

CloseUp

Service Description - SIX x-clear Ltd

Central Counterparty for the clearing of bonds on SIX Swiss Exchange

July 2009



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1.0 Introduction

SIX x-clear clears trades in equities and exchange-traded funds (ETF) concluded at SIX Swiss Exchange. With the introduction of clearing services for bonds, members of SIX x-clear are offered the clearing of eligible bond trades executed on SIX Swiss Exchange.

The primary functions of a Central Counterparty (CCP) are:

- to ensure post-trade anonymity in order to prevent market distortions;
- to eliminate bilateral counterparty risks from trade date to settlement of a trade – a requirement that is gaining in importance due to the globalisation of electronic trading platforms;
- to permit settlement netting and, in consequence, reduce settlement volumes and costs.

The degree of importance attached to these three functions differs between market participants and depends on the developments in the financial markets. Along with the netting functionality, risk minimisation plays a major role: due to the fully-automated matching of orders on electronic trading platforms, a trading party is not free to choose its counterparty. In view of the continued opening up of markets, stock exchange participants find it increasingly difficult to assess the counterparty risk since they no longer form part of a local, manageable group.

The clearing service is offered to members of SIX x-clear and comprises the clearing of eligible bond trades executed on SIX Swiss Exchange and settled at SIX SIS. SIX x-clear is a wholly-owned subsidiary of SIX Group Ltd, the integrated Swiss financial market infrastructure provider.



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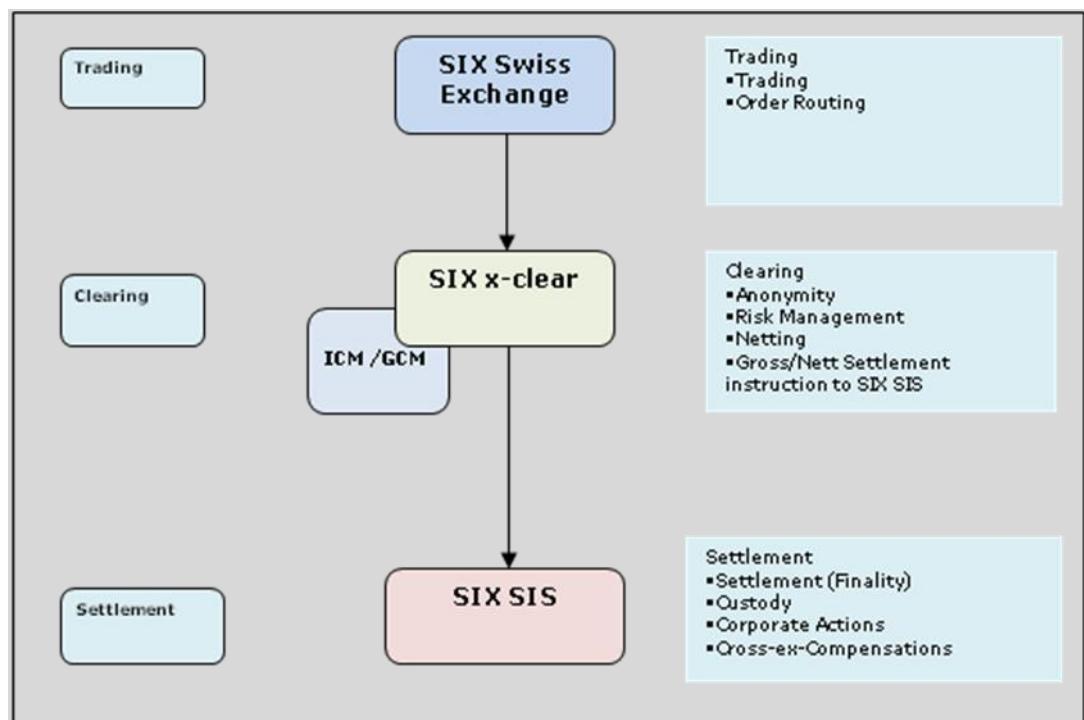
2.0 Concept of the CCP

2.1 Clearing

As a post-trading process, clearing comprises the efficient handling of risks inherent in concluded but still unfulfilled (trading) contracts. The CCP steps into the contracts as intermediary and represents the buyer to each seller and the seller to each buyer to eliminate the counterparty risk.

2.2 Clearing and settlement model

SIX x-clear offers clearing services for CHF bonds listed on SIX Swiss Exchange based on a sole CCP model. The place of settlement continues to be SIX SIS.



2.3 SIX x-clear as CCP

SIX x-clear has been recognised by the UK Financial Services Authority (FSA) as a Recognised Overseas Clearing House (ROCH) under the Financial Services and Market Act 2000 (FSMA) since 2004. The company also has a banking licence under Swiss law and is thus regulated and supervised by the Federal Financial Market Supervisory Authority (FINMA) and the Swiss National Bank. SIX x-clear started business operations in May 2003.

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Besides clearing bond trades executed on SIX Swiss Exchange, SIX x-clear offers clearing services for equities and exchange-traded funds (ETF) on different exchanges, such as the London Stock Exchange (LSE) and SIX Swiss Exchange. Integrated clearing services across different European markets and multiple asset classes enable SIX x-clear to provide cost-efficient services for its clearing members without the need for members to have additional interfaces. New members can choose one of the interface options to avail themselves of the SIX x-clear services.

SIX x-clear performs the following functions:

- Taking over counterparty risk: SIX x-clear automatically acts as counterparty for all its members trading clearing-eligible bonds at SIX Swiss Exchange. When a trade is executed on the trading platform (matching), a contract resulting from this trade is no longer concluded between the two stock exchange participants; instead, the CCP steps into the trade by representing the buyer to each seller and the seller to each buyer.
- Post-trade anonymity: As clearing house, the CCP occupies an intermediary position between the trading parties. This ensures full post-trade anonymity.
- Settlement netting: Settlement netting allows for the offsetting of delivery and payment obligations, which in turn reduces the overall settlement volume and the number of delivery instructions. The netting service is optional.
- Risk management: Central risk management serves to determine the members' individual risk positions and margin requirements by considering trades originating from different exchanges. Compared to calculation on a gross basis, net exposure – i.e. the offsetting of risk positions – reduces the total collateral to be pledged.



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3.0 Membership of SIX x-clear

3.1 General requirements

The general membership requirements are published on the SIX x-clear website www.ccp.sisclear.com.

To have trades executed on SIX Swiss Exchange and cleared by SIX x-clear, members of SIX x-clear are also required to be members of SIX Swiss Exchange and participants of SIX SIS¹.

Each member must comply with the infrastructure requirements of SIX Swiss Exchange, SIX x-clear and SIX SIS, as applicable.

3.2 Member structure

Two categories of clearing membership are available at SIX x-clear:

- Individual Clearing Member (ICM)
- General Clearing Member (GCM)

Unlike ICMs, GCMs may provide clearing services for other SIX Swiss Exchange participants without clearing membership (so-called Non-Clearing Members, NCM).

3.3 Individual Clearing Member (ICM)

ICMs provide clearing for both their own SIX Swiss Exchange transactions and transactions effected by their clients by having a contractual relationship with the CCP on a principal basis.

3.4 Minimum rating

An external, long-term counterparty rating of A-/A3 or better is expected. The second highest rating available from the rating agencies is used. If no external rating is available, SIX x-clear carries out an internal rating by means of benchmarking.

Although the rating represents no criterion for exclusion, it has an impact on pricing and the determination of the amount of collateral to be provided for margining.

¹ For custody of SIX x-clear collateral and monthly fee collection.

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3.4.1 Default Fund

Please refer to chapter 5.6.

3.4.2 Margining

The risk models of SIX x-clear uses a product-specific margining calculation which consider the risk factors in the respective asset class. SIX x-clear calculates the open positions and margins for bonds and equities separately. The total margin requirement is the sum of margin requirements for bonds and equities. The margining process for bonds is specified below:

The initial margin for bonds is calculated in real time based on the net exposure of all open contracts per security (bonds cleared) and currency combination held in the clearing account. The margin requirement is calculated on the basis of market and member specific risk factors. Market specific risk is measured according to a Value-at-Risk (VaR) based risk model, using a historical approach. The member's risk rating is used to calculate the member specific risk factor. For the calculation of the initial margin for bonds, the bonds traded on SIX Swiss Exchange are allocated to different bond risk buckets, depending on a security's VaR. VaR for bonds is derived on the basis of historic changes in bond yields and the modified duration of the bond.

Opposing positions within and across a bond risk bucket are netted using intra-and inter-bond risk bucket coefficients, respectively. The process of computing the initial margin for bonds is explained in detail later. Depending on the member's rating, the margins are increased by the applicable risk rating coefficient.

Additionally, the variation margin for bonds is calculated hourly during market hours on the basis of the mark-to-market valuation of the net positions of all open contracts per security held by a member in a clearing account.

A member's total margin requirement is computed by considering the margin requirement in equities and bonds. For details on the equity margining model, please refer to the published Service Description for equities.

3.5 General Clearing Members (GCM)

GCMs provide clearing of their own SIX Swiss Exchange transactions as well as transactions effected by their clients and third parties, i.e. SIX Swiss Exchange participants without direct access to a clearing house. The GCM is responsible for compliance of its NCM with all rules and regulations of SIX x-clear.

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3.5.1 Minimum rating

The minimum rating required is A+/A1 (also refer to chapter 3.3.1).

3.5.2 Default Fund

Please refer to chapter 5.6.

3.5.3 Margining

Please refer to chapter 3.3.3.

The GCM is obliged to demand from its NCM margins that equal or exceed its own margins.

3.5.4 Operational capabilities

Since GCMs are also responsible for clearing transactions of third parties (i.e. its NCMs), they must ensure smooth operation of their trading, operating and settlement systems as well as availability of sufficient human resources.

3.5.5 Duty of disclosure

The GCM is obliged to disclose the identity of the NCMs to SIX x-clear.

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4.0 Money/Custody account structure

4.1 Clearing

4.1.1 Clearing accounts

The member's open positions are recorded in clearing accounts. They are maintained at asset class level within the clearing accounts and segregated into bonds and equities. Members have the option to clear their own trades in a "home" clearing account and client trades in a "client" clearing account.

4.1.2 Margining

Members must maintain money and custody accounts for collateral management to clear trades through SIX x-clear. This allows for the management of collateral for margin and Default Fund requirements. Members can use the same collateral accounts for clearing of all equity trades executed on the different exchanges supported by SIX x-clear and bond trades executed on SIX Swiss Exchange. A separate collateral account is kept per Default Fund. The money and custody accounts listed below are to be kept with SIX SIS on behalf and for account of SIX x-clear for collateral management purposes.

4.1.2.1 Collateral accounts for margins

SIX x-clear opens collateral accounts (the same can be used for clearing equity and bond trades) with SIX SIS in the name of SIX x-clear for members using the SIX SIS collateral management facility to meet margin requirements. These accounts are used to transfer the margins provided. The collateral is transferred to SIX x-clear as an irregular pledge with the right of SIX x-clear to re-use the collateral.

The member can use the following collateral accounts:

Custody collateral account for margin-eligible securities

- Securities collateral can be provided by transferring from the member's custody account with SIX SIS.

Cash collateral account for margin-eligible currencies

- Cash can be provided from accounts held with SIX SIS or SIC.

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4.1.2.2 Dispo collateral account

SIX x-clear opens dispo collateral accounts with SIX SIS for each member. These accounts are held in the name of the member and are linked with the member's SIX x-clear collateral accounts.

4.1.3 Default Fund collateral account

Default Fund contributions are not mandated at asset class level. Members make a single contribution for clearing of all equity and bond trades executed on SIX Swiss Exchange. To enable members to meet the Default Fund requirements, SIX x-clear opens a collateral account (custody and/or money) with SIX SIS for each Default Fund. These accounts are held in the name of the member and are used to transfer the collateral provided. A separate collateral account is kept per Default Fund. Remittance of the pledged assets is effected only via one of the collateral accounts. Subsequently, SIX x-clear allocates the pledged assets to the respective collateral accounts per Default Fund. The accounts will be in the name of the SIX x-clear members. SIX SIS is pledge holder. The contents of these collateral accounts will be pledged to SIX x-clear by means of a regular pledge.

4.2 Settlement

Bond trades effected on SIX Swiss Exchange and cleared by SIX x-clear are settled at SIX SIS.

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5.0 Risk management

As CCP for SIX Swiss Exchange bond trades, SIX x-clear assumes the risk on the buy/sell side and is liable towards the respective members for the fulfilment of obligations (both on the cash and the securities side) arising from such trades. SIX x-clear guarantees the fulfilment of these obligations even in the event of default of a member; however, it does not guarantee timely execution of the transactions on the settlement date.

Clearing information such as open positions, margin details, the collateral placed for margins and the collateral utilisations can be viewed via online queries sent from the user's SIX x-clear interface. Open positions and margin details can be viewed at asset class level (bond and equity).

5.1 Objectives/Overview

The primary objective is to minimise potential risks through effective and accurate risk management. In the event of default of a member, the risk should be primarily borne by the defaulting member itself. Correspondingly, the following measures are employed to minimise risk:

- Safeguarding against the market risk to be expected subsequent to any default of a member by means of the margins and collateral deposited by the member.
- Pledging of collateral in the Default Fund to cover unpredictable losses.

5.2 Risk management process

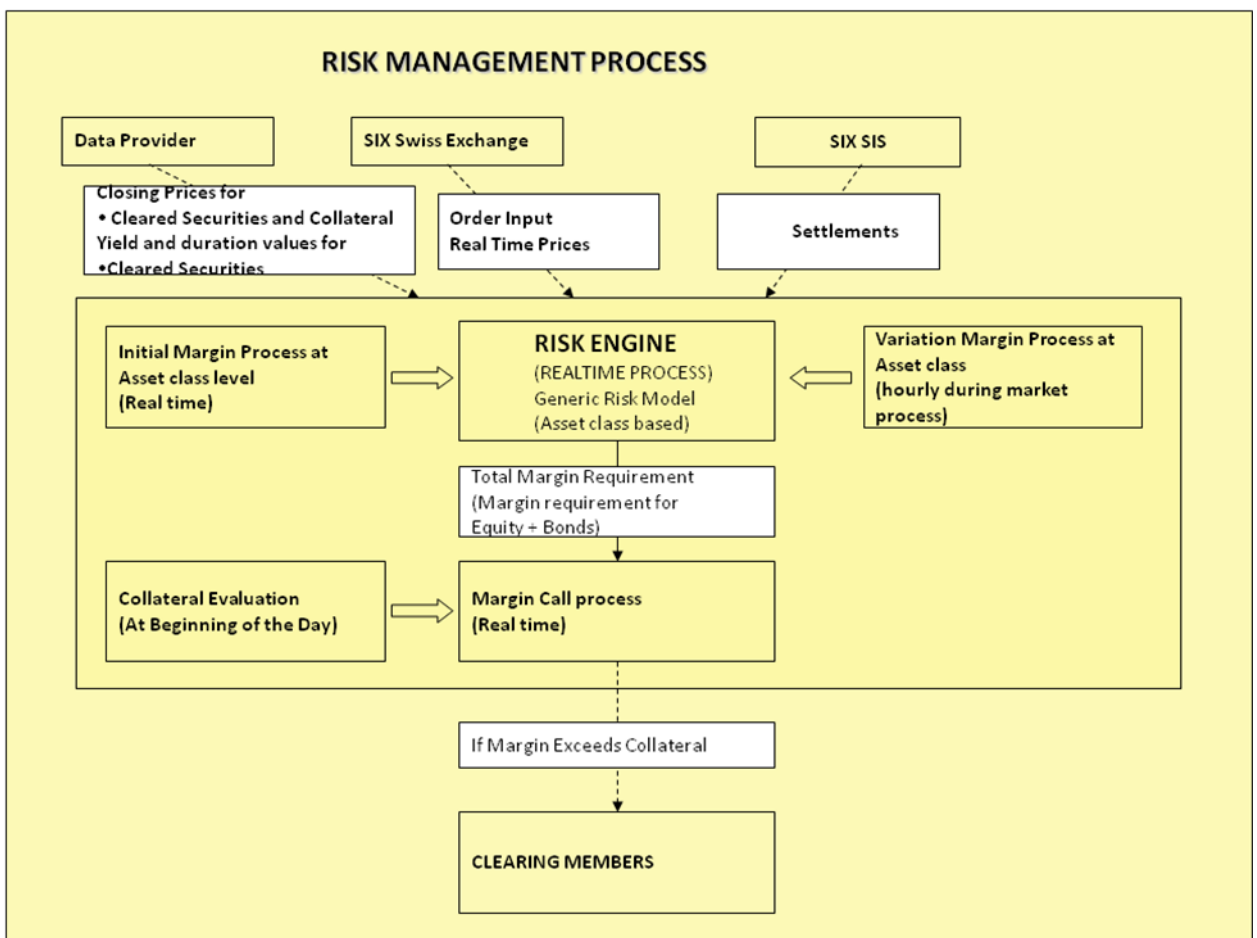
The following diagram provides a high-level overview of the risk management process:

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5.3 Open positions

Initial and variation margin is applied on a clearing account's open positions on SIX Swiss Exchange bond trades. All unsettled SIX Swiss Exchange bond trades on a member's clearing account are summarised per security and currency (of trade) into one position called "open bond position". Open positions are computed in real time by SIX x-clear and also include unsettled corporate action claims.



The following transactions impact a clearing account's "open bond positions":

- A new clearing-eligible SIX Swiss Exchange bond trade received
- Settlement of SIX Swiss Exchange bond trades
- Corporate action claim when the transaction becomes eligible for claims/compensation due to an appropriate corporate action

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- Settlement/Booking of such claims/compensation
- Cancellation of settlement order (possible during corporate action transformation).

The process of computing "open bond positions" nets all unsettled SIX Swiss Exchange bond trades, provided they are on the same security, clearing account and currency. Hence, the "open bond positions" for a clearing account are the same whether a member opts for settlement netting or not. A clearing member can obtain details of its open positions at asset class level at the end of day via a data format report or an online query.

5.4 Margins

Risk management consists of the following processes:

- Calculation of margin requirements at asset class level
- Valuation of collateral
- Checking of margin coverage
- Margin call

The daily valuation of custody collateral is normally based on the previous day's closing price of the respective securities.

The initial margin of bonds is the estimate of the market risk inherent in a clearing member's open bond positions. It is designed to cover the CCP for the market risk it becomes exposed to for the period between the last margin cycle prior to a member's default and the close-out of the defaulting member's unsettled positions by the CCP.

The variation margin of bonds covers the mark-to-market fluctuations for a clearing member's open positions in bonds. The variation margin helps a CCP to protect itself against losses due to a clearing member's open positions. In case of gains in a clearing member's open positions due to favourable price movements, the variation margin offsets the initial margin requirement.

The member's margin requirement for SIX Swiss Exchange bond trades is computed in CHF.

Assuming that a member trades in both bonds and equities, the total margin requirement of the member is the sum of the margin requirements for bond and equity trades.



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5.5 Calculation of margins

Open bond positions form the basis on which the initial margin and the variation margin for bonds are computed.

5.5.1 Initial margin (IM)

The calculation of the initial margin is based on the VaR of the underlying securities. With this model, margins are grouped according to the volatility of the securities and debited in real time.

VaR is defined as the maximum possible loss for a given financial portfolio with a given confidence level.

For each clearing-eligible bond, a 7-day yield VaR is periodically computed based on a yield-to-maturity² history. In addition to the long-term yield VaR based on yields over the past two years, a short-term yield VaR based on yields over the past three months will be determined. The procedure for computing the yield VaR for a bond is as follows:

- Compute 7-day historic yield differences³ using a 2-year or 3-month yield history
- Arrange such 7-day yield differences in descending order (largest positive return on top)
- Assuming that, for 500 7-day yield differences, the sixth largest positive yield difference is the one which has not been exceeded in more than 1% of the times. Determination of the short-term yield VaR is also based on a confidence level of 99%. If the short-term and the long-term yield VaR deviate, the higher of the two will be applied as yield VaR per bond ISIN.

In a next step, the yield VaR is transformed into a price VaR through multiplying it by the modified duration⁴ of the respective bond. Hence

² The yield-to-maturity is the yield promised to the bondholder on the assumption that the bond will be held to maturity, that all coupon payments and the principal payments will be made and that coupon payments are reinvested at the bond's promised yield at the same rate as invested. It is a measure of the return of the bond which is identical to the calculation of internal rate of return.

³ The 7-day yield difference of a particular bond at end of day t is given by $\Delta y_t = y_t - y_{t-7}$ where y_t is the yield to maturity of the bond at the end of day t and y_{t-7} is its yield seven days earlier.

⁴ The modified duration measures the sensitivity of the bond's price to interest rate movements. It represents the percentage change in the bond price if the interest rate

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Price VaR of the security = Yield VaR of the security X Modified duration of the security

The price VaR is recalculated and adjusted every week. In case of volatile market conditions, it may also be calculated on an ad hoc basis, if required.

5.5.1.1 Risk buckets

SIX Swiss Exchange bonds are grouped in bond risk buckets based on their price VaR values. There are six bond risk buckets with the following parameters (however, this setup could undergo changes based on the back-testing results and the confidence level achieved):

Bond risk bucket name	Minimum price VaR	Minimum price VaR	Initial margin (%)
BU01 Bond	0.00	1.50	0.75
BU02 Bond	1.50	3.00	2.25
BU03 Bond	3.00	4.50	3.75
BU04 Bond	4.50	6.00	5.25
BU05 Bond	6.00	7.50	6.75
BU06 Bond	7.50	and above	8.25

The process of forming the bond risk buckets always follows the computation of VaR, which is done weekly during normal market conditions.

Risk bucketing is maintained at asset class level. The risk buckets for equities are different from those for bonds.

5.5.1.2 Risk netting coefficient I (intra-bucket netting coefficient, or Intra-BNC)

Opposing open positions within a bond risk bucket have the effect of reducing the market risk posed by such open positions. Intra-BNC is designed to give effect to the high level of correlation between various securities comprised in a bond risk bucket, especially during

changes by 100 basis points (i.e. 1%). The modified duration is defined by the derivative of the bond's price function with respect to the interest rate divided by the price of the bond:

$$D_{Mod} = \frac{dP}{dy} \cdot \frac{1}{P} = -\frac{1}{1+y} \cdot \sum_{t=1}^T \frac{t \cdot C_t}{(1+y)^t} \cdot \frac{1}{P}$$



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volatile market moves. Opposing open positions within a bond risk bucket are netted off using the Intra-BNC.

The following example, using an Intra-BNC of 0.80, explains the process:

Risk bucket	Security	Long or short	Open amount (CHF)	Initial margin (%)	Initial margin (CHF)	Bucket initial margin (CHF)
BU02 Bond	A	Long	1000	7.50	75.00	75-(52.5 * 0.80) = 33.00
	B	Short	-700		-52.50	
BU03 Bond	C	Long	400	12.50	50.00	100-(50*0.80) = 60.00
	D	Short	-800		-100	

Bucket initial margin = (higher of "bucket IM_{Long}" or "bucket IM_{Short}") less "intra-bucket margin offset", where

- bucket IM_{Long} is the absolute sum of IM for all long positions within a bond risk bucket;
- bucket IM_{Short} is the absolute sum of IM for all short positions within a bond risk bucket;
- "intra-bucket margin offset" is the reduction of margin due to opposing positions within a bond risk bucket; this is equal to (the lower of bucket IM_{Long} or bucket IM_{Short}) X Intra-BNC.

Intra-bucket netting is performed for bonds separately. Hence, open positions in bonds will never be netted off with open positions in equities.

5.5.1.3 Risk netting coefficient II (inter-bucket netting coefficient, or Inter- BNC)

Similar to opposing positions within a bond risk bucket, opposing net positions across bond buckets also have the effect of reducing the market risk. The inter-BNC is applied to net positions across bond risk buckets and has the effect of reducing the initial margin of bonds in the case of opposing net positions across different bond risk buckets. The inter-BNC is applied at the level of margins. The objective of introducing the inter-BNC is to reduce margins to account for the existence of predominantly opposing positions in different bond risk buckets of bonds.

The following example uses an Inter-BNC value of 0.40 (the current value):

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Risk bucket	Security	Long or short	Open amount (CHF)	Initial margin (%)	Initial margin (CHF)	Bucket initial margin (CHF)	Net bucket IM (CHF)	Inter-bucket margin offset (CHF)	Total initial margin (CHF)
BU02 Bond	A	Long	1000	7.50	75.00	75-(52.5 * 0.80) =	22.50	22.50*0.40 = 9.00	33+60-9 = 84.00
	B	Short	-700		-52.50	33.00			
BU03 Bond	C	Long	400	12.50	50.00	100-(50*0.80) =	-50.00		
	D	Short	-800		-100.00	60.00			

Each bond bucket would have one "net bucket IM", which could be either positive or negative. Positive values of "net bucket IM" should be added across all risk bond buckets to arrive at the "total net long IM". Similarly, negative values of "net bucket IM" should be added across all bond risk buckets to arrive at the "total net short IM". The smaller of these two figures (in absolute) multiplied by the Inter-BNC is the value by which margins would have to be offset (inter-bucket reduction).

Total IM = \sum (IM for each bucket) less "inter-bucket margin offset", where

- " \sum (IM for each bucket)" is the sum of margins for all bond risk buckets; "IM for each bucket" incorporates the effect of Intra-BNC;
- "inter-bucket margin offset" is the amount by which margins would be reduced to account for the opposing nature of net positions across bond buckets = (lesser of "total net long IM" or "total net short IM") X Inter-BNC;
- "total net long IM" is the absolute sum of the net bucket IM where the net bucket IM is positive;
- "total net short IM" is the absolute sum of the net bucket IM where the net bucket IM is negative;
- "Net bucket IM" is the arithmetic sum of the IM of all securities within a bond risk bucket (with plus/minus sign).

Intra-bucket netting is performed for bonds separately. Hence, open positions in bonds will never be netted off with open positions in equities.

A small graphic in the top left corner showing a grid of financial market data with labels like 'DAX INDEX FUT', 'S&P 500 FUTURE', and 'NASDAQ COMPOSITE'.

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5.5.2 Variation margin (VM)

The variation margin for bonds is calculated hourly during the trading day and also upon end of day processing. Intraday VM cycles use the latest market prices while the end of day VM cycle is based on closing prices as well as on the net positions of all open contracts per security.

5.5.3 Total margin

If the member trades both equities and bonds, the total margin requirement for each clearing account is calculated as follows:

Total margin = total initial margin + variation margin equity + variation margin bond, where

Total initial margin = initial margin equities x risk rating coefficient equities + initial margin bonds x risk rating coefficient bonds

Hence, if a member has a "gain" from the variation margin due to favourable market movements, this has the effect of reducing the total margin, however, the total margin cannot sink below zero.

A risk rating coefficient of 1.0 is usually applied for SIX Swiss Exchange bonds, provided that the rating of the clearing member is at least A-. The risk rating coefficient may be increased for members with a lower rating. It may also be temporarily increased

- for members having substantial open positions;
- for all members during periods with extraordinary market conditions or due to instructions from regulators.

For details on margining of equities, please refer to the published Service Description for equity clearing .

5.5.4 Margin calls

If a member's calculated total margin requirements exceed the member's deposited collateral value, a margin call is automatically triggered in real time to settle the difference. A margin call must be met within one hour at the latest, which is exclusively done by direct debit (money side) of the SIC account or an account held with SIX SIS by means of direct debit authorisation. A member that fails to meet a margin call may be declared in default by SIX x-clear.

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5.6 Default Fund

The total margin requirement should cover all expected market risks that may arise due to the default of a member. However, there is no guarantee that an initial margin calculated from historic data will withstand all future price developments under extreme market conditions. Therefore, a Default Fund is additionally set up to cover unpredictable risks and losses. This Default Fund serves in particular to cover any systemic risk (domino effect). A common Default Fund is maintained for SIX Swiss Exchange transactions in equities and bonds. Therefore, participants active across multiple asset classes need to make but one single contribution.

The Default Fund is supported by contributions from members. The amount to be contributed is on the one hand determined by the membership category (ICM/GCM) and on the other hand by the member's average gross open position of the last three months. This exposure is recalculated monthly based on the consolidated open positions from SIX Swiss Exchange trades and may entail adjustments to the contributions. If the contribution needs to be adjusted, the respective member is notified. The adjustment must be made within the notified period.

Contributions to the SIX x-clear Default Fund are to be made in the form of money or securities. Contribution to the Default Fund may be done by depositing marketable securities in a separate custody account. The securities are subject to daily mark-to-market valuation and the lending value may not fall below the value of the contributions required.

The value of the deposited securities is calculated on the basis of their market value and not of their par value.

Should mark-to-market valuation reveal that market values have fallen below that minimum value, a margin call, which has to be met within given deadlines, is triggered. Default Fund contributions are secured by means of a regular pledge.

5.6.1 Adjustment duty

Each member is obliged to make additional contributions to the Default Fund if required. On the one hand, changes in the average gross open position of the last three months entail adjustments to the Default Fund contributions. On the other hand, price fluctuations resulting in a negative value change entail the member's obligation to make additional contributions.

Furthermore, each member is obliged to replenish the Default Fund up to the amount of its current contribution. These additional contributions may be claimed in one payment or, if required, in instalments. SIX x-clear may demand that members make additional

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contributions if the Default Fund has been utilised once or more than once. The additional contribution is calculated on a proportional basis (membership contribution as a percentage of the total Default Fund volume).

5.7 Defence lines

Initial margin, variation margin and Default Fund are not the only means for SIX x-clear to absorb losses.

The defence lines of SIX x-clear are applied in the following order:

- Margins, i.e. the collateral provided by the defaulting member itself
- Contributions, i.e. the collateral provided by the defaulting member in favour of the Default Fund for and SIX Swiss Exchange.
- Per calendar year, a maximum of 50% of the provisions/reserves made in SIX x-clear's balance sheet
- Default Fund for SIX Swiss Exchange (i.e. contributions from other clearing members)
- Provision of additional collateral to the Default Fund for SIX Swiss Exchange
- Remaining provisions/reserves, profit and surplus capital from SIX x-clear

The defence lines and the Default Fund for SIX Swiss Exchange respectively are intended to help prevent systemic risks (domino effect) for the entire financial market.

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5.8 Acceptance of collateral types

Eligible collateral to be provided within the framework of the overall risk management for margins and the Default Fund must be deposited with SIX x-clear (refer to 4.0 *Money/Custody account structure*).

Accepted collateral types
Money (legal tender, freely convertible currencies accepted by SIX x-clear)
CH government securities, federal and cantonal; in CHF
Other first-class CHF denominated bonds (minimum rating of A-); including SNB money market book claims
Highly rated bonds (minimum rating of A-); including ECB money market book claims
Blue chips admitted to trading at SIX Swiss Exchange (SMI securities)*

*only allowed for margins

The deposited collateral is accounted for at market value less a haircut. The current haircuts are published via Clearing Notice.

Bonds should generally be SNB repo eligible and must be substituted 15 days prior to final maturity (after which date bonds are no longer taken into account as margin collateral).

Due to Internal Revenue Service (IRS) regulations, US securities cannot be accepted as collateral.



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6.0 Open offer

6.1 Principles of open offer

An open offer implicates that solely contracts between the CCP and its clearing members result from the trading system (on-exchange), be it either on- or off-order book; there is no bilateral off-exchange contract between the trading counterparties.

6.2 SIX x-clear open offer

SIX x-clear offers to step, as a Central Counterparty, into a trade that results from exchange orders matched at SIX Swiss Exchange, provided that the two matching parties are either a member or a NCM of SIX x-clear. A detailed legal explanation of the open offer facility and its attendant mechanisms is given in the currently valid version of SIX x-clear's General Terms and Conditions of Business.

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7.0 Settlement

The settlement of SIX Swiss Exchange bond trades takes place on the third trading day after trade date (T+3). The member must ensure that a sufficient amount of funds or securities is available on settlement day to enable timely settlement.

SIX x-clear offers its members the clearing of on and off-order book transactions in clearing-eligible bonds that are concluded within the clearing time frame defined by SIX Swiss Exchange (8:00 am to 7:00 pm CET). Exceptionally, if the transactions are received outside the clearing window on any trade date, they will be settled on a gross basis.

7.1 Settlement organisation

SIX x-clear offers its members settlement at SIX SIS for SIX Swiss Exchange bond trades. Members can continue to receive the status of the settlement instructions by interfacing with SIX SIS.

7.2 Settlement process

SIX x-clear supports the choice between either gross or net settlement. The optional netting service is performed by SIX x-clear at the end of business day using trade date netting (TDN). The netting process offsets the deliveries and receipts on a member's security and currency combination against SIX x-clear, thereby reducing the overall settlement volume and number of transactions for settlement.

The member's netting preference is indicated in the Clearing & Settlement Standing Instructions (CSSI) form of SIX Swiss Exchange. If a participant chooses the net settlement option for SIX Swiss Exchange bond trades, netting will be applied for the member's SIX Swiss Exchange bond trades. Settlement netting has no impact on the margining of open positions.

The gross/net settlement instructions are instructed to SIX SIS by SIX x-clear on behalf of members upon completion of trade date netting at SIX x-clear. To allow SIX x-clear to submit settlement instruction to SIX SIS on behalf of the member, the member needs to execute a power of attorney (POA) to SIX x-clear.

Bond trades received from SIX Swiss Exchange after trade date netting at SIX x-clear will be settled as gross transactions. The gross settlement instruction will be submitted to SIX SIS.

SIX x-clear will instruct settlement to SIX SIS. The detailed settlement process at SIX SIS is described in the relevant SIX SIS documentation.



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7.3 Trade date netting at SIX x-clear

At the end of each clearing day, the SIX Swiss Exchange bond transactions intended for netting and showing the same contents in the fields below are pooled in a net settlement transaction for each SIX x-clear member.

Clearing account
 Settlement account
 Money account
 Counterparty (always SIX x-clear)
 Place of settlement
 Security
 Settlement currency
 Trade date
 Settlement date
 NCM identification

After netting of a transaction, SIX x-clear will send the net/gross settlement instruction to SIX SIS. Cancellations are not allowed after netting.

The possible outcomes for a member from netting are

Description	Security	Cash
Delivery versus payment (DVP)	Delivery	Receipt
Receipt versus payment (RVP)	Receipt	Delivery
Delivery versus payment (DVP)	Delivery	0
Receipt versus payment (RVP)	Receipt	0
Receive money only (RMO)	0	Receipt
Pay money only (PMO)	0	Delivery
Deliver security and pay money (DSM)	Delivery	Delivery
Receive security and receive money (RSM)	Receipt	Receipt
Null receipt (NLR)	0	0

7.3.1 Shaping

As a result of netting, the net settlement transaction may be worth an undesirably large amount of money (for SIC etc). To prevent such large amounts, the member may instruct SIX SIS to define a maximum amount per currency. In the case where the net transaction amount

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exceeds this cap a "shaping" process takes place, in which the net transaction is divided into net transactions with smaller amounts.

Example: The netting process results in a net DVP transaction with a payment amount of CHF 120 m. The cap for shaping is fixed at CHF 100 m. This net transaction is divided into two transactions of CHF 60 m each.

Shaping is part of the netting process and takes place at the end of each clearing day. All shape transactions contain the same net reference.

Note: Shaping is not applied for gross transactions.

7.3.2 Custody and money account details

The member can specify the custody and money account to be used in the settlement instruction to SIX SIS. If not specified at SIX x-clear, the members custody and money arrangements at SIX SIS for the settlement of SIX Swiss Exchange trades will be used.

7.3.3 Reference number

Net reference

SIX x-clear will generate the net reference and specify the same in the settlement instruction to SIX SIS. The net reference will appear in the status information from SIX SIS. The maximum length of the reference is 16 digits, for example, P9999.

Bank reference

This reference appears in the status intimation from SIX SIS. The bank reference of the original net transaction (before shaping/splitting) is the same as the net reference. All further shapes/splits have new references that are created by adding more digits to the net reference.

The maximum length of the reference is sixteen digits.

Example:

- The original net reference of a possible net transaction is: P9999.
- If this transaction is divided into two through "shaping", the new transactions will have the reference P999910 and P999920 respectively.



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- In the event of a split of the first of these two net shape transactions on settlement date, the two new net split transactions are allocated the following references: P9999101; P9999102.
- If the second net split transaction is split anew, the two new net split transactions are allocated reference P99991021 and P99991022 respectively.

A detailed description of how to use this reference is given in the BP-Specs under www.six-sis.com.

7.4 Settlement at SIX SIS

SIX SIS participants maintain their own custody account for securities at SIX SIS.

7.4.1 Settlement instruction

For the SIX Swiss Exchange bonds segment, SIX x-clear will perform trade date netting (at the end of the business day) of trade instructions received and send the resulting net settlement instruction to SIX SIS on the trade date. SIX SIS will consider these instructions for settlement.

Gross transactions and trades cleared after trade date netting at SIX x-clear are sent as gross settlement instructions to SIX SIS.

The possible transaction types for net settlement are listed below:

	Transaction		Settlement type	Transaction type for SWIFT
	Securities	Money		
1	Delivery	Receipt	DVP	MT547
2	Receipt	Delivery	RVP	MT545
3	Delivery	0	DVP	MT547
4	Receipt	0	RVP	MT545
5	0	Receipt	RMO	MT547
6	0	Delivery	PMO	MT545
7	Delivery	Delivery	DSM	MT547
8	Receipt	Receipt	RSM	MT545
9	0	0	NLR	MT545

The following table gives an example of how transaction type RSM (respectively DSM on the delivery side) is created.

Transaction type	Quantity	Price	Settlement amount
Purchase	100	2.50	-250

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Purchase	80	2.40	-192
Sale	-170	3.00	510
Net: Purchase	+10		+68

DVP, PMO and DSM net transactions are allocated status "201 – matched". RVP, RMO, RSM and NLR net transactions are allocated status "207 – matched generated". The transactions run through the normal succession of statuses until status "601 settled/executed" is reached at SIX SIS.

Amounts with value "0" are booked to securities accounts, but not to money accounts.

SIX x-clear will instruct settlement to SIX SIS. The member leg is instructed, followed by a matching SIX x-clear leg. The member is intimated on 'acceptance' of the member leg instruction, followed by 'matched' information based on the member's option at SIX SIS.

Status intimations and order status in the transaction life cycle for bonds are summarised in the appendix.

7.4.2 Splitting

While shaping is oriented towards the cash amount involved in a transaction, splitting refers to the availability of securities on settlement day. Splitting is optional and may only be applied by the party delivering the securities for net transactions in status 302 ("overdue, lack of security"). The counterparty (receiver of securities) has to accept the split. Thereby, the net transaction is "cancelled" and replaced by two new net transactions. The split order is usually entered by a delivering party with insufficient securities holdings.

The delivering party instructs SIX SIS by means of message type (MT530) or via webMAX, indicating the number of securities to be allocated to the two new split transactions. The transaction to be split is allocated the new status "414 – cancelled, due to split". The participant is informed accordingly via status intimation.

At the same time, SIX SIS generates two new split transactions. Normally, one of these transactions is settled immediately if sufficient holdings are available while the other transaction is allocated status 302 ("overdue, lack of security"). The transaction in status 302 can be split again. The sequential order for the settlement of transactions at SIX SIS ensures that the number of units stated in the MT530 message is settled first.

Example:

- The holdings of SIX SIS participant "A" in security X amount to 30.



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- "A" has a pending net DVP transaction of 45 units with settlement date corresponding to today's date.
- "A" transmits a split order to SIX SIS for 20 units.
- SIX SIS cancels the DVP transaction of 45 units and creates two new transactions: one transaction of 20 units and one of 25 units.
- SIX SIS settles the order for 20 units. The order for 25 units is allocated status "302 - overdue lack of security".

The money amount is split in the same proportion as the securities.

7.4.3 Settlement between GCM and NCM

In a GCM/NCM structure, the NCM has the option of having transactions settled directly against SIX x-clear or against the GCM. This has, however, no impact on the contractual situation since the GCM remains the only contracting counterparty of SIX x-clear, even on an individual trade level. A separate contractual relationship exists between the GCM and the NCM of SIX x-clear.

Settlement via the GCM entails two settlements: SIX x-clear against a GCM and a GCM against a NCM. The GCM against NCM settlement instructions are automatically routed to SIX SIS from the SIX Swiss Exchange trade router. Transactions between the GCM and the NCM are always effected on a gross basis at SIX SIS.

The parties involved (NCM and GCM) must indicate in the CSSI form of SIX Swiss Exchange the party against which settlement is to be effected.

7.4.4 Late delivery

Should it not be possible to settle a trade by 12:30 pm (CET) on settlement date (T+3) due to late delivery of securities, SIX x-clear tries to perform settlement with borrowed securities. The seller who has failed to deliver the securities to SIX x-clear on time by EOD has to bear the borrowing costs. If settlement is not effected on T+3, a late settlement fee is charged to the defaulting seller. If borrowing, and therefore timely delivery, was not possible, 50% of the fee is passed on to the buyer.

The member will not have to pay any late settlement fee to SIX x-clear if both SIX-clear and the member are in default of delivery of the same security with the same maturity.

In the case where securities are not delivered within a defined time frame a "buy-in" takes place, the costs of which are charged to the defaulting party. In addition, SIX x-clear may initiate a default procedure to exclude the delivering party from trading. Should it prove

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impossible to provide holdings, an adequate compensation payment is made according to the Clearing Terms of SIX x-clear.

8.0 Corporate actions

The execution of corporate actions is different for securities that are already held in a custody account (existing positions) and for securities that have been purchased but not yet delivered (open transactions).

Distributions on existing positions are made in accordance with the rules of SIX SIS, with which the securities are deposited. Distributions on positions deposited with SIX x-clear as collateral are directly credited by the main paying agent to the members of SIX x-clear (not via SIX x-clear).

With respect to distributions on open transactions, two types of corporate actions must be distinguished:

- Mandatory corporate actions, such as interest payments or principal pay downs
- Corporate actions with a choice of options (elective corporate events), such as takeover offers or conversion

8.1 Corporate actions processing on open transactions

The corporate action on an open transaction will result in one of the following at SIX SIS, depending on the nature of the corporate action:

- Compensation: the entitlements arising from corporate actions are transferred from the seller to the buyer.
- Elimination: the open transaction is cancelled.
- Regeneration: the open transaction is cancelled and a new settlement instruction generated for the security resulting from the corporate action.

While introducing clearing services on bonds, SIX x-clear implemented the existing market practices applicable for corporate actions for bonds.

Withholding tax rates for entitlements/compensations:

All taxable compensations are taxed at the same default tax rate (non-treaty default rate).

A small graphic in the top left corner showing a list of financial indices such as DAX, NYSE, FTSE, S&P 500, and NASDAQ.

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Rounding down of compensations in the form of securities:

In corporate actions involving the distribution of securities, decimal places may be handled in different ways (rounding up, rounding down etc). In the case of SIX Swiss Exchange bond transactions, however, they are rounded down by SIX SIS.

9.0 Default

A member that fails to fulfil its obligations under certain conditions can be declared by SIX x-clear as a "defaulting member". After having declared a member as "defaulting member", SIX x-clear issues a default notice and transmits it to the member and to SIX Swiss Exchange. The consequences of a default notice take immediate effect.

After issue of the default notice, SIX x-clear will no longer register any new contracts of the defaulting member.

To compensate for any damage incurred by the default of a member, the collateral of SIX x-clear is used according to chapter 5.7 "Defence lines".

10.0 Operating calendar

SIX x-clear accepts trades for clearing purposes on all days on which the SIX Swiss Exchange is open for trading.

SIX x-clear accepts settlement information from SIX SIS on all operating days of SIX SIS.

Margins are calculated and margin calls are sent on all operating days of SIX x-clear.

11.0 Member interface with SIX x-clear

There is a single interface provided for members using SIX x-clear as their CCP for different exchanges. Members can use this interface with SIX x-clear to perform online queries and receive clearing reports and margin call notices.

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12.0 Appendix

12.1 Status Intimations and Order status in the Transaction life cycle for SIX Swiss Exchange Bonds

Business Process	Transaction life cycle	Order status at SIX SIS	Message Type	Remarks
Acceptance of SIX Swiss Exchange bond Transaction	T	413	MT548	MT548 generated on trade acceptance by SIX SIS
MT518 Trade Information to Clearing members of CCP	T	NA	MT518	MT518 generated on trade acceptance/cancellation by SIX x-clear. The message will be sent to GCM for each trade executed by NCM.
Cancellation of SIX Swiss Exchange bond Transaction	T	415	MT548	MT548 generated on trade cancellation by SIX SIS.
Trade Date Netting at SIX x-clear at the End of Clearing day				
Acceptance of Nett/Gross Settlement Instruction from x-clear by SIX SIS	T	101	MT548	MT548 generated on acceptance of the settlement instruction at SIX SIS
Acceptance of Matching Nett/Gross Settlement Instruction from x-clear by SIX SIS	T	201	MT548	MT548 generated on matching of the settlement instruction at SIX SIS
Gross/Net Reconciliation	T	NA	MT537	After Trade Date Netting at SIX x-clear
End of Business day T				
T+1				
T+2				
Settlement at SIX SIS	T+3	3XX/601	MT548, MT545, MT547	MT548 generated for each status change of the settlement instruction. MT545/MT547 generated on settlement of the settlement instructions



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