

 Instruction	N°	Title
	IV.2-2	MARGIN REQUIREMENTS ON DERIVATIVES MARKETS

Pursuant to Chapter 2 of Title IV of the Clearing Rule Book.

For any information regarding Margins payment arrangement, Collateral accepted and cash payments please refer to Instruction IV.4-1.

For any information regarding Margin requirements applied to Transactions on Securities, which must be physically settled and which are registered in the Clearing System upon the Exercise or Assignment of option contracts or upon the expiry of futures contracts, please refer to Instruction IV.2-1.

CHAPTER 1 SCOPE

Article 1

This Instruction describes the method for calculating Margin requirements and payment obligations, as well as the means to fulfil these requirements on the Derivatives Markets.

CHAPTER 2 CALCULATION METHODOLOGY

Section 2.1 Initial Margins

Article 2 - Common Provisions

Initial Margin covers the potential future price fluctuations in case of unfavourable markets movements.

Initial Margins for futures and option contracts are calculated using SPAN® algorithm, specially designed for the Derivatives markets.

The detailed methodology is available on LCH SA web site: <https://www.lch.com/risk-management/risk-management-sa/sa-margin-methodology/sa-derivatives>

Article 3 - Initial Margin

3.1 The Initial Margin payable on Open Positions must cover the potential price fluctuation in a confidence level defined by LCH SA, as published on the website.

3.2 LCH SA may allow a reduction of the Initial Margin to take into account the risk offsets under certain assumptions and constraints.

3.3 If the Initial Margin requirement is greater than the value of the Collateral deposited, a call for covering this requirement is made.

3.4 If the Initial Margin requirement is less than the value of the Collateral deposited, refunds are made according to the conditions and timetable set forth in the Treasury Department procedures manual.

3.5 As part of the calculation process which determines Initial Margin on Open Positions, for option contracts, LCH SA uses standard valuation models which are generally accepted for the type of

products for which they are used (for example Cox, Ross & Rubinstein for equity options, and Black 76 for index, interest rate and commodities options).

3.6 LCH SA inputs the following parameters into the model:

- The price fluctuation range of the underlying asset;
- Interval between each fluctuation assumption;
- Benchmark volatility fluctuation range.

The values of these parameters are determined by LCH SA according to the risk level against which LCH SA intends to protect itself. These values are published in a Notice issued by LCH SA.

Section 2.2 Variation Margin and Option premium

Article 5 - Variation Margin for futures contracts

For futures contracts Variation Margin are calculated from price fluctuations based on the historical data.

Variation Margin on futures contracts is calculated on a daily "marked to market" basis for each Margin Account, Financial Instrument and expiry.

The prices used for the calculation are as follows:

- The previous day's Open Position is valued at the previous day's Settlement Price;
- The day's Transactions are valued at the recorded trade prices.

The end of the day Open Position is marked to market at the day's Settlement Price (i.e. long Open Positions are hypothetically "sold out" and short Open Positions are bought in").

Article 6 - Option Premium and options marked-to-market

The Option Premium is calculated on the basis of the Transaction price and with regard to the characteristics of each option contract and are exchanged through LCH SA between members.

The Open Positions on option contracts are daily valued by LCH SA. This corresponds to the option marked-to-market and is included in the Initial Margin amount required on those contracts.

Section 2.3 Additional Margins

In addition to the Margins calculated and called pursuant to Article 4.2.0.1 of the Rule Book and related Instructions, LCH SA may call for additional margins pursuant to Article 4.2.0.3 of the Rule Book. Specifics relating to additional margins are set forth in a Notice.

Section 2.4 Intra-day Margins

Article 7- General provision

In addition to the Variation Margins and Initial Margin calculated and called pursuant to Article 4.2.0.1 of the Rule Book and related Instructions, and pursuant to article 4.2.0.2 of the Rule Book, LCH SA calculates Intra-day Margins.

Intra-day Margins are calculated using SPAN® algorithm, specially designed for the Derivatives Markets and take into account amounts of variation margins due by the Clearing Member and Option Premium.

Article 8 - Revaluation scope

The revaluation process here discussed, and as described in a Notice, applies to the prices of both Derivatives instruments and their related underlying instruments.

Article 9 - Intra-day Margin Session

Intra-day Margins calculation is performed several times per Clearing Day in the course of Intra-day Margin calculation sessions and consists in revaluing Clearing Members Open Positions and Margins on the basis of real-time prices and Open Positions. This calculation process may result in an Intra-day Margin call in the conditions described in this Instruction and related Notice.

Each Intra-day Margin calculation session is qualified as either “With cover call” or “Without cover call” as set-up in a Notice.

In any event, there is at least one “With cover call” Intra-day session per Clearing Day. However, LCH SA can as it deems necessary re-qualify any “Without cover call” sessions into “With cover call” sessions or the other way around.

A “With cover call” session implies that for each Clearing Member LCH SA compares the amount of Intra-day Margin requirement to the amount of the latest cover call.

Article 10 - Intra-day Margin Calculation

LCH SA proceeds to the following calculations for each Clearing Member:

1 – Calculation of Open Positions per Margin Account

LCH SA performs snapshots on Open Positions:

Each Open Position is valued, applying the real time prices and revaluated prices upon pricing models used within SPAN® algorithm per options.

2 – Intra-day Margins calculation at Margin Account level

Based upon these Open Positions, LCH SA calculates Variation and Initial Margins applying the same methodologies as described under Chapter 2 of this Instruction.

The Intra-day Margin requirement is the aggregate amount of the revaluation of the Initial Margins, Variation Margins and Option Premiums.

LCH SA compares the amount of Intra-day Margin requirement to the amount of the latest cover call. It then performs the following process:

- For each Clearing Member (at Collateral Account level) for which:

$$\text{Latest cover call} < \text{Intra-day Margins requirements}$$

LCH SA values the amount of existing Collateral and compares such amount to the amount of Intra-day Margin requirement.

And then,

- For each Clearing Member (at Collateral Account level) for which as a result of such comparison it appears that:

$$\text{Existing valued Collateral} < \text{Intra-day Margin requirement}$$

LCH SA actually performs an Intra-day Margin call amounting to the difference between the Intra-day Margin requirement and the Existing valued Collateral.

Collateral valuation: There is at least one Intra-day Margin calculation session “With cover call” where collateral is valued. The details of the collateral valuation schedule are set out in a Notice.