

Circular C-VRF-02/2024

Procedure for Margin Calculation



BME CLEARING

Segment: Fixed Income Securities

Effective Date: 8 April 2024

Replaces: C-VRF-05/2022

This Circular establishes the margin calculation procedure for the Fixed Income Securities segment. The price source of foreign Sovereign debts has been modified.

This Circular is published in accordance with article regarding “Margins required by BME CLEARING” of t BME CLEARING’s Rule Book.

It consists of the following sections:

- I. Components of the margin.
- II. Assignment of positions to each positions block.
- III. Margin concepts: parameters, positions to which they apply and calculation algorithm.
- IV. Margin at margin account level.

I. COMPONENTS OF THE MARGIN

The Margin for the Fixed Income Securities segment is calculated for each open margin account at the CCP with positions pending to be settled.

It is calculated for each security or asset (ISIN), and within each security it is broken down into four position blocks whose margin is calculated independently:

1. Buy/Sell transactions positions with an intended settlement date subsequent to the time of the calculation. This component is susceptible to 3 calculation scenarios, and the worst one is selected. The calculation varies if involving a net or a gross margin account.
2. Failed instructions positions.
3. Held instructions positions.
4. Cash only positions.

Within each block of positions, the margin may be broken down into three concepts:

- Variation Margin or Mark-to-Market (MTM).
- Initial Margin.

- Margin for covering positions to be settled only in cash.

II. ASSIGNMENT OF POSITIONS TO EACH POSITION BLOCK

1. Open buy or sell positions

The positions that will contain each of the following 3 scenarios are selected.

- All pending settlement positions.
- All pending settlement positions, excluding those with Intended Settlement Date (ISD) equal to the calculation date (D).
- All pending settlement positions, excluding those with Intended Settlement Date (ISD) equal to the calculation date (D) or the following business date (D+1).

Justification of the 3 scenarios: the offset between buy and sell positions in the same ISIN, corresponding to different settlement dates, in net margin accounts, can be broken down into D or D+1 settlement positions.

2. Failed transactions positions

The margin account may contain failed transactions from prior sessions.

Failed transactions may come from a Settlement Instruction that has not been fully or partially settled.

3. Held positions/instructions

Held positions/instructions will receive the same consideration as failed positions for the purposes of calculating margins.

4. Cash only positions

Cash only positions to be taken into account in the margin calculation may arise due to corporate events such as distribution (coupon payment) and transformation (final redemption).

III. MARGIN CONCEPTS: PARAMETERS, POSITIONS TO WHICH THEY APPLY AND CALCULATION ALGORITHM

1. Variation margin

It represents the change in value of the obligations pending to be settled from the time of registration until the trading session ends.

Two inputs are required for its calculation:

- Positions per margin account: The positions resulting from pending to be settled buy/sell transactions and failed positions are subject to a Variation Margin calculation.
- Reference Price for each security: BME CLEARING determines a reference price for each security using as a source the latest market price available at the time of valuation, provided by a relevant market vendor, expressed as a percentage of the nominal. For Bonds that pay coupons the Daily Settlement Price is equal to the sum of the ex-coupon price plus the accrued interest. For the calculation of the accrued interest, it will be considered the one corresponding to the following business day.

Calculation of the Variation Margin

For each ISIN, in each position block and scenario, the mark to market is calculated as the difference between the market value of the position less the cash amount.

- For net margin accounts, there is only one net position per ISIN.
- For gross margin accounts, there is a long position and a short position per ISIN.

Variation Margin formula is as follows:

VM of the long position = Market Value of the position – Current Cash Amount = (Reference price (%) * Notional) – Current Cash Amount

VM of the short position = Current Cash Amount - Market Value of the position = Current Cash Amount - (Reference price (%) * Notional)

Current Cash Amount:

If the period between the following business day of the date of calculation and the ISD is less than 365 days:

Current Cash Amount = Cash Amount / (1+ cash discount rate (%) * t /360)

If equal or higher than 365 days:

Current Cash Amount = Cash Amount / (1+ cash discount rate (%)) ^ t/360

Where:

$t = \text{ISD} - \text{Calculation Date} - 1$ = number of days from the following business day of the margin calculation date until the ISD.

The cash discount rate is indicated in the *Margin Calculation Parameters* Circular of the Segment.

If the specific contract has one or more coupon payments, a distinction will be made between buy/sell-back and repos contracts:

Buy/sell-back contracts

If the specific contract has one or more coupon payments between the second business day following the calculation date and the ISD, the current cash amount of the transaction will also be increased by the current amount of the interim coupon payments.

VM of the long position = Market Value of the position - (Current Cash Amount of the trade + Current interim Coupon Payments Amount)

VM of the short position = (Current Cash Amount of the trade + Current interim Coupon Payments Amount) - Market Value of the position

Where

Current interim Coupon Payments Amount = %Coupon x Notional / (1+ cash discount rate (%)) * t /360)

where

$t = \text{Payment coupon date} - \text{Calculation Date} - 1$

The cash discount rate is indicated in the *Margin Calculation Parameters* Circular of the Segment.

In order to obtain the current cash amount of an interim coupon payment, the discount yield curve corresponding to the period between the following business day of the calculation plus one business day and ISD will be used.

REPOs

If the specific contract incorporates one or more coupon payments between the following business day of the calculation date and ISD, one previous day to the coupon payment as applicable, the Variation Margin relative to the long position in REPO / short in securities will be adjusted from negative / debit form for the notional of the coupon.

VM of the long / short position = Sign x [Market Value of the position - Current Cash Amount of the trade+ MIN (0; Sign x Current interim Coupon Payments Amount)]

Where

Sign = +1 for the buyer of the securities; -1 for the seller.

$$\text{Current interim Coupon Payments Amount} = \% \text{Coupon} \times \text{Notional} / (1 + \text{cash discount rate} (\%) * t / 360)$$

where

t = Payment coupon date – Calculation Date -1

The cash discount rate is indicated in the *Margin Calculation Parameters Circular* of the Segment.

In order to obtain the current cash amount of an interim coupon payment, the discount yield curve corresponding to the period between the following business day of the calculation and the coupon payment date will be used.

2. Initial Margin

It represents the impact of the change in value of pending settlement obligations from the last price used in the margin requirement to the eventual effective closing of the position by the CCP due to a default.

The following inputs are required for its calculation:

- Margin account positions: Pending to be settled buy/sell transactions as well as failed and/or held transactions are subject to the calculation of the Initial Margin.
- Reference Price for each security: Will be the same price used for the Variation Margin calculation.
- Margin Interval: Each ISIN is associated with a Margin interval that corresponds to the residual maturity tranche which the ISIN belongs to, which is basically the estimated price fluctuation, with a confidence interval and a close-out period, and which is published in the *Margin Calculation Parameters Circular* for the Fixed Income Securities segment. This interval may be increased due to large positions, as explained later in this Circular.
- Offset Parameters: If two ISIN are correlated enough, a Margin credit will be applied for opposite positions in those ISIN. If one ISIN may be offset against several ISINs, a priority order is established.

In that case, the offset parameters for a certain ISIN associated to a specific Margin Class, published in the *Margin Calculation Parameters Circular*, are:

- Priority offset order if it can be offset against several ISINs
- Deltas to form 1 spread
- Margin credit for each ISIN liable to be offset

Calculation of the Initial Margin

Block of Buy/Sell Transactions:

The initial margin calculation is different whether it involves a net margin account or a gross margin account.

Net margin account:

For each ISIN and scenario the net position or net notional amount of all transactions in the scenario is calculated. The net notional to be delivered or received, in absolute terms, is multiplied by the initial margin interval applicable to the security and by the reference price.

$$\text{Initial margin} = \text{Reference price} * \text{Net Notional (in absolute terms)} * \text{Initial Margin interval}$$

For each block of buy/sell transactions, the difference between the Initial Margin and the Variation Margin is calculated. Then, the worst scenario for the ISIN is selected (the one that has the highest difference amount between Initial Margin and Variation Margin). The position in this scenario will be used to calculate possible offsetting amounts with other ISIN codes.

When the position includes securities with recognised correlation, (there can be ISINs belonging to the same maturity term or to different maturity terms otherwise within a country or ISINs belonging to different countries and maturity terms) the possible credit for opposite positions in correlated ISIN codes is calculated from the worst scenario of buy/sell transactions per ISIN code.

The offset priority will start with the combination of maturity terms in each country that has a greater priority, in accordance with what is published in the *Margin Calculation Parameters* Circular of the segment. It can involve ISINs belonging to the same maturity term with ISINs of the same tranche which are liable to be offset.

It will start with the ISINs to be offset combinations whose maturity dates are much closer. In the case of a same distance between redemption dates, as a second criterion the combination containing the ISIN with the longest redemption date will then be chosen first.

Finally, it will start with the combination of maturity terms between different countries and maturity terms.

For each offsetting position an Initial Margin credit will be calculated in accordance with the following formula:

$$\text{Margin Credit} = \text{offset position} * \text{credit} * \text{margin percentage}$$

Where:

$$\text{Offset position} = \text{Spread Notional} * \text{Notional to form one spread}$$

$$\text{Spread Notional} = \text{Min} [\text{ABS (Reference Price (\%)) ISIN A} * \text{Net Notional ISIN A} / \text{Deltas to form one spread ISIN A} / 100]; \text{ABS (Reference Price (\%)) ISIN B} * \text{Net Notional} / \text{Deltas to form one spread ISIN B} / 100]$$

The non-offset ISIN A position is calculated as follows:

$$\text{Non-offset position} = \text{Prior position} - \text{Position already offset}$$

Then the following position to offset combination is applied and this process is repeated following the priority order established in the *Margin Calculation Parameters* Circular until there is no combination of underlying securities liable to be offset.

Gross margin account:

For each ISIN and scenario the maximum between the purchases and the sales of securities of all transactions in the scenario is calculated. The number of securities to be delivered is multiplied by the margin interval applicable to the security and by the reference price.

$$\text{Initial margin} = \text{Maximum (Reference price} * \text{Notional purchased} * \text{Margin interval, Reference price} * \text{Absolute Value [Notional sold]} * \text{Margin interval)}$$

No offset between different ISINs takes place.

Block of failed transactions:

An Initial Margin will be calculated by applying the margin interval for the relevant ISIN to the Notional amount of the unsettled instruction, valued at the reference price.

$$\text{Initial margin} = \text{Reference price} * \text{Notional purchased} * \text{Margin interval} + \text{Reference price} * \text{Absolute Value [Notional sold]} * \text{Margin interval}$$

Block of held transactions:

An Initial Margin will be calculated by applying the margin interval for the relevant ISIN to the Notional amount of the unsettled instruction, valued at the reference price.

$$\text{Initial margin} = \text{Reference price} * \text{Notional purchased} * \text{Margin interval} + \text{Reference price} * \text{Absolute Value [Notional sold]} * \text{Margin interval}$$

Large positions

The position registered in each block / scenario is selected and the position of all ISINs belonging to the same maturity term is added together. If in a block / scenario the net position of a given term is greater than the average daily volume recorded (ADV according to the criteria published in the *Average Daily Volume Circular*), a percentage increase will be applied to the Margin Intervals applicable to all ISINs belonging to that term and in such block / scenario, thus assuming a longer estimated close-out period, in accordance with the parameters published in the *Additional Margins for Large Positions and for terms beyond 1 year in Fixed Income Securities Circular* of the Fixed Income Securities segment.

Operationally, this is equivalent to using a higher Margin Interval than the one used for the Initial Margin calculation.

Margin percentage net purchase positions = Initial Margin percentage

**** (1 +% increase for large positions)***

The resulting margin percentage for net purchases positions shall under no circumstances exceed 100%.

Thus, the Margin if a large position in an ISIN is recorded will be:

***Margin for purchased Large Positions = Notional * Reference Price * Margin Percentage *
(large positions increase)***

This algorithm applies to all blocks, except for the cash only positions block.

Extraordinary Margins for ISD higher than 365 days

The Margin percentage must be at least twice the base Percentage (without large positions) if between the calculation date and the ISD there are more than 365 days. Therefore,

Margin percentage = Max (Base margin percentage * (1+increase if there are large positions in place); 2 * Base margin percentage)

3. Margin for cash only positions

Net cash balance pending to be settled (negative), which only adds risk to the margin account's risk.

IV. MARGIN AT MARGIN ACCOUNT LEVEL

The margin is determined for each ISIN and each buy/sell transaction scenario as the difference between the Initial Margin and the Variation Margin.

The worst buy/sell transactions scenario for each ISIN is selected. If the required margin in such scenario is negative, this result can reduce the margin of other ISINs, not only from those belonging to the same maturity term, but also from the rest of the buy/sell transactions block.

The sum of the negative margins for a given ISIN coming from the buy/sell transactions scenario will be allocated on a pro-rata basis between those ISINs for which the worst case buy/sell transactions scenario is positive.

Finally, the margin corresponding to the remainder blocks (failed/held, cash adjustments) is added.

The result is the margin at margin account level.

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