Eurex Clearing Prisma

Portfolio-based risk management

eurex clearing

www.eurexclearing.com

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Eurex Clearing Prisma: Delivering innovation with portfolio-based risk management

Eurex Clearing is a leader in clearing technology and state-of-the-art customer solutions. We were first to introduce both real-time risk calculation and real-time risk-data provision, and we continue to set industry standards in risk management.

With our new portfolio-based risk management approach – Eurex Clearing Prisma – we offer an innovative way to help customers maximize collateral efficiency.

Eurex Clearing Prisma maintains reliable counter cyclical margin levels in even the most challenging situations through a transparent and risk-sensitive methodology. It also delivers synergies through risk netting effects for listed, OTC and between listed and OTC positions.

It also promises flexibility when introducing new products as well as opportunities for greater capital efficiency, all with the robustness and reliability the market has come to expect from Eurex Clearing. As with everything we do, Eurex Clearing Prisma has been developed in conjunction with customers and regulators around the world to ensure maximum benefits for all market participants. It is a solution that prioritizes safety, efficiency and integrity.

Eurex Clearing Prisma calculates combined risks across all markets cleared by Eurex Clearing. Cleared products that share similar risk characteristics will be assigned to so-called Liquidation Groups, which result in more accurate risk calculations and which will enable cross-margining within Liquidation Groups. Our new margining method is unique in the industry as it closely aligns the default management process with actual margin methodology.

Eurex Clearing is optimizing post-trade activity for all participants – so you can be prepared for new regulations, respond faster to challenging market conditions and feel confident that you are clear to trade.

About Eurex Clearing
Eurex Clearing is one of the leading central counterparties globally – assuring the safety and integrity of markets while providing innovation in risk management, clearing technology and client asset protection. We clear the broadest scope of products under a single framework in Europe – both listed products and OTC – and offer the world's widest spectrum of eligible collateral.

Eurex Clearing serves more than 150 Clearing Members in 16 countries, managing a collateral pool of around 50 billion euros and processing gross risks valued at almost 8 trillion euros every month. In the first ten months of 2012 we cleared over 1.45 billion derivatives contracts – nearly half of which were entered via our EurexOTC Trade Entry services.

Eurex Group is comprised of Eurex Exchange, the International Securities Exchange, the European Energy Exchange, Eurex Clearing, Eurex Bonds and Eurex Repo.

Eurex Group is owned by Deutsche Börse AG (Xetra: DB1).

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Introduction to Eurex Clearing Prisma

In order to facilitate the transition from the currently used Risk-based Margining method to Eurex Clearing Prisma, we are introducing the new margin method in multiple steps.

Eurex Clearing Prisma roll-out schedule

	Release 1	Release 2	Release 3
Products	Swaps products (IRS, OIS, FRAs)	Listed fixed income derivatives*	Listed commodity derivatives*
	Listed equity derivatives*	Margin offsets between OTC/IRS derivatives and listed fixed income derivatives	Equities
	Listed equity index derivatives*		Repos
			Bonds
			Commodities
			Other products

* This includes as well transactions entered via EurexOTC Trade Entry services i.e., Block Trades, Flexible Contracts, etc.

During the migration period, Eurex Clearing Prisma and the Risk-based Margining method will run in parallel, allowing our Clearing Members to migrate to the new risk method at their own pace. Throughout this period, Clearing Members will be able to decide individually when to migrate their portfolios on a Liquidation Group and position account basis.

Eurex Clearing's Prisma methodology[1] introduces new concepts that build on existing principles and procedures in order to achieve enhanced precision and maximize use of collateral. The following section explains, among others, Liquidation Groups, a key element of the new portfolio-based margining system that enables Eurex Clearing to deliver synergies such as cross margining. It also describes how the default management process is facilitated by the introduction of Liquidation Groups. In a subsequent section the brochure explains the new margin calculation method.

Eurex Clearing Prisma calculates combined risks across all markets cleared by Eurex Clearing. Cleared products that share similar risk characteristics will be assigned to so-called Liquidation Groups, which result in more accurate risk calculations.

Our new margining method is unique in the industry as it closely aligns the default management process with the margin methodology. The default management process is the basis of the new portfolio-based margining method. As such, both the new margining method and the revised default management process will be implemented along with the newly introduced Liquidation Group set-up.

Liquidation Groups

A Clearing Member's portfolio typically features a heterogeneous structure, size and/or complexity. Given that complexity, and due to the general handling principles laid out in our default management process, it is usually impossible to liquidate an entire portfolio in one single transaction. Therefore Eurex Clearing Prisma is introducing the concept of Liquidation Groups.

A Liquidation Group combines all cleared products across all markets cleared by Eurex Clearing that share similar risk profiles. Liquidation Groups serve as a cornerstone of the Eurex Clearing Prisma portfolio-based risk management method.

[1] Please refer to the Eurex Clearing Prisma User Guide, which is available on Eurex Clearing's website **www.eurexclearing.com**, for more detailed information on specific topics.

These groups can be dealt with efficiently and quickly, simplifying the offsetting of risk in a Clearing Member default situation. A complete Liquidation Group can be hedged by Eurex Clearing, priced by Clearing Members and then be auctioned within a reasonable period of time. The composition of each Liquidation Group is reviewed on a regular basis and adjusted due to market requirements. Together with its Clearing Members, Eurex Clearing decides on the composition of Liquidation Groups.

General principles:

- Liquidation Groups are pre-defined (they exist irrespective of a Clearing Member default).
- Portfolio risk margin offsets are only granted within these pre-defined Liquidation Groups.
- Each Liquidation Group has a fixed holding period that reflects the time estimated to analyze, hedge and auction the respective products.

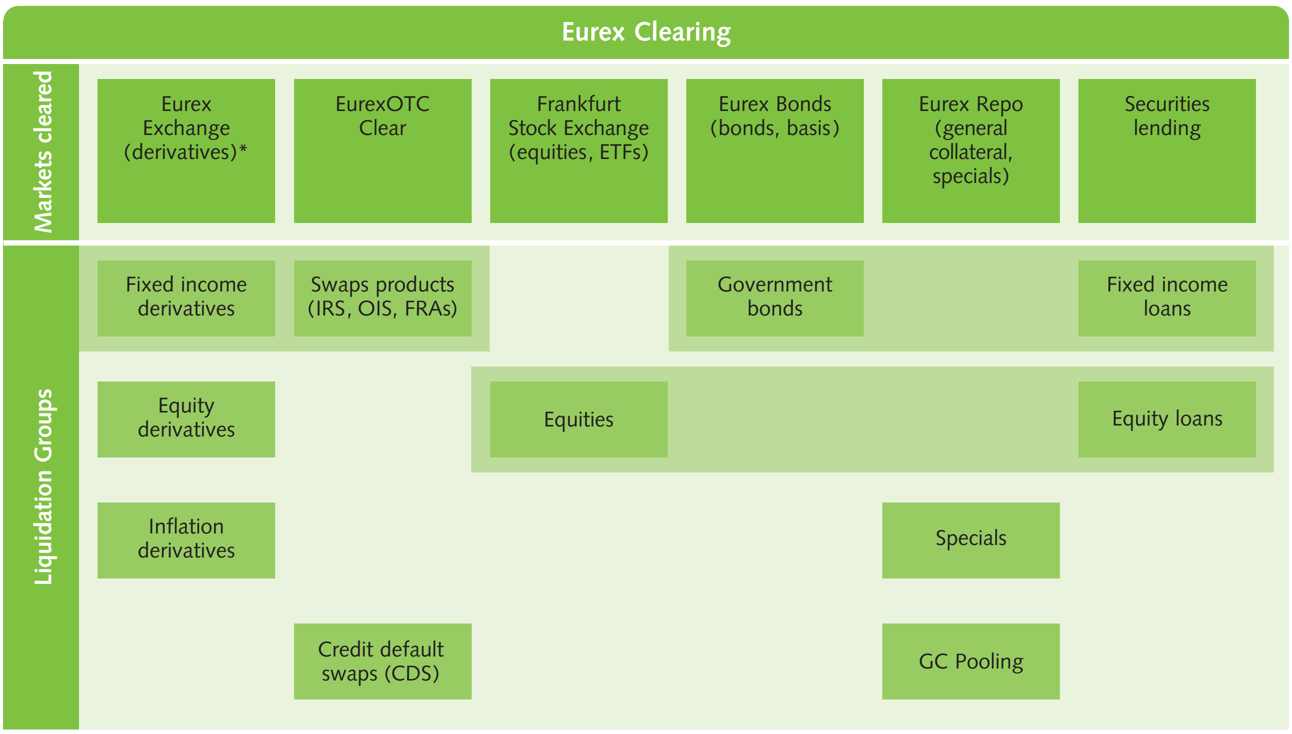
An expected holding period can be between two to five days, depending on the Liquidation Group, and is at the same time the basis for margin calculation.

Within each Liquidation Group, positions that are near-to-expiry (i.e., options or near-to-maturity bonds) will be treated separately and must be liquidated with priority in case of a Clearing Member default. To facilitate this process, Liquidation Groups can further be divided into so-called "Liquidation Group splits" consisting of expiring and non-expiring positions. This means that up to two different Liquidation Groups can simultaneously exist for a given product:

- One which includes positions in products where the regular default management process is applied (see following section).
- One in which only the positions that are near-to-expiry are bundled for prioritized liquidation.

The following diagram illustrates examples of potential Liquidation Groups across some markets cleared by Eurex Clearing.

Examples of potential Liquidation Groups



*This includes as well transactions entered via EurexOTC Trade Entry services i.e., Block Trades, Flexible Contracts, etc.

Overview – default management process

Covered by Eurex Clearing's lines of defense

Set-up/ client transfer	Preliminary measures	Hedging	Independent sale	Auction per Liquidation Group	Asset class resolution
• Client position and collateral transfer • Convening of default management committee • Close-out netting per framework agreement • Portfolio and market evaluation	• Handling as required for near-to-expiry positions, e.g., by rolling • Cancellation of pending settlements • Preparation of portfolio for liquidation	• Define hedging for defaulting portfolios • Hedge portfolio based on management decision	• Selling the portfolio independently, if it is small or special	• Mandatory participation in auctions for all Clearing Members (CM) holding clearing licenses with respect to all positions held in the auctioned portfolio • Customers (NCMs, RCs, clients) are able to bid as well, fulfilling the CM's bidding obligation • Economically reasonable bid for a minimum of auction units required • Penalty fee and Clearing Fund juniorization if not fulfilled	• If auction results in remaining positions a) Eurex Clearing will hold the positions and charges any losses resulting from them to non-bidders b) Non-bidder agrees to enter into respective transactions with Eurex Clearing at the auction price or last available mark-to-market price c) Eurex Clearing can terminate corresponding transactions

Timeline corresponds to assumed period in risk calculation within Eurex Clearing Prisma

Default management process

As one of the world's leading Clearing Houses, we play an important role in the global effort to maintain stability in financial markets. We recognize our responsibility to help mitigate systemic risks should the default of one or more Clearing Member occur. We manage stress situations effectively, not least because we have robust procedures in place to deal with a Clearing Member default and are prepared to act when the need arises.

When a Clearing Member goes into default, one of our principle objectives is to protect customers and minimize harm to clients and their positions. With our Client Asset Protection service, we provide segregation and timely portability of client positions and collateral (both cash and securities). Our service allows Clearing Members and their clients to choose between different, optional protection solutions – depending on the level of protection they require.

Aware that each default scenario is unique, we maintain flexibility in our procedures in order to accommodate the individual factors of each default. Our procedures provide an adaptable framework that is applied depending on the circumstances of the scenario at hand. Despite the individual nature of every situation, the legal triggers that set a given Clearing Member into default are the same, regardless of product or market cleared.

Our default management process is comprised of set procedures, designed to facilitate the orderly liquidation process of large and complex portfolios. The Eurex Clearing Prisma margin approach considers the expected duration of the default management process in its methodology so as to reflect actual risk throughout an actual default situation.

The following briefly describes key components of the default management process, which comes into effect for remaining positions now maintained by the Clearing House, after Eurex Clearing has successfully completed the porting of open positions to a new, solvent Clearing Member (under certain client asset protection models):

- **Default management committees:** Each default management committee (DMC) consists of representatives of Clearing Members with sufficient trading and risk expertise in products belonging to the respective Liquidation Group(s) for which the default management committee is convened. They assist Eurex Clearing with regards to any relevant matter of the default management process, especially hedging and auctioning. The default management committees will be convened in case of a Clearing Member default situation and for regular default simulations.

- **Hedging:** The purpose of hedging within the default management process is to enable the Clearing House to reduce the risk of a Liquidation Group and therefore reduce the risk for Eurex Clearing. Furthermore, it reduces the portfolio sensitivity to market moves and stabilizes it for auctions.

- **Independent sale:** In order to grant sufficient flexibility during a default situation, Liquidation Groups can be sold independently, i.e., positions of the defaulted Clearing Member are then closed by the Clearing House and subsequently opened in the position account of the Clearing Member that overtook the position.

- **Auction process:** The Liquidation Group-specific auction process is the main component of the default management process. An auction enables Eurex Clearing to rapidly transfer risk in bulk to willing absorbers establishing a fair market price for the particular portfolio. Auctions are mandatory for those Clearing Members active in the Liquidation Group affected by the default.

- **Asset class resolution:** If positions are unable to be closed out after an auction, the Clearing House can follow three possible courses of action:
  - In the first scenario, Eurex Clearing can hold the remaining positions and charge any losses to the non-bidding parties.
  - Alternatively, in the second scenario, the non-bidding parties can enter into the transactions at the auction price.
  - In the third scenario, Eurex Clearing can terminate the corresponding transactions to all positions within a Liquidation Group, if positions of the defaulted Clearing Member can not be transferred.

Products covered

The qualification of product related risk is another important component of the Eurex Clearing Prisma process. This allows the Clearing House to accurately assess the overall risk of an open position as well as to determine potential cross margining synergies. As Eurex Clearing Prisma permits cross margining between products as well as across markets cleared by Eurex Clearing, this section provides an overview of the products covered under the new methodology and their general characteristics.[2]

Futures

Financial futures are always based on the firm contractual agreement
- to purchase (buyer of a futures contract)
- or to deliver (seller of a futures contract)
- a standardized quantity of a particular financial asset (underlying instrument)
- at a pre-determined price (price of the futures contract)
- at a standardized future point in time (delivery date).

Both parties to a financial futures contract, i.e., the buyer as well as the seller, have assumed an obligation. However, neither the buyer nor the seller is obliged to keep his position until the end of the contract's term and, consequently, to fulfill the obligation. Both have the possibility to eliminate their risk exposure by executing an offsetting (closing) transaction. The actual fulfillment of the contract, i.e., the delivery or purchase of the underlying instrument, can therefore be avoided. Only the profit or loss arising from the difference between the entry and exit price remains. This difference is charged or credited to a cash clearing account on a daily basis by the Clearing House. This daily offsetting of profits and losses is called variation margin. In contrast to other kinds of margin, variation margin is not an amount that must be deposited as collateral, but is rather a daily cash settlement of profits and losses.

Options

The purchaser of an options contract (buyer) acquires, against payment of a premium, the right
- to buy (call option) or
- to sell (put option)
- a pre-determined amount (contract size)
- a standardized quantity of a particular financial asset (underlying instrument)
- on (European & American style) or before (American style) a specified date (expiration)
- at a pre-determined price (strike or exercise price).

Our margin process distinguishes between two different options types and sets different margin requirements for each:
- premium styled options and
- futures styled options

It is important to note that each of these two options types has different margin obligations associated with it.

Premium styled options

For premium styled options (e.g., equity options) only the seller of the option must deposit collateral to cover the risk of his position – known as premium margin.

The options buyer is not required to put up any collateral because, once the options premium has been paid in full, no risk of nonperformance of the contractual obligation remains.

Futures styled options

In the case of futures styled options[3] (e.g., options on fixed income futures), both the buyer and the seller of the option are required to deposit collateral. The buyer of the option is required to put up collateral as well because the premium is due in full only at the end of the contract's term or upon exercise of the option. Thus, both the buyer's and the seller's positions represent risk to the Clearing House until the position is closed out.

[2] Please note that this section covers products which are available in Eurex Clearing Prisma release 1.

[3] Please note that futures styled options are not part of release 1. They are described here to differentiate them versus the characteristics from premium styled options.

With futures styled options, the positions are marked-to-market on a daily basis. This margin is adjusted in a similar way to futures variation margin.

Swaps products

Eurex Clearing's EurexOTC Clear offering includes different types of swaps products:

- interest rate swaps (IRS),
- overnight index swaps (OIS) and
- forward rate agreements (FRAs).

All three are margined in a similar manner as they share certain characteristics, which are briefly described below.

Interest rate swaps

An interest rate swap (IRS) is a derivative in which one party exchanges an agreed series of interest payments for another party's series of interest payments. Interest rate swaps allow market participants to lock in interest rates and payments. Fixed interest rate payments received/paid out of an underlying security/loan can be swapped into floating interest payments received/paid and vice versa. In an interest rate swap, each counterparty agrees to pay either a fixed or floating rate denominated in a particular currency to the other counterparty. The fixed or floating rate is multiplied by a notional principal amount. This notional amount is not exchanged between counterparties, but is used only for calculating the size of cash flows to be exchanged. The typical so-called plain vanilla interest rate swap is an instrument where one counterparty pays a fixed rate (the swap rate) to another counterparty, while receiving a floating rate (linked to a reference rate such as the EURIBOR). According to usual market convention, the counterparty paying the fixed rate is called the "payer", and the counterparty receiving the fixed rate is called the "receiver". Interest rate calculations usually are based on a constant "notional" principal amount and interest payments are settled net. An interest rate swap can be spot or forward starting. The coupon is usually greater than zero and a spread can be added to the floating leg. It contains one single currency; the reset is in advance and the payment in arrears. The floating and the fixed rate is always paid at the end of the payment period and netted, which means that only one party must pay depending on the fixing of the floating reference rate.

Overnight index swaps

An overnight index swap (OIS) is an interest rate swap where the fixed rate of the swap is exchanged for the weighted (geometric) average of an overnight index (i.e., a published interest rate) over every day of the payment period. The index is typically an interest rate for overnight call-money in EUR (EONIA) or USD (Fed Funds) etc. It will not be paid daily but compounded and typically paid at maturity or annually for calculation periods exceeding one year.

Forward rate agreements

A forward rate agreement (FRA) is a contract that starts in the future and whose final payoff depends on an interest rate fixing on that date. The difference between a swap and an FRA is that only one payment occurs and that typically the payment is settled on the effective date.

Two types of backward-looking components are applicable for the swaps products described above.[4] They are variation margin and price alignment interest (PAI). Marking-to-market is carried out as well for all swaps products. Using variation margin, profits and losses that arise due to the price fluctuations of open positions are offset daily, as in the case of financial futures. Price alignment interest (PAI) serves as a further cash-based margin component.

Applicable margin components for products cleared in release 1

	Backward-looking components		Forward-looking components	Model error adjustments		
	Premium margin	Variation margin	Market risk	Correlation break	Compression error	Liquidity risk
Premium styled options	Applicable	Not applicable	Applicable	Applicable	Applicable	Applicable
Futures	Not applicable	Applicable	Applicable	Applicable	Not applicable	Applicable
Futures styled options	Not applicable	Applicable	Applicable	Applicable	Applicable	Applicable

				Model error adjustments		
	Price alignment Interest	Variation margin	Market risk	Correlation break	Compression error	Liquidity risk
Interest rate swaps	Applicable	Applicable	Applicable	Applicable	Not applicable	Applicable
Forward rate agreements	Applicable	Applicable	Applicable	Applicable	Not applicable	Applicable
Overnight index swaps	Applicable	Applicable	Applicable	Applicable	Not applicable	Applicable

Applicable   Not applicable

[4] All margin components are described in-depth in the next chapter.

Margin components

The Eurex Clearing Prisma methodology calculates the actual liquidation cost of a portfolio as well as estimates the worst case losses that a Liquidation Group can incur during its holding period. This ensures that risk is covered prudently without tying up unnecessary liquidity. Risk is calculated using different margin components that are the essential elements of the Eurex Clearing Prisma computation process. When determining appropriate margin requirements and risk offsets, Eurex Clearing considers two margin components:

- mark-to-market margin – backward-looking margin components and
- initial margin – forward-looking margin components

Both the backward- and forward-looking margin components are described in detail in this section. After providing an in-depth discussion of each margin component, this section then proceeds to describe how Eurex Clearing Prisma aggregates the different forward-looking components to create a comprehensive risk profile for determining the initial margin requirement of each Clearing Member.

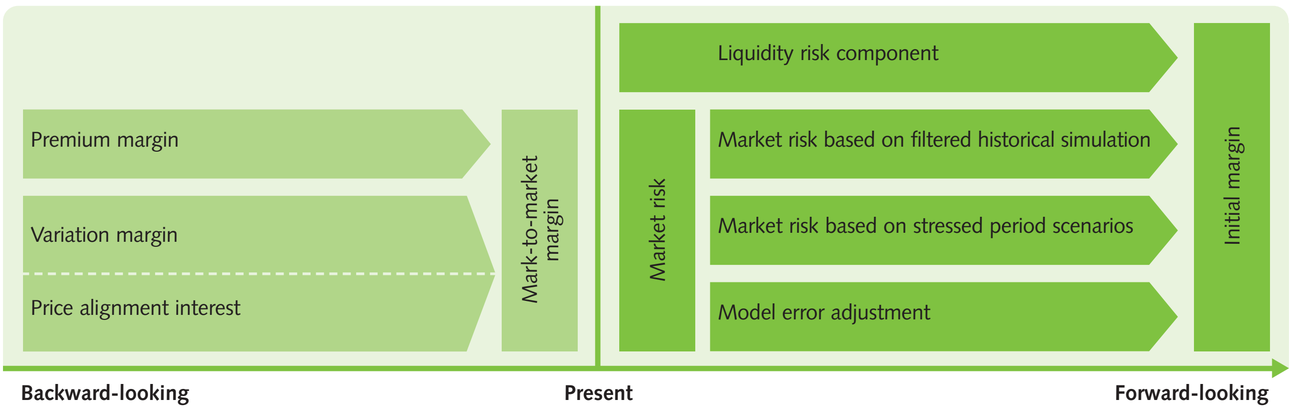
Backward-looking components – mark-to-market margin

The Eurex Clearing Prisma calculation approach begins by considering two backward-looking margin components: one of which allows for the deposit of collateral and the other deals with the debit and credit of cash.

Premium margin

Premium margin must be deposited by the seller of an option, if the transaction results in an open position. It covers the potential loss that could be incurred if the seller was forced to liquidate

Eurex Clearing Prisma margin components



the position today. The premium margin is continuously adjusted, i.e., if prices fluctuate so that the potential loss upon liquidation increases, the seller will be obliged to deposit additional premium margin.

Premium margin is calculated for all positions in options products that are subject to the procedure known as "premium styled options". This involves those options for which the premium is paid in full at the time of purchase (e.g., equity options). The premium margin covers the costs that would arise upon liquidating all positions of a specific product at their respective closing prices. A wide variety of collateral is accepted by the Clearing House to cover the margin requirements relating to premium margin.

Variation margin

On a mark-to-market basis, Eurex Clearing settles the trading day's profits and losses of all open positions held in a position account in cash. This approach applies to futures, futures styled options and swaps products. Using variation margin, profits and losses that arise due to the price fluctuations of open positions are offset daily.

Unlike other types of margin, which may consist of depositing collateral, variation margin consists of offsetting the daily profits and losses in cash in a position account. The owner of a long position that was purchased at a lower price than the daily closing price (settlement price) is credited with the difference between the two prices, whereas the owner of the related short position must pay that difference. When the variation margin for futures styled options is determined, calculation of the appropriate credits and debits depends on how the value of a call or put position changed during the trading day.

The variation margin procedure ensures that each position is revalued at the daily settlement price. The difference between today's and the previous day's closing price is offset by daily compensating payments. Thus, all that has to be done on the final settlement day is to value all open positions at their respective final settlement prices.

In the case of futures styled options, the final valuation is made at the settlement price on either the expiration date of the option or the day on which it is exercised.

Price alignment interest

Price alignment interest (PAI) serves as a further cash-based margin component in addition to variation margin and is only applicable to products within our swaps offering. It minimizes the impact of daily cash variation margin payments on the pricing of swaps.

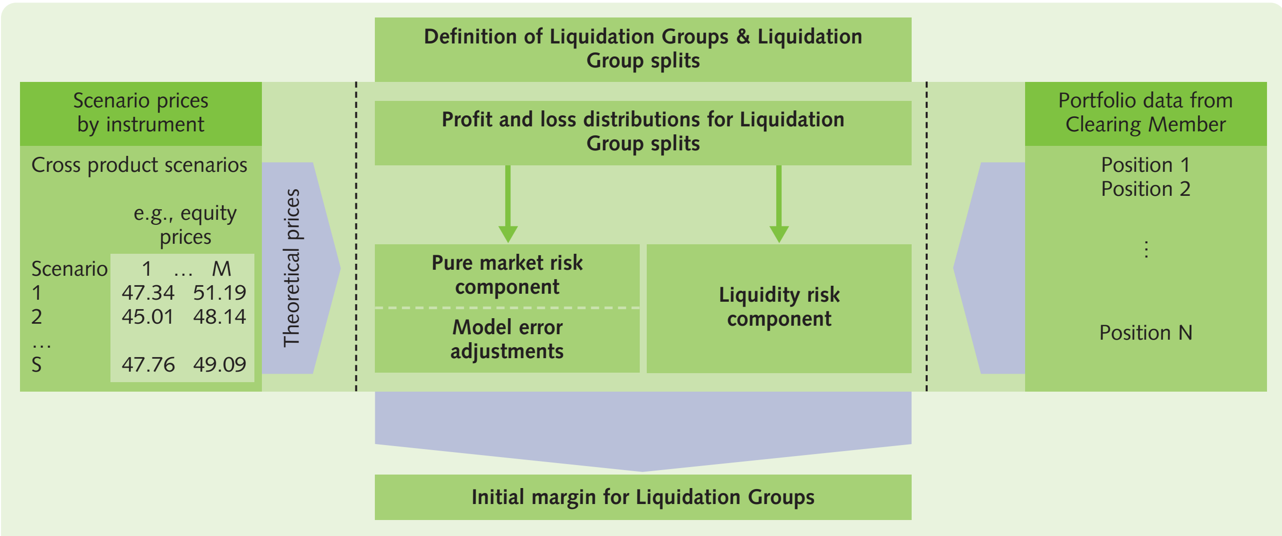
Eurex Clearing will charge/pay interest using the overnight interest rate of the corresponding currency on cumulative variation margin received/paid for products.

The price alignment interest is exchanged separately for each trading currency on a portfolio basis and is settled daily, analogous to variation margin.

Forward-looking components – initial margin

The Eurex Clearing Prisma margin methodology is based on a complete view of each Clearing Member's portfolio and takes advantage of cross-correlation effects and accounts for hedging. In this way, it determines the initial margin requirement on a portfolio level as opposed to a product-by-product view.

Methodology overview



The methodology is designed for the adequate and stable computation of initial margin figures, thus creating a forward-looking risk model that is able to cope with a high degree of uncertainty in the financial markets and yet at the same time is sufficiently flexible to be able to adapt to changes in the risk environment.

The Eurex Clearing Prisma initial margin calculation is the result of a simulation-based, value-at-risk (VaR) methodology that uses

- filtered historical scenarios,
- stressed period scenarios and
- adjustments to account for correlation breaks, compression errors and illiquidity.

As the initial margin is a forward-looking margin component, it quantifies an estimate of future potential losses over the holding period of all Clearing Members' Liquidation Groups at a predefined and appropriate confidence level. The initial margin is calculated by taking into account potential correlation and netting effects for positions within a Liquidation Group. Initial margin figures for different Liquidation Group splits and Clearing Member position accounts are then aggregated to a single margin call.

The initial margin consists of two main subcomponents:

- market risk and
- liquidity risk.

Both components are calculated using profit and loss distributions for the Liquidation Group based on a set of different scenario prices for the underlying instruments.

Market risk component

The pure market risk component, i.e., without the model error adjustments, is calculated based on tail risk measures in the form of value-at-risk figures that utilize profit and loss distributions on a Liquidation Group split level that in turn uses historical and stressed period scenarios.

Filtered historical scenarios

A set of 750[5] filtered historical scenarios is used to calculate potential profits and losses for every instrument cleared by Eurex Clearing. The filtered historical scenarios are:

- scenario curves for swaps products, and
- real prices for all other instruments cleared.

The potential profits and losses shall cover the maximum loss that could occur during the holding period of a Liquidation Group. Therefore, these maximum levels are calculated for any instrument by applying 750 historical returns of the underlying instrument over the n-day holding period to its risk factors (e.g., volatility, interest rates) and revaluating the instrument leading to 750 different historical scenario prices. Instead of using a straightforward historical simulation, a filtered historical simulation is used to calculate the different scenario prices. The filtered historical simulation uses dynamic volatility modeling, where the levels of margin requirements are dynamically increased when market volatility increases. In practice this means that the historical volatility is replaced by the current volatility of the instrument because current volatilities exhibit highly accurate forward-looking properties and are thus a good proxy.

All historical scenarios are updated on a daily basis with the latest risk factor returns and the new current price information available leading to a new set of 750 historical prices every day.

Stressed period scenarios

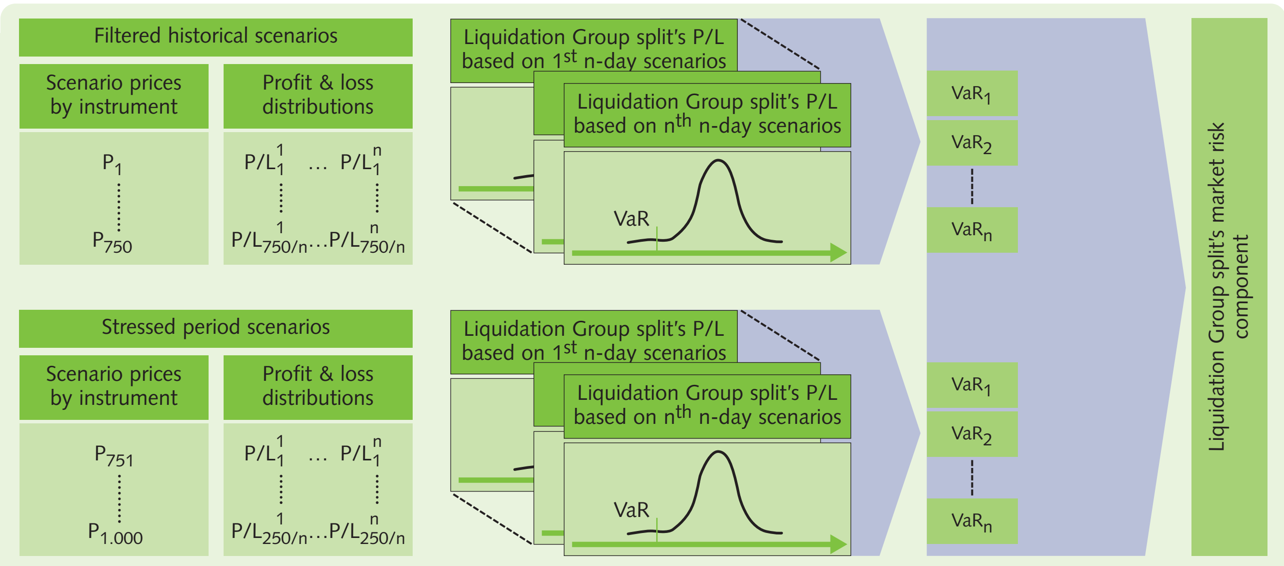
In order to introduce a countercyclical margin component by taking into account periods of high financial distress and extreme events, 250[6] stressed (real) scenarios are also used as input for the calculation of risk figures such as volatility, interest rates, etc. These scenarios are obtained by jointly simulating n-day returns for all instruments of a Liquidation Group based on periods with exceptionally high fluctuations of the corresponding risk factors. In contrast to the calculation of historical scenarios, no filtering is used for the stressed scenarios.

Subsamples

The scenario prices are divided into several subsamples to avoid artificial statistical effects resulting from overlapping time periods that would violate the assumptions of the calculated risk figures. Therefore each risk figure is calculated on scenario subsample level and subsequently aggregated to an overall risk figure. The number of subsamples depends on a Liquidation Group's holding period.

The graphic below illustrates how Eurex Clearing calculates the market risk component of a portfolio by applying filtered historical and stressed period scenarios.

Overview – market risk calculation



5 In alignment with our goal of providing comprehensive coverage for the filtered historical scenario approach, Eurex Clearing has selected 750 prices that cover a three-year period. The Clearing House uses 750 historical scenarios as a general rule in order to provide a comprehensive risk picture.

6 The Clearing House uses 250 stressed scenarios as a general rule in order to provide a comprehensive risk picture.

Based on the scenario prices of the filtered historical and stressed scenarios, the profit or loss for each product is calculated by comparing the calculated scenario price to the current neutral price. The profit and loss figures for each product within a Liquidation Group are then aggregated for each scenario individually. Therefore, risk offsets within the Liquidation Groups are automatically considered.

Model error adjustments

In order to mitigate model risk inherent in the calculation of the tail risk measures, two model error adjustments are calculated and added to the pure market risk component:

- The correlation break adjustment completes the simulation for the worst-case breaks in correlation.
- The compression error adjusts the simulation by pricing effects where a data compression approach has been chosen applicable to products which are sensitive to volatility.

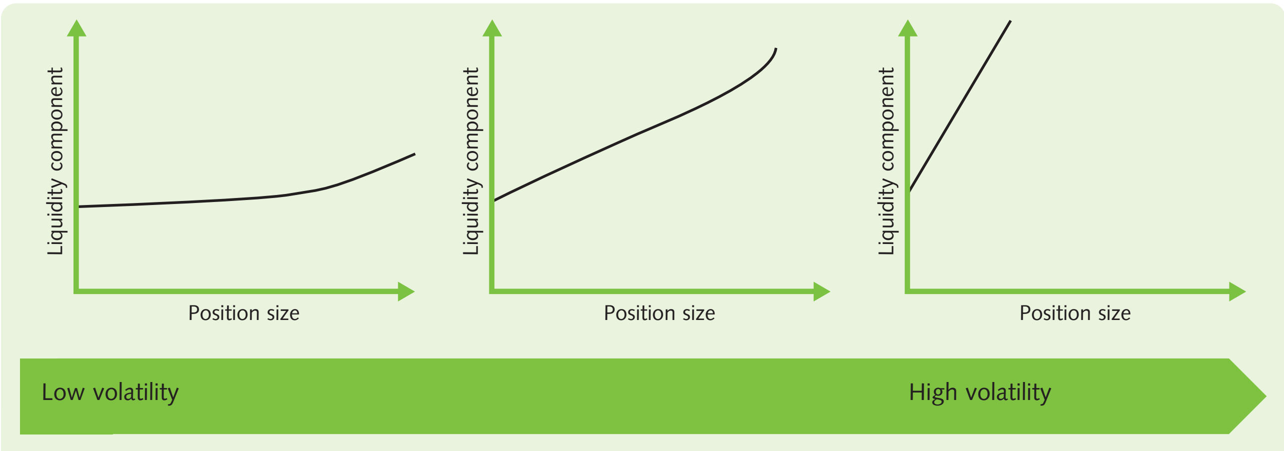
Liquidity risk component

The liquidity risk component is designed to capture the potential additional costs when liquidating portfolios, including possible adverse price movements of the products cleared. The most important characteristics are listed below:

- The liquidity risk component depends on the relative size of the position. The liquidity risk component is a function of the position size and the total market capacity, which can be characterized by means of daily traded volume or open interest of a financial instrument.

- The liquidity risk component depends on the current level of market risk in the respective product, i.e., the higher the volatility of an instrument's price, the higher the premium. Therefore, the liquidity risk component is modeled as a fraction of the market risk component.

Liquidity risk depictions



- Even for small position sizes, the liquidity risk component is not zero. In reality trading does not actually occur at mid prices, but at bid or ask prices. Therefore the minimum liquidity component is defined by the liquidity premium.

- Market capacities and liquidity risk components are product-specific and unevenly distributed across product subgroups, i.e., for options the market capacities and bid-ask spreads depend on their moneyness and time to expiry.

The illustration (on the left) shows the liquidity risk component's dependence on the position size and the market risk of three positions with different risk profiles. For all three positions the liquidity risk component is non-zero even for a small position size (i.e., on the left hand side of each graph) and grows with an increasing position size. The liquidity risk component for a position carrying a higher market risk increases at a faster rate relative to the liquidity risk component for positions with a smaller market risk.

Specific treatment for swaps products
Interest rate swaps are treated differently from other instruments due to product specific requirements and market conventions. The liquidity risk adjustment is calculated by currency according to the expected transaction costs of the swaps required to hedge the Clearing Members' current portfolio.

Aggregating forward-looking components

The Eurex Clearing Prisma methodology takes both backward- and forward-looking risk components into consideration in forming a complete risk picture. This section exclusively covers the elements of the forward-looking risk components – the initial margin – as backward-looking components have been covered previously and are partly settled in cash on a daily basis.

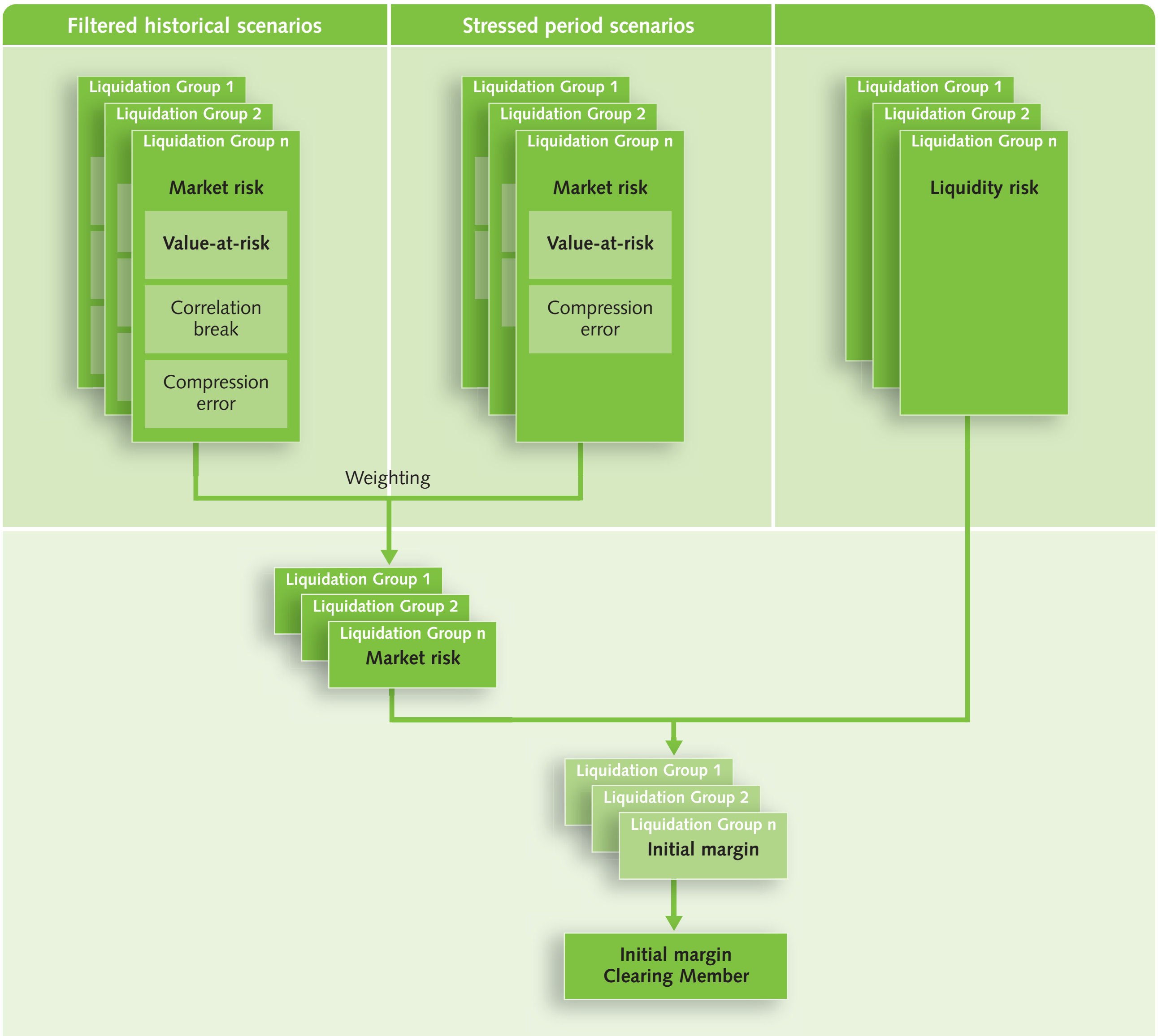
The total initial margin component for a single Liquidation Group consists of the aggregated market risk components over all scenario subsamples, including the respective model error adjustments and Liquidation Group specific liquidity risk components.

The value-at-risk figures for each subsample of the filtered historical and the stressed scenarios are aggregated by taking the mean value-at-risk figures of the subsamples separately for the filtered historical and the stressed scenarios, including the relevant model error adjustments.

The resulting two value-at-risk figures for the stressed and the filtered historical scenarios need to be aggregated as well. This is done by taking the maximum of the filtered historical value-at-risk and a scaled stressed value-at-risk.

The following table (page 16) depicts how the initial margin for a Clearing Member is determined.

Initial margin calculation by Clearing Member and Liquidation Group



Weighting
After the calculation of the two market risk components (filtered historical scenarios and stressed period scenarios), the filtered historical scenario is weighted at 100 percent and the stressed period scenario is weighted at 60 percent.

This calculation is performed for each Liquidation Group and the result can differ by Clearing Member and position account, i.e., in one instance it can be the value from the filtered historical scenario and in another instance it can be the value from the stressed period scenarios. The value selected will be the most favorable for the safety of the Clearing House and the market place.

Initial margin
The initial margin per Liquidation Group is determined by combining the market risk component with the liquidity risk component. This approach is followed for each individual Liquidation Group that is contained within the Clearing Member's portfolio and is applied to an individual position account.

The consolidated initial margin for each Clearing Member results from the sum of all initial margin results by Liquidation Group.

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