be based on objective criteria and shall not discriminate between members on the basis of subjective criteria.
c. Transparency is an important regulatory goal and therefore every effort must be made to make the risk management systems fully transparent by disclosing their details to the public.

## 11 Margins from the Client

Members should have a prudent system of risk management to protect themselves from client default. Margins are likely to be an important element of such a system. The same shall be well documented and be made accessible to the clients and the Stock Exchanges. However, the quantum of these margins and the form and mode of collection are left to the discretion of the members.

## 12 Resultant Modifications in the corresponding circulars

With the advanced collection of margins and the introduction of the stringent margining structure, the following circulars would stand modified suitably:

a. Gross exposure limits stipulated vide circular No. SMDRP/Policy/2001 dated March 11, 2001 and press release No.45 /2001dated March 11, 2001.

b. Intra-day trading limits stipulated vide circular No. SMD/RCG/3737/96 dated August 13, 1996.

c. Additional Margin of 6% stipulated vide circular No. SMD/Policy/ Cir - 9/2003 dated March 11, 2003.

d. The form of maintenance of BMC and AC stipulated vide circular No. SMDRP/Policy/Cir-19/99 dated July 2, 1999.

e. The provisions regarding Bank Guarantee stipulated vide Circular No. 22/2003 dated June 11, 2003.

f. The provisions relating to usage of stock exchange membership card value stipulated vide circular No. SEBI/MRD/SE/Cir- 25/2004 dated July 22, 2004.

g. The provisions relating to handling of pay-in shortfall stipulated vide Circular No. SEBI/SMD/SE/21/2003/05/06 dated June 05, 2003.

h. The provisions of collection of margins from clients stipulated vide circulars No. SMDRP/policy/Cir-35/98 dated December 4, 1998, SMDRP/Policy/Cir-7/00 dated February 4, 2000, SMDRP/Policy/Cir-33/00 dated July 27, 2000 and SMDRP/Policy/Cir-12/2002 dated May 17, 2002.

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**Annexure – II**

**Methodology for computation of MTM Margin**

For a Client A, his MTM profit/ loss would be calculated separately for his positions on T-1 and T day (two different rolling settlements). For the same day positions of the client, his losses in some scrips can be set off/netted against profits of some other scrips. Thus, we would arrive at the MTM loss/profit figures of the two different days T and T-1. These two figures cannot be netted. Any loss will have to be collected and same will not be setoff against profit arising out of positions of the other day.

Thus, as stated above MTM profits / losses would be computed for each of the clients Client A, Client B, Client C etc. As regards collection of margin from the broker, the MTM would be grossed across all the clients i.e. no setoff of loss of one client with the profit of another client. In other words, only the losses will be added to give the total MTM loss that the broker has to deposit with the exchange.

| | | T-1 day | T day | | Total profit/loss of Client | | MTM for broker |
|---|---|---|---|---|---|---|---|
| Client A | Security X | 800 | 300 | | | | |
| | Security Y | -500 | -1200 | | | | |
| | Total | 300 | -900 | | -900 | | |
| | | | | | | | |
| Client B | Security Z | 700 | -400 | | | | |
| | Security W | -1000 | 800 | | | | |
| | Total | -300 | 400 | | -300 | | |
| | | | | | | | |
| Client C | Security X | 1000 | 500 | | | | |
| | Security Z | -1500 | -800 | | | | |
| | Total | -500 | -300 | | -800 | | |
| | | | | | | | |
| Client D | Security Y | 700 | -200 | | | | |
| | Security R | -300 | 800 | | | | |
| | Total | 400 | 600 | | 1000 | | |
| | | | | | | | |
| BROKER | | | | | | | -2000 |

In this example, the broker has to deposit MTM Margin of Rs 2000.

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