



**COMMODITY DERIVATIVES RISK ENGINE**

*Total Margins*

*Methodological notes*



# EURONEXT CLEARING

## *Table of contents*

1	What's new.....	3
2	Introduction.....	4
3	<i>Total Margins</i> requirement computation.....	5



# EURONEXT CLEARING

## 1 What's new

REVISION NO./ VERSION NO.	DATE	CHANGE DESCRIPTION
1.0	29/02/2024	Document submitted for approval to Regulatory Authorities
2.0	05/11/2024	<ul style="list-style-type: none"><li>• Fine tuning of the document</li></ul>

## 2 Introduction

The aim of this module is to illustrate the computation of the *Total Margins* requirement for the Clearing Member's portfolio (i.e. margin account), once all the various margin components described in the other modules have been computed.

In particular, the following margin components are required in order to compute the *Total Margins*:

- 1) *Mark-to-market Margins* –  $MtmM$ ;
- 2) *Initial Margins, Ordinary* (scaled) and *Stressed* (unscaled) –  $IM_{ordinary}$  and  $IM_{stressed}$ ;
- 3) *Decorrelation risk add-on, Ordinary* and *Stressed* –  $DECO_{ordinary}$  and  $DECO_{stressed}$ ;
- 4) *Liquidity risk add-on* –  $LIQ$ ;
- 5) *Concentration risk add-on* –  $CONC$ ;
- 6) *Settlement risk add-on* –  $SETTL$ ;
- 7) *Monthly Stress add-on* –  $MSA$ ;
- 8) *Daily Stress add-on* –  $DSA$ .

*Monthly* and *Daily Stress add-ons* are margin components linked to stress testing.

### 3 *Total Margins* requirement computation

The *Total Margins* (*TM*) requirement for a given portfolio (Clearing Member's margin account) is given by:

$$TM = \max\{TM_{SUB1} + TM_{SUB2} + LIQ + CONC; 0\} + SETTLE + TM_{SUB3} + MSA + DSA,$$

or, put differently:

$$TM = \max\{TM_t; TM_{t+1}\} = \max\{\max\{TM_{SUB1,t} + TM_{SUB2,t} + LIQ_t + CONC_t; 0\} + TM_{SUB3} + MSA + DSA; \max\{TM_{SUB1,t+1} + TM_{SUB2,t+1} + LIQ_{t+1} + CONC_{t+1}; 0\} + TM_{SUB3} + MSA + DSA\},$$

with *TM* of the first formula equal to  $TM_t$  of the second formula ( $t$  and  $t+1$  are *Settlement risk add-on* portfolio configurations, i.e.  $t$ : current, 'unaltered' and  $t+1$ : future, 'altered');

$$TM_{SUB1} = \sum_{PG} \max\{ordinary\_weight * (IM_{SUB1,PG,ordinary} + DECO_{SUB1,PG,ordinary}) + stressed\_weight * (IM_{SUB1,PG,stressed} + DECO_{SUB1,PG,stressed}); IM_{SUB1,PG,ordinary} + DECO_{SUB1,PG,ordinary}\} + \sum_{i \in SUB1} MtmM_i,$$

with  $i$ : net position in instrument and *PG* product group (please refer to the document depicting the product scope);

$$TM_{SUB2} = \sum_{i \in SUB2} IM_i,$$

with  $i$ : net position in instrument;

$$TM_{SUB3} = \sum_{i \in SUB3} IM_i,$$

with  $i$ : position in instrument arising from a single delivery instruction.

*ordinary\_weight* and *stressed\_weight* are model parameters (please refer to the relevant document).

Always employing the convention of subtracting long positions from short positions (S - L) to obtain net positions to express margin debts as positive quantities and margin credits as negative quantities, all margin components in the above formulas represent a debt (+) for the Clearing Member except for *MtmM*, which can represent a credit (-) or a debt (+).