

FIXED INCOME RISK ENGINE

Settlement risk add-on

Methodological notes

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1 Outline

The present add-on framework aims at tackling the risk to the CCP of a Clearing Member defaulting:

- 1) after having met the margin call reflecting the current portfolio configuration,
- 2) after the portfolio configuration has changed due to settlement of trades **but**
- 3) before a (potential) new margin call reflecting the new portfolio configuration is made.

Indeed, margin calls occur at discrete time intervals and reflect the portfolio configuration at that time, while settlement of trades is almost continuous throughout the day. Therefore, in the event of a default the CCP would probably find itself wanting to clear a portfolio which is different from that it has collected the last called margins on.

2 Calculations

The goal outlined above is achieved summing the (potential) settlement risk add-on to the total margins computed on the Clearing Member's portfolio and reflecting its current portfolio configuration.

Fail portfolios are excluded from the scope of this add-on framework, in the sense that fail positions are treated separately from 'regular' positions and total margins computed on fail positions are always added at the end of the 'regular' margining process, the latter including the abovementioned add-on calculation.

In formulae,

$$\text{Settlement risk add-on} = \max(fpm - cpm; 0),$$

with *fpm*: 'future' 'regular' portfolio margins and *cpm*: current 'regular' portfolio margins,

or equivalently:

$$\text{Total 'regular' margins called} = \max(fpm; cpm)$$

Cpm are total margins (all additional components included, $\max(\text{additional margins} + / - \text{mark-to-market margins}; 0)$) computed on 'regular' portfolios at the time of the calculation (therefore on *cash* trades still to settle, *repo* trades with term leg still to settle and *forward starting repo* trades with both spot and term legs still to settle).

Fpm are the same exact total margins, though reflecting a different, 'future' portfolio configuration.

In order to identify this different, 'future' 'regular' portfolio configuration one must assume that certain trades that will settle after margins are computed have actually settled before.

Both end-of-day and intra-day the number of different, 'future' 'regular' portfolio configurations is 1. These are the characteristics of the configuration:

- current *cash* trades settling in $t+1$ are assumed to be settled \rightarrow not in 'future' portfolio;
- current *repo* trades with term leg settling in $t+1$ are assumed to be settled \rightarrow not in 'future' portfolio;
- current *forward starting repo* trades with spot leg settling in $t+1$ are assumed to become *repo trades* (therefore with term leg to settle) \rightarrow *repo* in 'future' portfolio.

In formulae,

$$\text{Settlement risk add-on} = \max(fpm - cpm; 0).$$