

Back testing Methodology on the BSE derivative markets

1. *During back testing we examine directly whether the initial margin requirements specified for individual clearing entities (clearing member own and aggregate client, individually segregated non-clearing member / client) provide sufficient cover for risks arising from daily price changes.*
2. *Accordingly, back testing is completed at the portfolio level, that is at the level of segregation each clearing entity is checked.*
3. *We define daily the value of price changes per clearing entity that is not covered by the initial margin.*
4. *Upon checking the 99% compliance we examine daily on a rolling basis the data available for the last year with respect to the clearing entities.*
5. *Quarterly we inform the Risk Committee on the consolidated result of back testing and upon case by case requests we provide access to clearing members and related clearing entities to their own results. We publish the consolidated results at our web site.*
6. *We define actions to be taken should the back testing results fail to meet the expected 99% compliance level.*
7. *Annually we review our back testing methodology and make recommendations to improve it if necessary.*

Thus during back testing we back test our methodology related to the determination of the initial margin requirement in order to support the assumptions and mechanisms inherent in the methodology. Upon these back testings the initial margin requirement defined for the period tested and with respect to the clearing entities examined should evidence coverage of at least 99%. If back testing indicates that the methodology applied does not perform as expected (that is the amount of initial margin defined based on the methodology does not reach the required level of cover), it has to be examined whether it is justified to make a basic change to the methodology used to determine the margin requirement or only the valid parameters need to be recalibrated.

Accordingly, the evaluation of the data available in the course of back testing will provide support:

- to determine margin parameters
- and to determine the appropriate margining methodology.

The 99% compliance related to daily back testing with respect to individual markets is checked based on the following formula:

$$\frac{\text{the number of non-compliant covers during the lookback period per clearing entity and per day}}{(\text{average number of clearing entities reviewed in the period} * \text{number of days reviewed (minimum 250)})}$$

The comprehensive portfolio level reviews completed for each clearing entity in the course of back testing provide an overall picture of the appropriateness of initial margins determined by products. It helps to manage risks arising from price change in an aggregate manner, besides it indicates the necessity to review margin parameters.