EURONEXT CLEARING

COMMODITY DERIVATIVES RISK ENGINE

Total Margins

Methodological notes

EURONEXT CLEARING

Table of contents

1 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.*

2 *Total Margins* requirement computation

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

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

or, put differently:

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

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);

$$TM_{SUB2} = \sum_{i \in SUB2} (max\{ordinary\_weight * IM_{i,ordinary} + stressed\_weight * IM_{i,stressed}; IM_{i,ordinary}\}),$$

with *i*: net position in instrument;

$$TM_{SUB3} = \sum_{i \in SUB3} (max\{ordinary\_weight * IM_{i,ordinary} + stressed\_weight * IM_{i,stressed}; IM_{i,ordinary}\}),$$

with *i*: (net) position in instrument arising from a single contract.

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 (+).

The illustrated *Total Margins* exclude potential additive margin components linked to stress testing. The actual amount called to the margin account, which we can call *Total Margins Plus Stress Margins*, will indeed be the sum of the *Total Margins* and such additive components.

Disclaimer

The information provided in this Document "Total margins" is strictly confidential and is provided "as is" without representation or warranty of any kind. Whilst all reasonable care has been taken to ensure the accuracy of the content, Euronext does not guarantee its accuracy or completeness. The content itself is also still subject to regulatory approval. Euronext will not be held liable for any loss or damages of any nature ensuing from using, trusting or acting on information provided. No information set out or referred to in this publication shall form the basis of any contract. All proprietary rights and interest in or connected with this publication shall vest in Euronext. No part of it may be redistributed or reproduced in any form without the prior written permission of Euronext. Euronext disclaims any duty to update this information. Euronext refers to Euronext N.V. and its affiliates.