

## Practice Note 7.23 — Additional Margins

Issue Date	Cross Reference	Enquiries
Added on 8 August 2016	Rule 7.20 and Rule 7.23	Please contact Risk Management: rmd@sgx.com

### 1. Introduction

- 1.1 Rule 7.20 states that margin requirements shall be prescribed by the Clearing House from time to time, and Rule 7.23 provides for the Clearing House to call for additional margins from one or more Clearing Members in certain situations. This Practice Note elaborates on the additional margins.
- 1.2 The objective of additional margin requirements is to provide greater assurance that unique risks which may potentially not be captured under the Clearing House's margin setting methodology are appropriately accounted for and collateralized. As risks unique to a Clearing Member attract additional margin rather than being mutualized through the Clearing Fund, it makes Clearing Members accountable for excessive risk they bring to the system.
- 1.3 The Clearing House conducts daily monitoring of Clearing Members' exposures and assesses the adequacy of the Clearing House and Clearing Members' resources using a comprehensive range of scenarios. In addition, as part of its continuing risk management process, the Clearing House monitors news and developments which may affect Clearing Members, and conducts risk-based inspections on Clearing Members' risk and credit management practices.
- 1.4 In the event that any of the circumstances specified in Rule 7.23 exist, the Clearing House may impose additional margin requirements. Such additional margin requirements may include, without limitation:
- (a) Default Fund risk add-on;
  - (b) Credit risk add-on;
  - (c) Liquidity risk add-on;
  - (d) Position risk add-on; and
  - (e) Discretionary risk add-on.
- 1.5 If the composition of a Clearing Member's portfolio calls for multiple add-ons, the Clearing House may at its discretion decide on an appropriate quantum sufficient to cover the risks.
- 1.6 For clarity, the additional margin requirements prescribed under this Practice Note do not count towards the sources of funds for the clearing fund as prescribed in Rule 7A.06 ("Clearing Fund").

1.7 Besides the add-ons described in paragraph 1.4 of this Practice Note, the Clearing House also imposes margin add-on on positions held in respect of Applicable Customer Accounts pursuant to Rule 7.30. The details are provided in Practice Note 7.30.

## **2. Default Fund risk add-on**

2.1 The Clearing House may impose a default fund risk add-on to mitigate risk arising from a Clearing Member's stress loss when its potential tail risk exposure is significant.

2.2 The Clearing House conducts daily stress testing of Clearing Members' outstanding positions in line with the CPMI-IOSCO<sup>1</sup> and global best practices to assess clearing fund adequacy. The test includes a comprehensive range of stressed scenarios, and clearing fund resources must be able to cover the simultaneous default of the Clearing Member and its affiliated Clearing Members with the largest aggregate loss ("Top 1"), and two other financially weakest Clearing Members ("Weak 1", "Weak 2").

2.3 While stress testing focuses on the mutualized resources to cover a default of the Top 1, Weak 1 and Weak 2, the Clearing House would also want to secure appropriate amount of resources from an individual Clearing Member with significant potential tail risk exposure. This provides a balance between mutualization and the defaulter pay principle. For guidance, the potential tail risk exposure is the worst loss estimated from different stressed scenarios, net of margins and any add-ons. The potential tail risk exposure is considered to be significant if:

- (a) the potential tail risk exposure of a Clearing Member and its affiliated Clearing Members ("Member Group") exceeds a percentage (a threshold as determined by SGX) of SGX-DC Clearing Fund resources ("Threshold 1"); or
- (b) the aggregate potential tail risk exposure of any Member Group, together with Weak 1 and Weak 2, exceeds a percentage (a threshold as determined by SGX) of SGX-DC Clearing Fund resources ("Threshold 2"). Threshold 2 will be higher than Threshold 1<sup>2</sup>.

2.4 The Clearing House will determine the quantum of the default fund risk add-on based on the potential tail risk exposure from each Clearing Member relative to each of the two thresholds, as described below:

- In respect of Threshold 1, the applicable add-on for a Member Group is equal to the difference between its potential tail risk exposure and the threshold;
- In respect of Threshold 2, the total applicable add-on is equal to the difference between (i) the potential tail risk exposure aggregated across the Member Group, Weak 1 and Weak 2, (provided the Member Group does not include Weak 1 or Weak 2) after offsetting any add-on arising from Threshold 1, and (ii) the threshold. The applicable add-on is then allocated to the Member Group, Weak 1 and Weak 2 proportional to their exposure; and

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<sup>1</sup> Principles for Financial Market Infrastructures issued by the Committee on Payments and Market Infrastructure (CPMI) and the Technical Committee of the International Organization of Securities Commissions (IOSCO)

<sup>2</sup> Threshold 1 and 2 is currently defined as 70% and 90% respectively, but may be revised from time to time.

- The add-on for a Clearing Member is equal to the sum of its applicable add-on arising from Threshold 1 and/or Threshold 2. The Clearing House may at its sole discretion not impose on Weak 1 or Weak 2 the add-on if it is not significant.

2.5 An illustration of the calculation is provided at the end of this Practice Note.

### **3. Credit risk add-on**

3.1 The Clearing House may impose a credit risk add-on if there are concerns regarding the solvency or credit-worthiness of a Clearing Member. For guidance, these concerns may be based on indicators that include, without limitation:

- (a) deterioration in the credit standing of the Clearing Member as assessed through SGX's internal credit risk rating model, downgrading of the credit rating or credit outlook of the member or its parent/affiliates by external credit agencies, widening credit default swaps of the member or its parent/affiliates;
- (b) adverse market sentiments/news or any other relevant indicators on the Clearing Member or its parent/affiliate, or when the Clearing House believes the Clearing Member or its parent/affiliate may be adversely affected by unstable market conditions or price fluctuations which the Clearing House deems a concern;
- (c) reduction of the Clearing Member's financial resources;
- (d) in the Clearing House's view, there is an increase in the Clearing Member's risk exposure, for example, increased operational risk due to unsound risk or credit practices or, that potentially places the Clearing House at greater risk; and
- (e) other specific issues or concerns relating to the Clearing Member, which may arise from SGX's on-site inspection, the Authority's audit findings; or frequent rule violations committed by the Clearing Member.

3.2 For guidance, the quantum of the credit risk add-on for Clearing Members will be determined by considering the following:

- (a) for a Clearing Member with credit standing the Clearing House deems equivalent to B rating and below (based on the indicators described in paragraph 3.1 of this Practice Note), the quantum is equal to the difference between the member's potential tail risk exposure and a threshold. This threshold<sup>3</sup> will be determined by SGX, as a percentage of actual SGX-DC Clearing Fund resources and will be lower than the Threshold 1 described in paragraph 2.3 of this Practice Note;
- (b) for a Clearing Member that clears Over-the-counter Financial Derivatives ("OTCF") Contracts, the quantum of the credit risk add-on will be based on the "Credit Rating

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<sup>3</sup> The threshold is currently defined as 15%, but may be revised from time to time.

Add-on” as provided in the OTCF Clearing Member Guide, provided it is not at the same time subject to the add-on described in paragraph 3.2(a) of this Practice Note; and

- (c) the Clearing Member's available financial resources, prevailing market conditions and the size of Clearing Member’s positions.

#### **4. Liquidity risk add-on**

4.1 The Clearing House may impose a liquidity risk add-on if there are liquidity concerns on a Clearing Member, such as not maintaining sufficient liquid resources to cover the potential funding gap for its variation margin.

4.2 The quantum of the liquidity risk add-on may be to close potential funding gap, taking into consideration any mitigating actions taken by the member. For guidance, the potential funding gap is estimated based on:

- (a) its potential variation margin impact over the next clearing day for its current day portfolio (on the assumption of static portfolio), and
- (b) the Clearing Member’s liquid resources that is available (to offset the potential variation margin impact), which includes its excess margin collateral held with SGX-DC, and credit lines granted by its settlement banks.

4.3 In the context of a Clearing Member that clears OTCF Contracts, a Liquidity Margin Multiplier applies in respect of its OTCF Contracts as provided in the OTCF Clearing Member Guide.

#### **5. Position risk add-on**

5.1 The Clearing House may impose a position risk add-on if:

- (a) for a Contract other than OTCF, a significant proportion of the open interest in the Contract is highly concentrated in a customer or a Clearing Member; or
- (b) for an OTCF Contract, a customer or a Clearing Member has gathered significant exposure to one or more bucket tenors.

5.2 The quantum of the position risk add-on should mitigate the potential slippage when liquidating a large portfolio. For guidance, before imposing position risk add-on for a Contract other than OTCF, the Clearing House may take into considerations the risk contribution from the Contract, and whether the concentration will be cured within a short period of time. For OTCF Contracts, reference may be made to the “Large Exposure Add-on” provided in the OTCF Clearing Member Guide.

#### **6. Discretionary risk add-on**

6.1 The Clearing House may impose a discretionary risk add-on to a Contract or on Clearing Members with positions in a Contract to cover unique risk that may not be captured in the

estimate of the Contract’s potential future exposure or the conditions described in the earlier paragraphs, or to cover any types of risk arising from exceptional market conditions. The quantum of the add-on is discretionary depending on the circumstances that necessitate it. The add-on may be imposed as an absolute dollar amount, or as a percentage add-on to a Clearing Member's maintenance margin requirements, or as percentage add-on to the Contract’s margin.

6.2 An example is the gap risk associated with FX-related Contracts that may arise from potential changes in currency regimes or political environment. This is known as the “Gap Risk Add-on” in the OTCF Clearing Member Guide for Clearing Members that clear OTCF Contracts. To determine the quantum of the FX gap add-on, the Clearing House may, but not limited to, make reference to similar events in the past for relevant currency pairs.

**ILLUSTRATION ON THE CALCULATION OF THE DEFAULT FUND RISK ADD-ON**

Assumptions:

- (i) Actual Clearing Fund resource is \$800.
- (ii) Assume SGX assigns percentages of 70% and 90% to Threshold 1 and Threshold 2 respectively.  
 Threshold 1: 70% x 800 = 560 (Any Member Group)  
 Threshold 2: 90% x 800 = 720 (Any Member Group + Weak 1 + Weak 2)

Example 1 — Add-on applies to a Member Group X only

Assume only one stress testing scenario generates exposure that exceed the thresholds,

- Exposure (X + Weak 1 + Weak 2) = 700
- Exposure (X) = 640
- Exposure (Weak 1) = 60
- Exposure (Weak 2) = 0

		Loss exceeds threshold		Potential add-on	
	Loss	Threshold 1	Threshold 2	Threshold 1	Threshold 2
<b>X + Weak 1 + Weak 2</b>	700		No		
<b>X</b>	640	Yes		640-560=80	
<b>Weak 1</b>	60	No			
<b>Weak 2</b>	0	No			

- Therefore, credit risk add-on of 80 applies to Member Group X only.

Example 2 — Add-on applies to a Member Group X, and Weak 1 and Weak 2 by apportionment

Assume only one stress testing scenario generates exposure that exceed the thresholds,

- Exposure (X + Weak 1 + Weak 2) = 760
- Exposure (X) = 520
- Exposure (Weak 1) = 200

- Exposure (Weak 2) = 40

	Loss	Loss exceeds threshold		Potential add-on	
		Threshold 1	Threshold 2	Threshold 1	Threshold 2
<b>X + Weak 1 + Weak 2</b>	760		Yes		760-720=40
<b>X</b>	520	No			
<b>Weak 1</b>	200	No			
<b>Weak 2</b>	40	No			

- Therefore, credit risk add-on of 40 applies to (X + Weak 1 + Weak 2). The add-on for each of the three members will be proportionate to their share of the aggregate exposure.
  - For X, add-on =  $520/(520+200+40)*40 = 28$
  - For Weak 1, add-on =  $200/(520+200+40)*40 = 11$
  - For Weak 2, add-on =  $40/(520+200+40)*40 = 2$

Example 3 — Add-on applies to a Member Group X, and Weak 1 and Weak 2 by apportionment

Assume only one stress testing scenario generates exposure that exceed the thresholds,

- Exposure (X + Weak 1 + Weak 2) = 820
- Exposure (X) = 640
- Exposure (Weak 1) = 180
- Exposure (Weak 2) = 0

	Loss	Loss exceeds threshold		Potential add-on	
		Threshold 1	Threshold 2	Threshold 1	Threshold 2
<b>X + Weak 1 + Weak 2</b>	820		Yes		820-720=100
<b>X</b>	640	Yes		640-560=80	
<b>Weak 1</b>	180	No			
<b>Weak 2</b>	0	No			

- Based on Threshold 1, credit risk add-on of 80 applies to the X.
- Based on Threshold 2, there is a balance of 20 since an add-on of 80 already applies to X from Threshold 1. This balance will be apportioned among X, Weak 1, and Weak 2.
  - For X, add-on from Threshold 1 = 80
  - For X, add-on from Threshold 2 =  $560/(560+180)*20 = 15^{\wedge}$
  - For Weak 1, add-on =  $180/(560+180)*20 = 5$
  - For Weak 2, add-on = 0

<sup>^</sup> The loss for X is taken as 560 here because it has been partially offset by the 80 from Threshold 1. (When X exceeds Threshold 1, the calculation for its pro rata assignment under Threshold 2 will be based on Threshold 1.)

Example 4 — Add-on applies to a Member Group X, a Member Group Y, and Weak 1 and Weak 2 by apportionment

Assume a stress testing scenario generates exposure that exceed the thresholds,

- Exposure (X + Weak 1 + Weak 2) = 820
- Exposure (X) = 640
- Exposure (Weak 1) = 180
- Exposure (Weak 2) = 0

Assume a second stress testing scenario generates exposure that also exceed the thresholds,

- Exposure (Y + Weak 1 + Weak 2) = 790
- Exposure (Y) = 620
- Exposure (Weak 1) = 170
- Exposure (Weak 2) = 0

First stress scenario					
		Loss exceeds threshold		Potential add-on	
	Loss	Threshold 1	Threshold 2	Threshold 1	Threshold 2
<b>X + Weak 1 + Weak 2</b>	820		Yes		820-720=100
<b>X</b>	640	Yes		640-560=80	
<b>Weak 1</b>	180	No			
<b>Weak 2</b>	0	No			

Second stress scenario					
		Loss exceeds threshold		Potential add-on	
	Loss	Threshold 1	Threshold 2	Threshold 1	Threshold 2
<b>Y + Weak 1 + Weak 2</b>	790		Yes		790-720=70
<b>Y</b>	620	Yes		620-560=60	
<b>Weak 1</b>	170	No			
<b>Weak 2</b>	0	No			

- Based on Threshold 1, credit risk add-on of 80 and 60 applies to X and Y respectively.
- Both scenarios have to be considered to determine the add-on arising from Threshold 2.
- For first scenario (X + Weak 1 + Weak 2), balance of 20 applies.
  - For X, add-on =  $560 / (560 + 180) * 20 = 15$
  - For Weak 1, add-on =  $180 / (560 + 180) * 20 = 5$
  - For Weak 2, add-on = 0
- For second scenario (Y + Weak 1 + Weak 2), balance of 10 applies.
  - For Y, add-on =  $560 / (560 + 170) * 10 = 8$
  - For Weak 1, add-on =  $170 / (560 + 170) * 10 = 3$
  - For Weak 2, add-on = 0
- Therefore the final add-on is:
  - For X, add-on =  $80 + 15 = 95$
  - For Y, add-on =  $60 + 8 = 68$
  - For Weak 1, add-on = higher of (5, 3) = 5
  - For Weak 2, add-on = 0