EUREX Architects of trusted markets

Trading Safeguards at Eurex Exchange

Eurex Market Supervision

May 2026

Agenda

1 Introduction

Introduction

- Various examples of highly volatile market situations caused by the activity of trading participants in recent years (e.g. US Flash Crash 2010, Knight Capital issue 2012, Covid19 in 2020…)
- Development of safeguards in order to limit the consequences of potential trading errors

- Trading errors can result from e.g.
  - Erroneously entered orders/quotes
  - Abrupt market movements
  - System dependency due to program trading
  - High frequency trading

Various Safeguards during Process of Trading

There are a number of safeguards through the whole process from order entry until order execution:

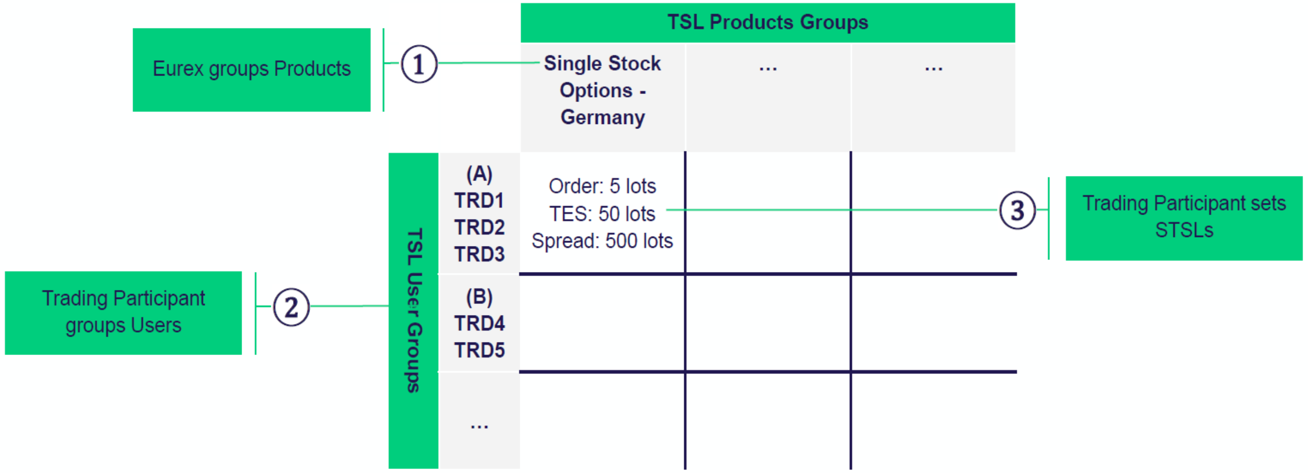
2 Transaction Size Limits (TSL)

Transaction Size Limits (TSL)

- Transaction size limits defining max. number of contracts tradable per order on business unit and trader level
- Separately defined for each product
- Potentially different limits for on-exchange and off-book trade
- For on-exchange trades separate outright/ spread limits
- Individual trader limit is capped by overall business unit level
- On-exchange limits as well as limits for off-book trades are set in T7 system
- Maximum Order Value determining the maximum value of an order that a trader is allowed to enter

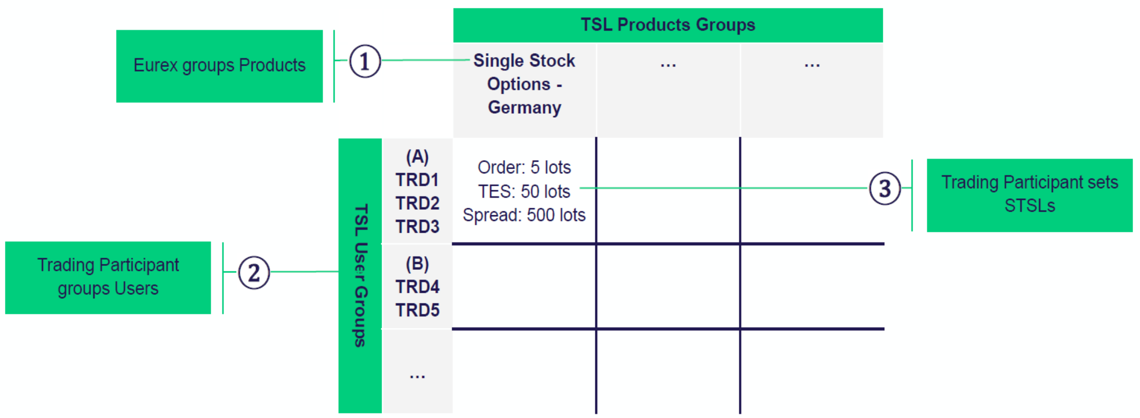
Trading Participant Defining Standard TSLs (STSLs)

- Eurex groups products into TSL Product Groups (i.e. Single Stock Options with German Underlyings).
- Trading Participants can group users into TSL User Groups
- Trading Participants can configure STSLs per Product Group and User Group



Transaction Size Limits (TSL)

Trading Participant Defining Standard TSLs (STSLs)



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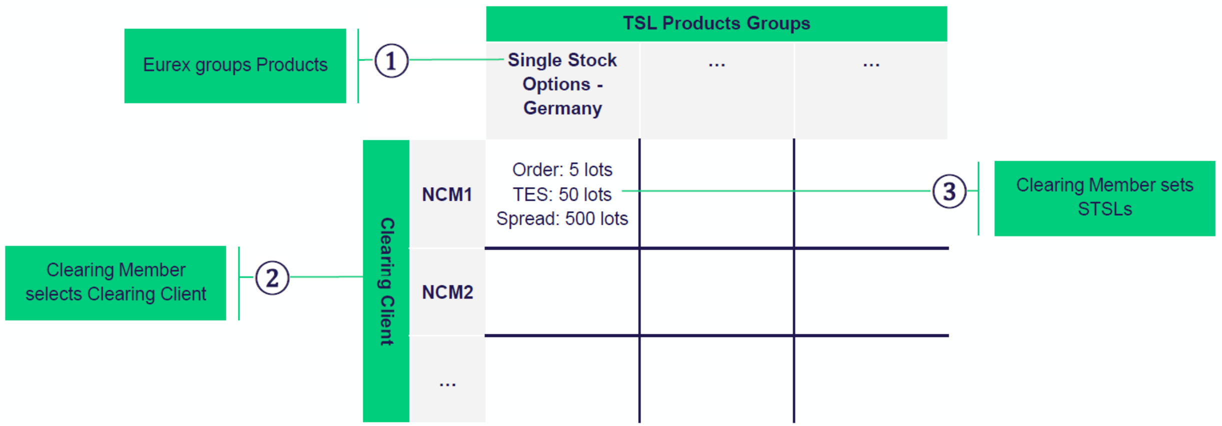
Clearing Member Defining Standard TSLs (STSLs)



- Eurex groups products into TSL Product Groups
- Clearing Member selects Clearing Clients
- Clearing Member configures STSLs

Trading Participant Defining Exception TSLs (ETSLs)

Trading Participant defines exceptions

#	Products	User	Order Limit	TES Limit	Spread Limit
1	DAI	**User Group** TRD001	10	100	1,000
...	DAI	User Group A	20	200	500
n					

- Trading Participants can use ETSLs to overwrite (up- or downwards) STSLs for specific users, product & TSL type
- The maximum allowed number of ETSLs may not be exceeded when summing up the ETSL on TSL user group level and user level.
- Trading Participants can spend ETSLs as they see fit, i.e. a user/ user group might have 200 ETSLs while another has none
- An ETSL per user and product will have a higher priority than an ETSL per TSL user group and product. Consequently, in case of coinciding ETSLs on user level versus TSL user group level, the ETSL on user level will be used for the calculation of the effective TSL.
- ETSL cannot be used to circumvent limits defined by Clearing Members or Eurex

3 Quote Validation

Quote Validation

- The limit price of a quote is subject to the same validations as the limit price of an order:
  - It must comply with the price step table of the instrument
  - User may request the limit prices of the quote to be validated with the Price Reasonability Check
  - Quotes not validated with the Price Reasonability Check are tested with the Extended Price Range Validation for the product (if enabled)
- Quote quantity must be equal or above the minimum quote size, defined individually per product
- Total quote quantity must be above the minimum quote size. The open quote quantity might fall below the minimum threshold but it is not considered a violation of the minimum quote size
- Different minimum quote size requirements apply during fast market state

4 Market Maker Protection (MMP)

Market Maker Protection (MMP)

What is MMP	How it works?
• T7 offers a Market Maker Protection (MMP) mechanism, which prevents too many quotes from a market maker to be executed in a short period of time using statistics • The MMP is not a mandatory feature. In case no limits are set, T7 does not perform any check. If limits are set, but an individual limit equals zero, the corresponding statistic is not checked • A deactivation due to MMP takes place only after the matching of an incoming order or quote has been completed. If the limit is exceeded, T7 automatically triggers a quote deactivation • The exchange enables or disables this feature on a product basis	• T7 calculates for each session and product several statistics on the traded volume: **Volume**, **Delta**, **Vega** and **Percent Statistic** a) Only trades during instrument state "continuous" trading are taken into consideration for the calculation of the statistics b) Only trades that occurred before the last trade are considered for the calculation for these statistics c) The statistic value is reset to 0 when the corresponding limit is exceeded • The size of the time window and the limit values of the four statistics are configured by the market maker • The statistics can be set either at product level or at instrument level (for each instrument type)

Market Maker Protection (MMP)

- The four MMP statistics represent four different methods of counting the traded contracts
- Volume, Delta and Vega statistics are computed differently for futures and options:

Statistic Figures	Options	Futures
Volume Statistic	#BC + #BP + #SC + #SP	#BF + #SF
Delta Statistic	(#BC – #SC) – (#BP – #SP)	#BF – #SF
Vega Statistic	(#BC + #BP) – (#SC + #SP)	N/A

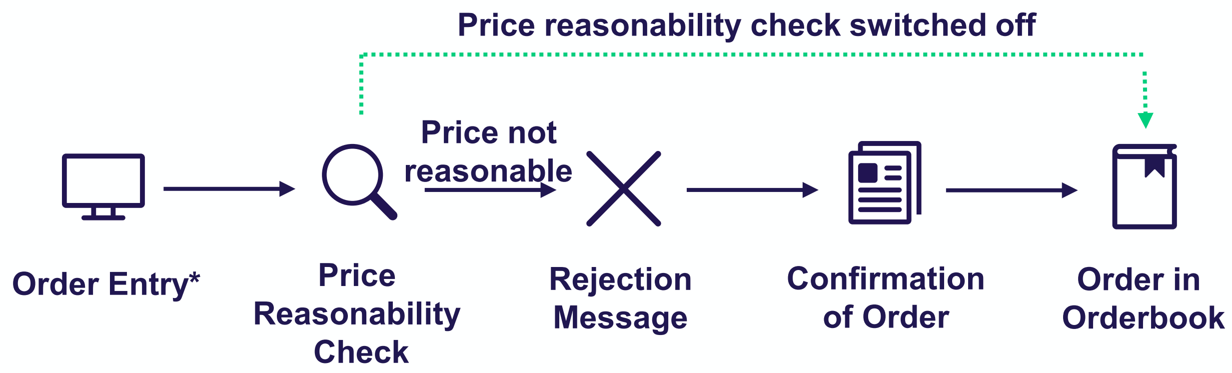
- The percent statistic sums up a value determined comparing the traded volume of the quote to the original total size of the quote. The idea is to have a volume statistics that gives equal weight to quotes with different quantities in different instruments
- Percent Statistic $= \sum \mathrm{Round}\ (100\ \times \mathrm{Traded\ Quantity}\ \div \mathrm{Total\ Quantity})$

5 Price Reasonability Check and Extended Price Range Validation

Price Reasonability Check (PRC): Mechanism

- System-related check of limit orders/quotes in futures/options trading before the order is written into the order book, based on a reference price. Its purpose is to reduce operational risk.
- **Optional** check but obligatory for stop limit orders.
- Condition for rejection:
  - **Buy Limit Price > Reference Price + Price Range(ref. Price)**

    Or
  - **Sell Limit Price < Reference Price – Price Range(ref. Price)**
- Exclusively performed in instrument state “Continuous”
- The standard price range tables for a specific product are published by T7’s Reference Data Interface in the product snapshot message (RDI group message name: PriceRangeRules).



* Simplified illustration, no distinction between mandatory and optional price reasonability check

- If entered order/quote limit is outside of range, then the order/quote is not automatically admitted into order book but rejected with message “STANDARD PRICE VALIDATION FAILED”. The order can be reconfirmed by trader via the Eurex Trader GUI.
- The message can be switched on or off by the Trading Participant via the ETI settings (see next slide).

Price Reasonability Check (PRC): ETI Settings

When entering an order/quote, the trader can choose one of the following alternatives in ETI:

- **Skip price reasonability check**

  In case the price reasonability check is skipped, an extended price range check is done by the exchange to protect markets from obviously mispriced orders (see below for further explanations).

- **Optional price reasonability check**

  Relevant parameters: order book situation, availability of an additional reference price.

  If no price reasonability check is performed, the incoming order/quote is accepted without performing a PRC validation and without additional notification.

- **Mandatory price reasonability check**

  Relevant parameters: order book situation, availability of an additional reference price.

  If no price reasonability check can be performed by the exchange, the incoming order/quote is rejected with a specific notification to the entering trader.

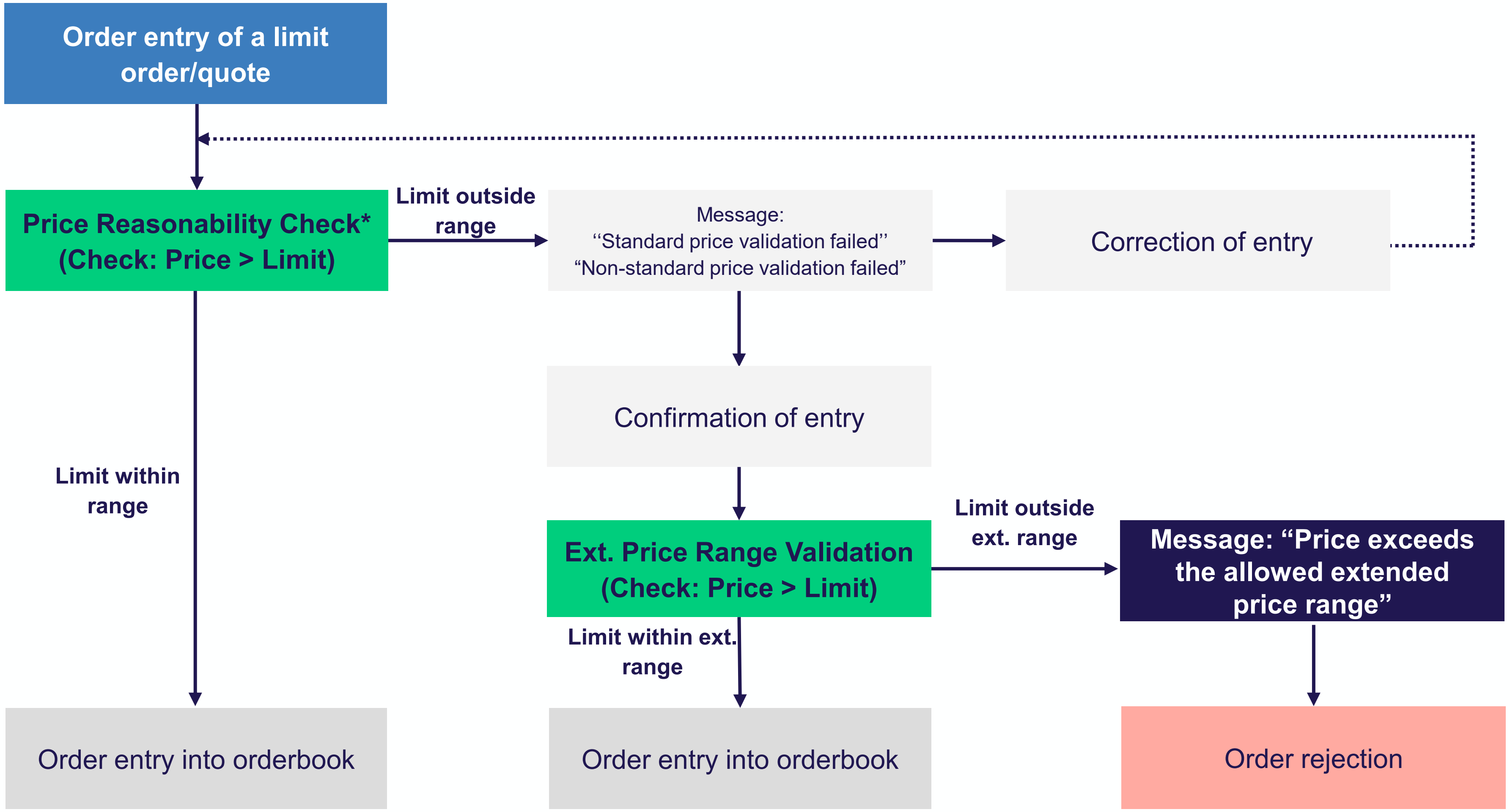
PRC: Reference Price Determination

Standard procedure	Conditions
Best available price on opposite side of incoming order (for buy order the best sell price and vice versa) as published by market data feed.	• Best buy and sell price are available • Price difference between best buy and best sell price equal or smaller than applied price range • Exception: No best buy price available > smallest allowed limit price is used (OTM options) • For stop limit orders that are not triggered directly on entry or modification, the reference price to be applied is the stop price of the order itself.

Non-Standard Procedure	Conditions

▪ Alternative reference price must be available
▪ Reference price can be:
  ▪ Last traded price
  ▪ Theoretical price
  ▪ Previous day’s settlement price
	If none of the prices are available, no check is done and incoming order/quote is rejected (for option “mandatory price reasonability check”) or accepted (for option “optional price reasonability check”)

PRC for Limit Orders



* Simplified illustration, no distinction between mandatory and optional price reasonability check

Price Not Reasonable Check range

Limit buy/sell orders beyond the below pre-defined range above/below the last price will generate PNR pop up			
Equity-related future products	**Range in points**	**Equity-related future products**	**Range in points**
FDAX Future on DAX Index	10	ODAX	
FESX Future on Euro STOXX 50 Index	10	OESX	
FSMI Future on SMI Index	15	OSMI	
FESB Future on STOXX Bank	2	OESB	
FEXD	2 if <100, 2% if >100	OEXD	
Single Stock Futures	0.2	Equity Options	
Single Stock Futures (on British Underlyings)	20		
FEDV	40	OEDV	
TESX	20		
Stoxx Index Futures	Product specific	Stock Index Options	Price Range Table accessible via RDF/RDI
FVS	2 if <100, 2% if >100	OVS2	
MSCI Index Futures	Product specific	MSCI Index Options	
		OKS2	
Fixed Income-related futures products	**Range in points**	**Fixed Income-related futures products**	
FGBL, FGBM, FGBS	0.05	OGBS, OGBM, OGBL	
FGBX	0.3	OGBX	
FBTP	0.2	OEXD	
FBTM	0.1	OBTP	
FBTS, FBON, FOAT, CONF	0.15	OOAT	

Extended Price Range Table

Maximum permitted deviation from the reference price				
Product	**Min Price**	**Absolute Value**	**Min Price**	**Relative Value**
FDAX Future on DAX Index	0	4,00	400	1,00%
FESX Future on Euro STOXX® 50 Index	0	4,00	400	1,00%
FSMI Future on SMI Index	0	4,00	400	1,00%
FSTX Future on STOXX® 50 Index	0	4,00	400	1,00%
Futures on STOXX® Sector Indices	0	1,00	100	1,00%
FGBL Future on 8 ½ – 10 ½ Yr. German Gov. Bonds	0	0,15	50	0,30%
FGBM Future on 4 ½ – 5 ½ Yr. German Gov. Bonds	0	0,10	50	0,20%
FGBS Future on 1 ¾ – 2 ¼ Yr. German Gov. Bonds	0	0,05	50	0,10%
FGBX Future on 24 – 35 Yr. German Gov. Bonds	0	0,20	50	0,40%
FBTP Future on 8 ½ – 11 Yr. Italian Gov. Bonds	0	0,20	50	0,40%
FBTM Future on 4 ½ – 6 Yr. Italian Gov. Bonds	0	0,10	66	0,15%
FBTS Future on 2 – 3 ¼ Yr. Italian Gov. Bonds	0	0,20	50	0,40%
FOAT Future on 8 ½ – 10 ½ Yr. French Gov. Bonds	0	0,15	50	0,30%
FOAM Future on 4 ½ – 5 ½ Yr. French Gov. Bonds	0	0,15	50	0,30%
FBON Future on 8 ½ – 10 ½ Yr. Spanish Gov. Bonds	0	0,15	50	0,30%
CONF Future on 8 – 13 Yr. Swiss Gov. Bonds	0	0,15	50	0,30%

The extended price range table can be accessed via the following page: https://www.eurex.com/ex-en/data/trading-files/product-information --> Trading Parameters --> YYYYMMDD_extendedPriceRangeTables.csv

6 Pre-Trade Risk Quantity Limits

Pre-Trade Risk Quantity Limits

- The pre-trade risk limits (PTRL) functionality provides the possibility to continuously check in real-time whether traded quantities (on-book/off-book) in combination with incoming transactions will breach the pre-defined risk limits. In case the pre-trade risk limit functionality is activated and a newly submitted transaction (on-book/off-book) would breach the defined pre-trade risk limit, the transaction will be rejected.
- Limits set separately for order book and TES trades, defined at product level and changeable intraday
- PTRL positions will not reflect trade cancellations. The previously consumed risk quantity of the cancelled trade is not restored.
- The limits can be set:
  - by the NCM for his own risk groups
  - by a GCM to his NCM and his own risk groups
  - by a Sponsored Access Provider
  - by the Exchange for a business unit
- Quantities from the previous day are not taken into consideration. In case of a complex instrument, the quantity of an open order is given by the sum of all legs with a buy (sell) side indicator multiplied with the corresponding leg ratio. The futures leg of an option volatility strategy as well as the futures leg of a vola trade attached to a TES options trade are not taken into account for the limits.

* With the Release 13.1 the Pre-Trade Risk Quantity Limits calculation no longer considers Option Quotes

Pre-Trade Risk Quantity Limits for Outright futures

The limit quantities are calculated differently for Order Book trading and TES trading.

On-book Trading

- Buy side on-book statistics
  = Traded on-book quantity on buy side
  - Traded on-book quantity on sell side
  + Quantity of open orders & quotes on buy side,
- Sell side on-book statistics
  = Traded on-book quantity on sell side
  - Traded on-book quantity on buy side
  + Quantity of open ordes & quotes on sell side.

Off-book Trading

- Buy side off-book statistics
  = Traded off-book quantity on buy side
  - Traded off-book quantity on sell side
  + Quantity of pending off-book trades on buy side,
- Sell side off-book statistics
  = Traded off-book quantity on sell side
  - Traded off-book quantity on buy side
  + Quantity of pending off-book trades on sell side.

Pre-Trade Risk Quantity Limits with Future Spreads

Netting Coefficient (NC) allows trading participants to define how much of the quantity of a Future Spread is considered in existing PTRL checks for TES & CLOB.

While Calendar Spread Orders were considered in Long & Short Limit simultaneously, they will only be considered in one, depending on trade direction (like any other outright order)

PTR Limit	=	Open Orders / Quote	+	Net Position (Trades)
Proposal		Configurable NC %		Configurable NC %

The limit quantities calculated with Futures Spreads taking into account:

PTRL Consumption Buy

= (Net Position Buy + Open Quantity Buy) *except for Futures Spread*
+ Round [NC x (Futures Spread Net Position Buy + Futures Spread Open Buy Quantity)]

PTRL Consumption Sell

= (Net Position Sell + Open Quantity Sell) *except for Futures Spread*
+ Round [NC x (Futures Spread Net Position Sell + Futures Spread Open Sell Quantity)]

Pre-Trade Risk Quantity Limits for Options (1/2)

With release of T7 13.1, Eurex introduces scope enhancements for PTRL for options providing following features, removing the Quotes and Quote Weighting Coefficient (QWC)

Limit Aggregation

- Puts/Calls counted based on their position effect, i.e., Buy Call (BC) and Sell Put (SP) count to long position while Buy Put (BP) and Sell Call (SC) to short position

PTRL Options		Net Position		Open Quantity
Long	=	BC + SP - BP - SC	+	BC + SP
Short	=	BP + SC - BC - SP	+	BP + SC

Pre-Trade Risk Quantity Limits for Options (2/2)

Delta Equivalent Futures Quantities

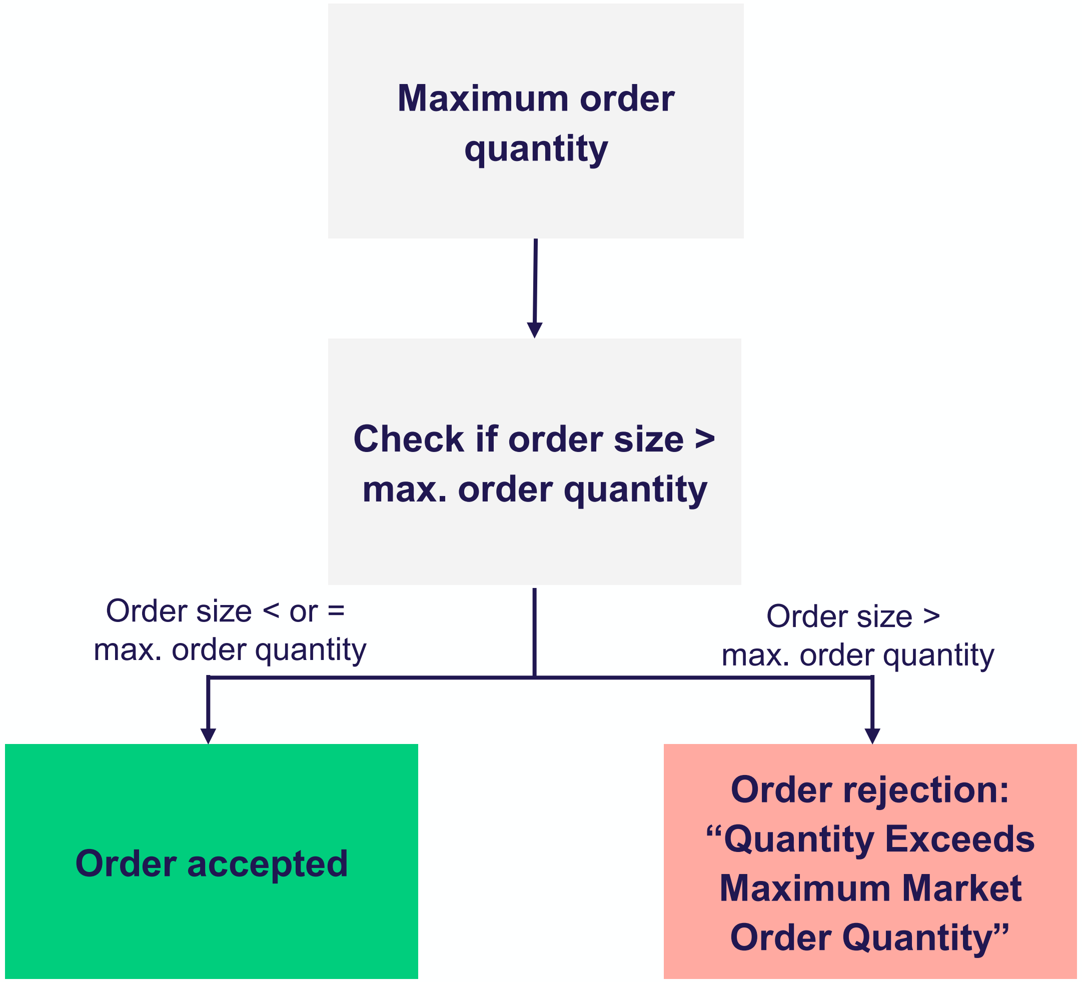
- For the risk profile of each options instrument – complex as well as simple – while consuming PTRL, Delta Equivalent Futures Instrument quantities will be applied for option PTRL consumption based on a fixed, end-of-previous day instrument specific option-delta that will weigh each order and quote incoming transaction as well as when it is executed.
- These instrument specific constant deltas will be published to the members via reference data valid per day.

Complex Instrument treatment

- Like Future Spreads, complex instruments in options will affect the PTRL consumption as a whole and will no longer be broken down to leg instrument components.
- Specifically, for option volatility strategies (OVS), this will change the treatment for the underlying futures leg with regard to the PTRL consumption. The corresponding futures underlying quantity of an OVS will be considered in the respective long or short Net Position as well as the Open Quantity of the reference Option PTRL consumption for OVS.

7 Maximum Order Quantity & Maximum Order Value

Maximum Order Quantity (Market/Stop Orders, Futures)



Maximum order quantity for market- and stop market-orders (Futures)	
Product	**No. of Contracts**
FDAX Future on DAX Index	500
FESX Future on Euro STOXX® 50 Index	1000
FSTX Future on STOXX® Europe 50 Index	250
FSMI Future on SMI Index	500
FESB Future on Euro STOXX® Banks/ FSTB Future on STOXX® 600 Banks	500
Futures on STOXX® Sector Indices	50
Futures on Euro STOXX® Sector Indices	50
FGBL Future on 8 ½ – 10 ½ Yr. German Gov. Bonds	2000
FGBM Future on 4 ½ – 5 ½ Yr. German Gov. Bonds	2000
FGBS Future on 1 ¾ – 2 ¼ Yr. German Gov. Bonds	2000
FGBX Future on 24 – 35 Yr. German Gov. Bonds	250
FBTP Future on 8 ½ – 11 Yr. Italian Gov. Bonds	2000
FBTM Future on 4 ½ – 6 Yr. Italian Gov. Bonds	2000
FBTS Future on 2 – 3 ¼ Yr. Italian Gov. Bonds	2000
FOAT Future on 8 ½ – 10 ½ Yr. French Gov. Bonds	2000
FOAM Future on 4 ½ – 5 ½ Yr. French Gov. Bonds	2000
FBON Future on 8 ½ – 10 ½ Yr. Spanish Gov. Bonds	2000
CONF Future on 8 – 13 Yr. Swiss Gov. Bonds	250

Maximum Order Value

- With T7 Release 12.0, maximum order value (MOV) check is enhanced by linking the exchange specified limits for each product with the Trading Participant defined max order value.

- Effective limits for maximum order value will therefore be the minimum of user limit set by Trading Participant and the limit set by the exchange

- The possibility to skip the maximum order value check based on the respective instruction sent via the order layout will continue to be available via a flag but only for limit set by the Trading Participant, not the exchange

- Eurex will set the limits per product in accordance with the current Transaction Size Limit regime and will communicate these limits prior to application

- With T7 Release 12.1, the following fields will be added to RDI* and RDF in the Product snapshot by the exchange:
  - Maximum Order Value by Exchange
  - Maximum Order Quantity by Exchange
  - Maximum Calendar Spread Quantity by Exchange
  - Maximum TES Quantity by Exchange

- With T7 Release 14.1, a service admin of the Sponsored Access (SpA) provider can define a mandatory MOV check for SpA users.

*RDI: https://www.eurex.com/ex-en/data/free-reference-data-api

8 Market Order Matching Range

Market Order Matching Range

Matching rules for market orders

- Market orders: Matched at best available bid or ask price or saved on the order book when they cannot match due to the validation (partial match possible)
- Market order matching range defines price interval, outside which no matching takes place
- The market order matching range helps to prevent extreme price fluctuations
- Incoming market buy order: Match against sell book order until the execution price exceeds the value of best buy price + market order matching range
- Incoming market sell order: Match against buy book order until the execution price falls below the value of best sell price - market order matching range
- If difference between best buy price and best sell price, i.e. bid/ask spread > market order matching range, incoming market orders are not executed

- Instrument states which offer market order for Options:
- Instrument state **Book**: Market orders will be rejected
- Instrument state **Continuous**: Market orders will be rejected if there is no valid bid / ask price available on opposite side of incoming Market order (validation to be applied also to Market order modifications)
- Instrument state **Auction**: Market orders generally allowed Transition to **Continuous**: Sitting Market orders are validated and, if necessary, cancelled (valid also for Auction Uncrossing)
- **Stop** Market orders to be generally rejected

Market Order Matching Range

Market Order Matching Range

↓

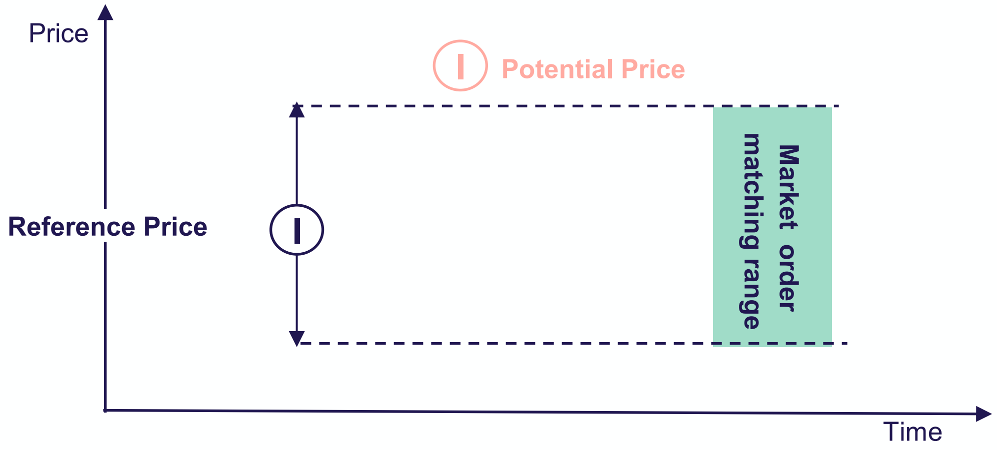
Check if potential execution price is outside market order matching range

Execution price within range → **Order executed**

Execution price outside range → **Order not executed, but written into orderbook**

Product related limits (examples)

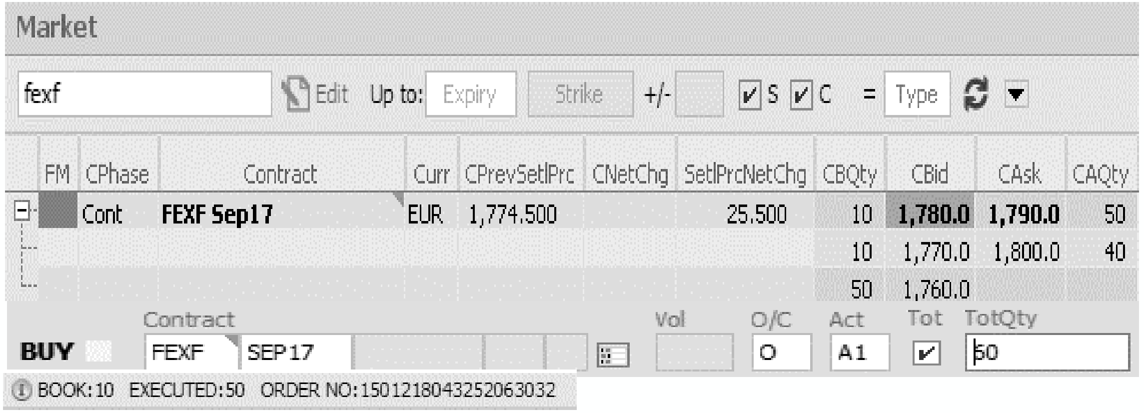
Max. deviation in points	Market order matching range
FDAX	10
FESX	10
FGBL	0,05
FGBM	0,05
FGBS	0,05
FGBX	0,3
FBTP	0,2
FBTM	0,1
FBTS	0,15
FOAT	0,15
FOAM	0,15
FBON	0,15
CONF	0,15



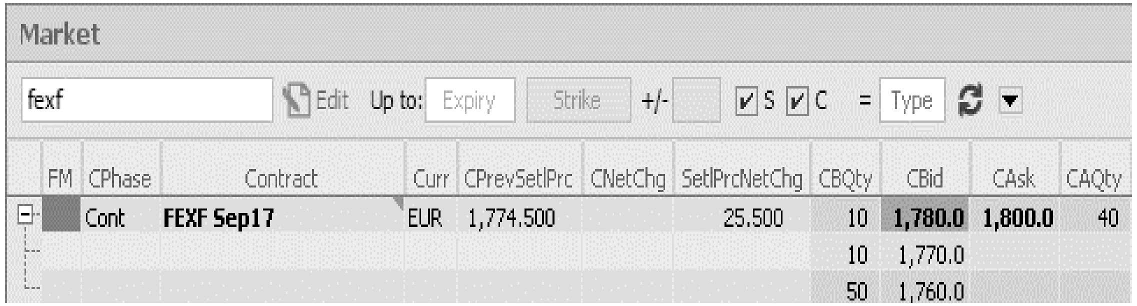
Market Order Matching Range: Example

- The current order book for FEXF is as shown. The market order matching range for FEXF is 10 points
- A buy market order for 60 lots gets entered
- From the market order 50 contracts are executed (@1790). The remaining 10 contracts don't get executed because potential execution price outside market order matching range (= best buy price + 10 points = 1780+10=1790). The unexecuted part of the market order is written into the order book but can't be seen by the Trading Participants

Order book before execution



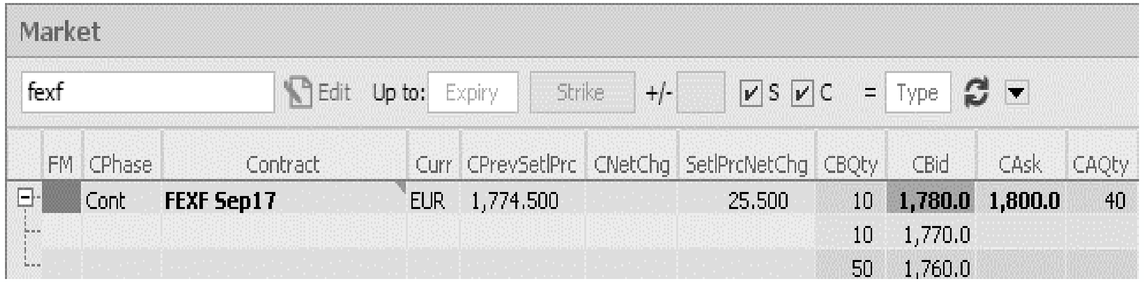
Order book after the first execution



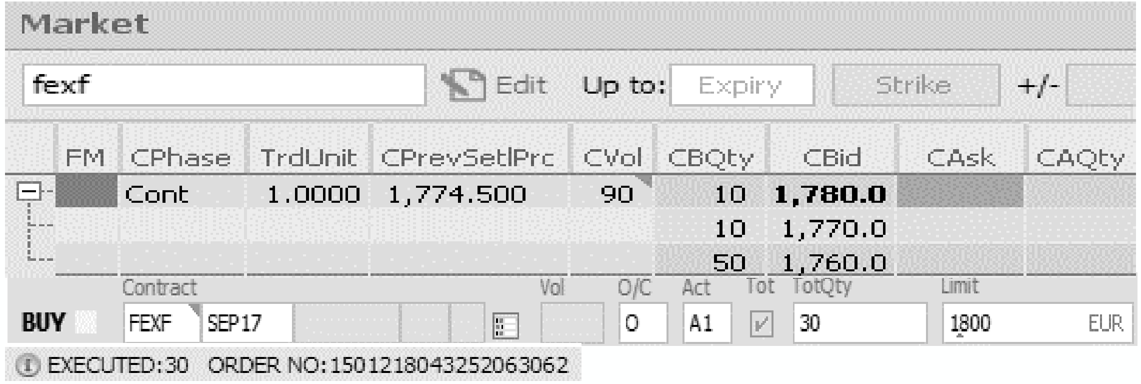
Market Order Matching Range: Example (cont.)

- New buy limit order necessary to trigger the remaining part of the market order
- Book market orders are executed at the best available limit price and not protected by the market order matching range like incoming market orders
- A buy limit order with price of 1800 for 30 lots is entered. The resting book market order is triggered and executed for the remaining 10 lots against the best available price of 1800. Afterwards the new buy limit order (@ 1800, Qty 30) gets executed for the full quantity
- With T7, the market order matching range works in the same way for futures and options

Order book before the second execution



Order book after the second execution



9 Volatility Interruption

Volatility Interruption: The functionality I

- The Eurex Volatility Interruption Functionality is a safeguard which aims to ensure market integrity and price continuity by preventing matching of incoming orders that would lead to an erroneous trade price and stop sudden price cascades.

- In the functional concept of the Volatility Interruption, the potential trade price of an incoming order is checked against all prices of previously executed trades in the same instrument within configured lookback time windows, the so-called reference prices. In order to account for different liquidity scenarios, Eurex currently applies two time windows, a “short” and a “long” one, configured for each product together with the respective parameters for the allowed price deviation.

- A Volatility Interruption will be triggered if the allowed price deviation is exceeded, i.e.:

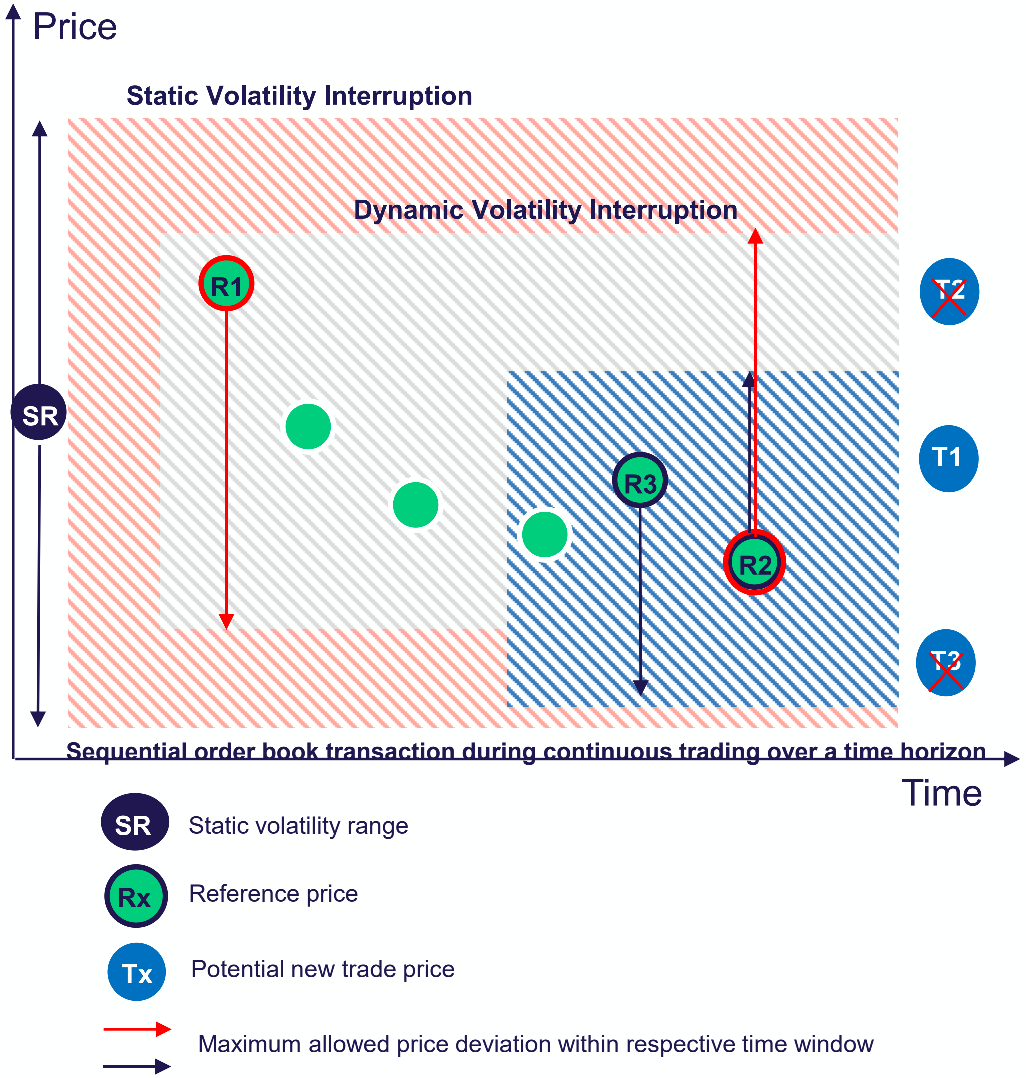
  - **Potential trade price of an incoming order > Reference Price Low + maximum allowed price deviation or**
  - **Potential trade price of an incoming order < Reference Price High - maximum allowed price deviation**

- The execution of the incoming order will be prevented and the affected instrument or all instruments of the affected product will be automatically moved from continuous trading to a volatility auction. The incoming order that triggered the volatility auction is written to the auction book, or in case of an IOC order, it is cancelled. Executions which happened before the volatility interruption was triggered, remain valid.

- Eurex volatility auctions behave like normal Eurex auctions, market participants are able to submit, maintain or cancel orders without matching taking place. The Volatility Interruption along with its indicative auction price is available and published to the market.

- For further information please refer to Chapter 7.5 Volatility Interruption in the Functional Reference.

Volatility Interruption: The functionality II



Functional Description

- Each potential new trade price (blue bullet) is checked against all previous trades in the same instrument (green bullets), that executed within the configured time window.
- There are two lookback time windows defined, the "Long" (grey area) and the "Short" (blue area) for each product
- Both short and the long time windows have their own independent set of configurations for parameters of the maximum allowed price deviation on product level.
- The parameters take risk profile and volatility of products into consideration.
- The maximum allowed price deviation is calculated by applying a configured percentage parameter to the highest and lowest prices of the previous trades within the time windows (red (long) and black (short) circles).
- Potential trade price T1 is inside of parameters of both short and long time window and will therefore lead to an execution.
- Potential trade price T2 is outside of parameters of short time window and the match will be prevented. A volatility interruption is triggered.
- Potential trade price T3 is outside of parameters of the long time window and will therefore not be executed either. A volatility interruption is triggered.
- The Static volatility range is used along with the existing long and short dynamic ranges, and additional trigger mechanism for Volatility Interruptions introduced in T7 Release 12.1

Volatility Interruption: Static Volatility

Product Type / TSL Product Group	TSL Product Group Description	Static Volatility Threshold	Product Exemption
FBND			
FIFL	FIXED INCOME FUTURES - TENOR L	5%	FGBX (10%)
FIFM	FIXED INCOME FUTURES - TENOR M	5%	
FIFS	FIXED INCOME FUTURES - TENOR S	5%	
FCUR			
DUKCF	DAILY USDKRW CURRENCY FUTURES	5%	
FXF	CURRENCY FUTURES	5%	
FINT			
MMF	MONEY MARKET INDEX FUTURES	2,5%	
FINX			
BIF	BOND INDEX FUTURES	15%	
CIF	COMMODITY INDEX FUTURES	15%	
IDF	INDEX DIVIDEND FUTURES	30%	
IFL1NH	INDEX FUTURES - LIQUIDITYCLASS 1 - NV HIGH	10%	
IFL1NM	INDEX FUTURES - LIQUIDITYCLASS 1 - NV MID	10%	
IFL2NH	INDEX FUTURES - LIQUIDITYCLASS 2 - NV HIGH	10%	FBTE/FBTU (15%)
IFL2NL	INDEX FUTURES - LIQUIDITYCLASS 2 - NV LOW	10%	
IFL2NM	INDEX FUTURES - LIQUIDITYCLASS 2 - NV MID	10%	
IFL3NH	INDEX FUTURES - LIQUIDITYCLASS 3 - NV HIGH	15%	
IFL3NL	INDEX FUTURES - LIQUIDITYCLASS 3 - NV LOW	15%	
IFL3NM	INDEX FUTURES - LIQUIDITYCLASS 3 - NV MID	15%	
KOF	KOSPI-FUTURES	10%	
FSTK			
EXTFF	EXTF-FUTURES	15%	
FETCS	FUTURES ON ETC SECURITIES	15%	
FXG	FUTURE ON XETRA-GOLD	15%	
SSF	SINGLE STOCK FUTURES	15%	
STF	STOCK TRACKING FUTURES	15%	
FVOL			
VIF	VOLATILITY INDEX FUTURES	30%	

- The static volatility interruption will, apart from preventing sharp price movements within short time, also prevent large price movements across the entire business day.

- Static volatility interruption is activated for all Futures products excluding products with different trading-clearing notation, i.e., Total Return Futures, EURO STOXX 50® Variance Futures (EVAR) and Eurex MOC Futures on EURO STOXX 50® Index Futures (FES1), as well as all Single Stock Dividend Futures.

- Reference prices for determining the static volatility interruption remain static over the trading day and will automatically update based on the following hierarchy:

  1. Last auction price (this includes volatility auction prices),
  2. Previous day’s closing price,
  3. Previous day’s settlement price,
  4. Settlement price of the nearest expiry

Further details here:
- https://www.eurex.com/ex-en/support/emergencies-and-safeguards/volatility-interruption-functionality
- https://www.eurex.com/ex-de/ressourcen/rundschreiben/circular-3989346

Volatility Interruption: Process Steps

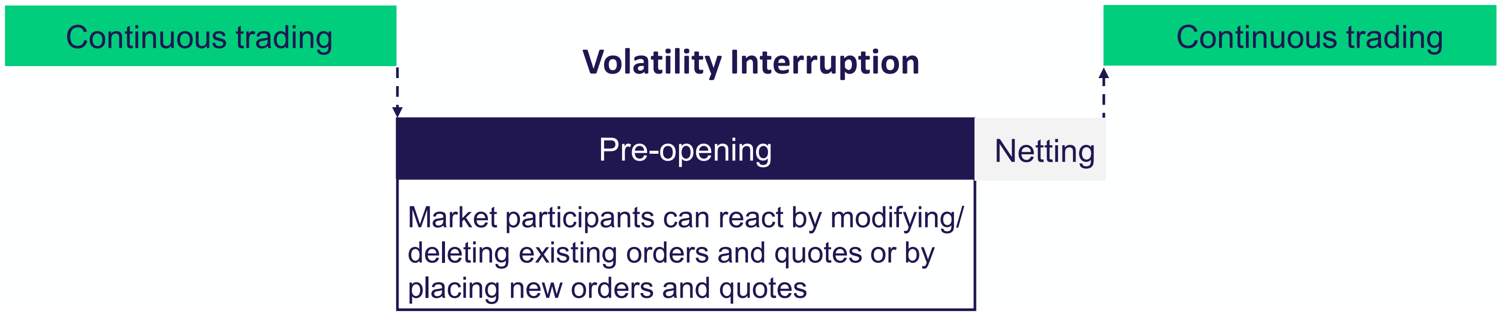
- Change of trading phase occurs: Volatility auction phase
- Information to trading members via news board

News Board

SYSTEM-NEWS | MS-NEWS | GUI | LEGAL | RISK | SYSTEM > 02.08.2016 05:00:00

Source	Type	Market	Time	Product	Contract	Title	Text
SYSTEM-NEWS	Info	XEUR	01.08.2017 14:48:42.662	FVS	FVS Sep17	VOLATILITY_INTERRUPT	VOLATILITY INTERRUPT IN PRODUCT FVS

- Non-persistent orders/quotes are deleted. The incoming order that triggered the volatility auction is written to the auction book, or in case of an IOC order, it is cancelled.
- Re-opening of trading phase: Trading Operations commits the auction once auction price is deemed in line of market price
- Preliminary auction price continuously displayed



- Ensure price continuity process
- Prevent adverse effects that may result e.g. due to triggered stop order cascades

10 Trade Cancellation

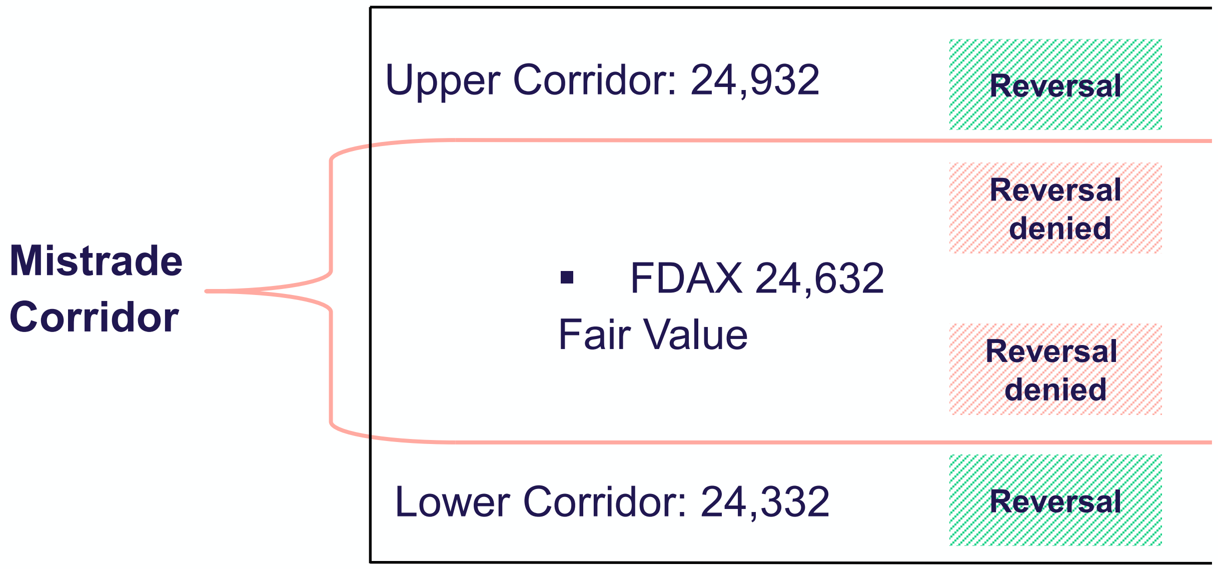
Cancellation of Transactions (Mistrade Rule)

Factors impacting chance for cancellation of transactions:

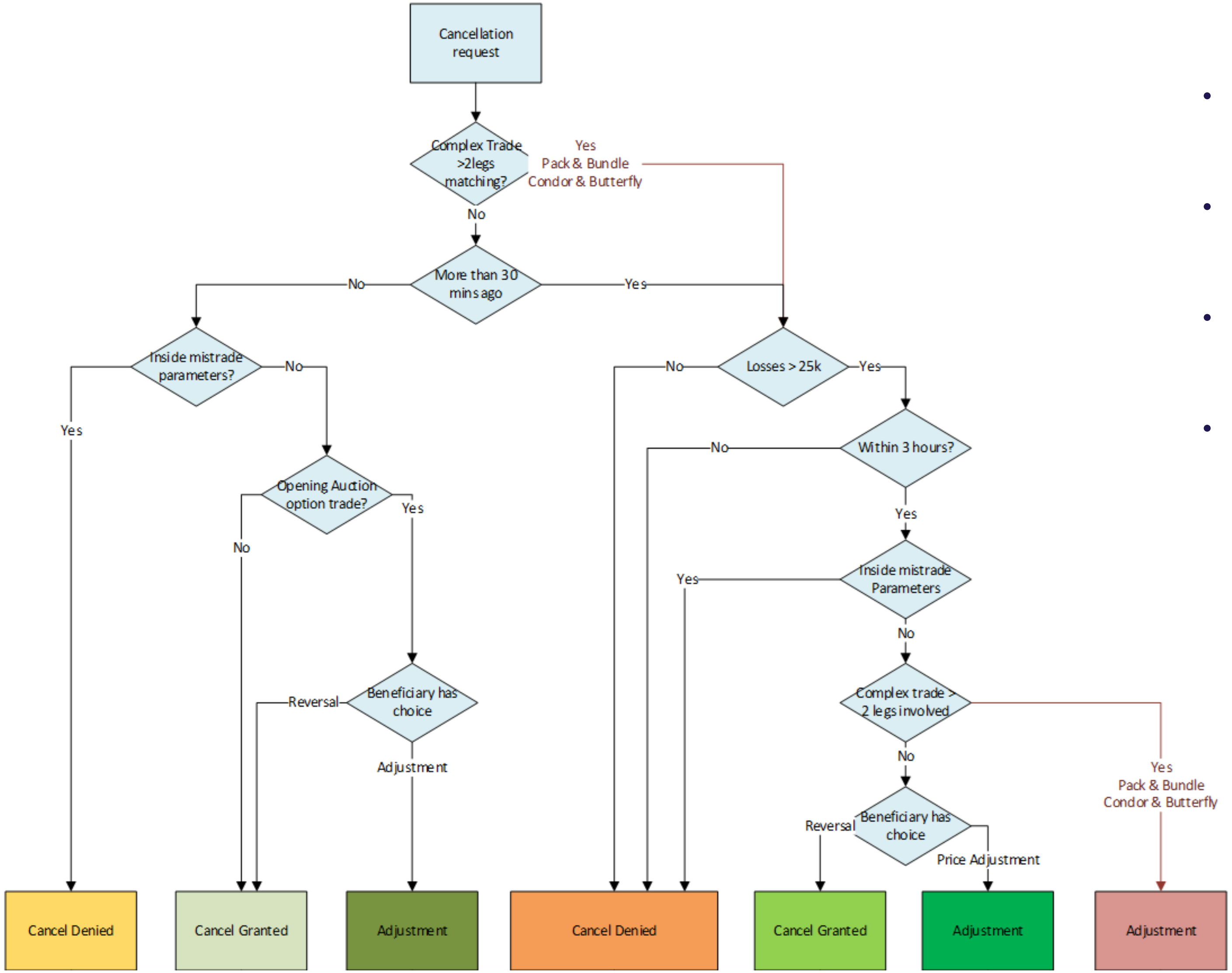
- Request submitted in correct format
- Timing of submission
- Price outside mistrade range
- Loss amount
- Voting right of counterparty, if applicable

Example:

- Product: FDAX Jun26
- Fair value: 24,632
- Mistrade range: 300 points (dynamic value)
- Mistrade low/high corridor: 24,332/24,932



Cancellation of Transactions: Illustration



- Note that a fee of EUR 500 will be charged if an official request for a mistrade claim has been made.
- Request for mistrade can be made via call to Eurex's Market Supervision at +49-69-211-11210.
- For auction trades in Futures, trades can only be cancelled.
- For auction trades in Options, traders on good side has the choice of price adjustment or cancellation.

Mistrade Parameters

- **Futures**: 20% of the reference price Price Change Percentile (PCP)
  - **Future spread:** 20% of the reference price, Price Change Percentile (PCP) or mistrade range floor
  - Mistrade range floor: max of 10% of the corresponding outright futures mistrade range and an absolute value of four ticks.
  - **Standard future strategy (FBUT, FCOND):** Strategy mistrade range depending on no. of total contracts within strategy:
  - 2 contracts 100%, 3 contracts 125%, 4 or more contracts 150%
  - **Strip & non-standard future strategy =100%**

- **Options**: Individual parameters are defined per product
  - **Strategies**: Special mistrade rules are defined for strategies and weight-factors from leg ratios are used to calculate the mistrade range:
    - Mistrade range is calculated based on strategy price as well as leg instrument prices. Highest mistrade range is applied.
    - Mistrade range based on a leg instrument will be multiplied by the corresponding leg ratio.
    - For standard option volatility strategies mistrade range will be multiplied by the leg ratio of the standard options strategy part without the options leg multiplier.

The mistrade parameters are available on the Eurex webpage www.eurex.com under the relevant product specifications.
The updated rule for the calculation and examples of the mistrade ranges for option strategies is available in the circular 116/24 and for future spread floor in the circular 066/19.

*

Mistrade Calculation- Illustration

For standard and non-standard options strategies (**SOS** and **NOS**) and for non-standard options volatility strategies (**NOVS**), a fair strategy price is taken as a reference price to obtain a strategy specific mistrade range. A fair leg price is taken as a reference price to derive the leg specific mistrade range that is multiplied by the corresponding leg ratio. The overall mistrade range valid for the strategy is the highest range of the strategy specific mistrade range and the leg specific mistrade ranges of all strategy legs.

For standard options volatility strategies (**OVS**), a fair strategy price is taken as a reference price to obtain a strategy specific mistrade range. A fair leg price is taken as a reference price to derive the leg specific mistrade range that is multiplied by the leg ratio of the standard options strategy part without the options leg multiplier. Again, the overall mistrade range valid for an options strategy is the highest range of the strategy specific mistrade range and the leg specific mistrade range of all strategy legs.

OESX Mistrade Parameters	
Reference price (currency units)	Mistrade Range (currency units)
0 to 15	1.2
>15 to 225	8.0%
>225	18

Ex 1: Non-Standard-Option-Volatility-Strategy (NOVS)	Buy / Sell	Reference price	Leg Ratio (NOVS)	Leg Multiplier	Mistrade Range based on Reference	Final Mistrade Range
OESX NOVS B400 DEC24 4900 P - S900 DEC24 4650 P- B400 DEC24 4400 P vs B 23 FESX 4833		7,600			18.00	18.00
DEC24 4900	Buy	172.60	400		13.81	5,524
DEC24 4650	Sell	88.93	900		7.11	**6,399***
DEC24 4400	Buy	47.00	400		3.76	1,504
Ex 2: Options-Volatility-Strategy (OVS)	**Buy / Sell**	**Reference price**	**Leg Ratio (OVS)**	**Leg Multiplier**	**Mistrade Range based on Reference**	**Final Mistrade Range**
OESX BU23 JUN25 4900-5200 vs 26 FESX DEC24 @ 4760		-127			10.16	10.16
Jun25 4900 Call	Buy	119	2	100	9.52	**19.04***
Jun25 5200 Call	Sell	37	3	100	2.96	8.88

**Mistrade range*

EUREX

Mistrade Parameters (cont.)

- **Fast market**: Mistrade range + 100% for all options (all legs and strategy)
- **Last trading day**: Mistrade range + 100% for all equity and equity index-options for corresponding leg(s) and strategy
- **Expiry threshold:** Mistrade range + 100% for all equity and equity index-options for corresponding leg(s) and if all legs have far expiry, mistrade range + 100% for strategy

- **Important**: The mistrade fee is charged per order number (EUR 500 per order number) irrespective of any final decision to cancel/let the trade stand by Eurex Exchange.

  Mistrade regulations integrated into Conditions for Trading at Eurex Deutschland, chapter 2.9

The mistrade parameters are available on the Eurex webpage www.eurex.com under the relevant product specifications.

The updated rule for the calculation and examples of the mistrade ranges for option strategies is available in the circular 116/24 and for future spread floor in the circular 066/19.

11 Stressed Market Conditions (SMC)

Stressed Market Conditions

*There are two types of Stressed Market Conditions on Eurex market, the **SMC_Auto** under MiFID2, which is detected automatically by the T7 trading system with pre-defined parameters and the **SMC_Fast** which is set manually by Eurex for products and situations that are not covered by the SMC_Auto.*

A state of Fast Market/SMC implicates stressed market conditions where, the following price and quantity validations may be relaxed, depending on the product specific settings as decided by the exchange:

- *The Minimum Quote Size may be lowered and the Maximum Quote Spread for double-sided quotes may be enlarged*
- *The Price Range and Extended Price Range i.e., Price Reasonability Check may be enlarged*
- *The Market Order Matching Range may be enlarged*
- *Conditions for a Volatility Interruption to occur are relaxed*

All changes of SMC are communicated to the market through the Production Newsboard.

SMC_Auto

- SMC_Auto is implemented according to the MiFID2 regulation for Equity Index Futures, Equity and ETF Futures that will be triggered if one of the following criteria is met:
  - End of a volatility interruption
  - Simultaneous significant short-term change of price and volume during a predefined time interval
- SMC_Auto is set to 10 minutes, after which the product state will return to normal unless another SMC is triggered.
- Respective options defined as related products of the above-mentioned futures will be also switched to SMC along with the futures

Stressed Market Conditions

SMC_Fast

Eurex will set products to SMC_Fast at its own discretion if certain criteria are fulfilled. However, fulfilment of the criteria does not automatically lead to the switch of products into Fast as the decision will be made according to current market situation.

Decision criteria include but are not limited to the following:

- Significant movement of the underlying index/ share
- Economic releases, industrial news, company news or other information which will have large impact on the market, specific industry or specific products
- Significant movement of the volatility index e.g. VSTOXX, VDAX as indication for major equity index products and also market sentiment
- General orderbook situation
- Other criteria which may have influence on market movements

General process of setting products to Fast Market:

- It can be triggered both by Eurex or upon request by market participants.
- Eurex monitors movements in the market and products. Products that are detected to expect higher volatility, will be set manually to Fast Market and switched back to normal market condition if deemed necessary.
- The same evaluation and decision process will take place if there is any request from market participants.

12 Self-Matching Prevention (SMP)

Self-Match Prevention (SMP) – Overview

- Self-match prevention (SMP) allows the prevention of own (certain) orders/quotes of the same instrument to match against each other.
- **Type A** and **Market Wide SMP** are optional SMP.

SMP Type A

- Flexible SMP application per order or quote dependent on order layout field MatchInstCrossID (28744)
- **Active in continuous trading** but **not active across order books** e.g., synthetic matching, auctions
- T7 checks if the orders are owned by the same business unit and if they carry the same optional, user supplied SMP ID. If that is the case, the match between the two orders is prevented.
- 3 types of deletion instruction (*defined by incoming order*):
  1. **Cancel Aggressive and Passive (CAP)** - The quantity of both, aggressive and passive, orders will be reduced until at least one order is completely cancelled
  2. **Cancel Aggressive (CA)** – Results in the cancellation of the remaining quantity of the incoming order or quote
  3. **Cancel Passive (CP)** – Results in the cancellation of book order(s) or quote(s) on that match price level on the opposite side of the orderbook
- In case no SMP instruction is defined, but a SMP ID is entered, the **default handling will be CP** which starts on Dec 1, 2025

Market-wide SMP

- Introduced during T7 12.1's Release
- Prevents from matching in the same instrument irrespective of whether the orders or quotes were sent by the same or by a different trading participant., but can also be applied within one
- Both SMP Type A or market-wide SMP are **mutually exclusive** i.e., can't be used together
- **Market-wide SMP IDs are unique** and created by trading participants via **Eurex T7 Admin GUI**
  - After successful registration, SMP ID is available starting next business day.
- Market-wide SMP IDs can be shared amongst members and clients outside of T7
- **Types of deletion instruction available are identical to SMP type A**

*Guide on how to register and maintain the Market-Wide SMP IDs can be found in the below link, under Readiness Videos:
https://www.eurex.com/ex-en/support/initiatives/t7-release-12-1

Self-Match Prevention (SMP) – Example (Type A – CP)

Orderbook allocation impacts the treatment of SMP instruction.

Order Allocation "Time" (FIFO):

- Check of SMP event is done order-by-order. Consequently, Matching Engine is matching as much as possible before detecting and resolving a SMP event

Order Allocation of type Pro-Rata:

- Check of SMP event is done for all price best orders before matching starts. Consequently, Matcher Engine is resolving the SMP event before starting to match aggressive against passive orders

SMP instruction	Time allocation	Non-time allocation
CAP	Order-by-order, both orders will be reduced/netted	Per match price level, upfront, both orders will be reduced/netted
CA	Order-by-order, remaining quantity of incoming order will be cancelled	Per match price level, upfront, remaining quantity of incoming order will be cancelled
CP	Order-by-order, incoming order will completely cancel the resting orders with the same SMP ID	Per match price level, upfront, incoming order will completely cancel the resting order(s) with the same SMP ID.

Orderbook Allocation Time priority and SMP deletion instruction CP:

Incoming aggressive order is facing a passive order on the opposite orderbook side of the incoming order triggering an SMP event (**order-by-order SMP event check**), the corresponding passive order will be deleted entirely, regardless of the size of the incoming aggressive order triggering the SMP event.

Afterwards, the execution of the incoming order will continue. The incoming order will be executed, as long as quantity in the order book exists, and the remaining quantity will be written into the order book.

Example: **CCCFR incoming <u>Sell Limit order 500@7.3</u> with SMP ID 123 and CP instruction**

Initial order book

Member	SMP ID	SMP instruction	BID qty	BID price	ASK price	ASK qty
AAAFR			100	7,5		
BBBFR			200	7,5		
CCCFR	123	CA	50	7,5		
DDDFR			100	7,2		

Trade 100@7.5

Trade 200@7.5

Cancel passive 50

Post incoming 200@7.3

Final order book

Member	SMP ID	SMP instruction	BID qty	BID price	ASK price	ASK qty
~~AAAFR~~			~~100~~	~~7,5~~		
~~BBBFR~~			~~200~~	~~7,5~~		
~~CCCFR~~	~~123~~	~~CA~~	~~50~~	~~7,5~~		
CCCFR	123	CP			7,3	200
DDDFR			100	7,2		

(The incoming order with restriction CP is **<u>not</u>** displayed in the initial order book, but only sitting orders)

Orderbook Allocation Pro-Rata / Time Pro-Rata and SMP Deletion Instruction CP:

The passive orders triggering the SMP event will be deleted entirely on that price-level (there might be more than one passive order satisfying the SMP criterion).

Afterwards, the pro-rata matching weights of each remaining passive order involved in the match event will be calculated in accordance with the pro-rata allocation scheme and the match event will be executed.

Example: **CCCFR incoming <u>Sell Limit order 200@7.3</u> with SMP ID 123 and CP instruction**

Initial order book

Member	SMP ID	SMP instruction	BID qty	BID price	ASK price	ASK qty
AAAFR			100	7,5		
BBBFR			200	7,5		
CCCFR	123	CA	50	7,5		
DDDFR			100	7,2		

Trade 67@7.5

Trade 133@7.5

Cancel passive 50

Final order book

Member	SMP ID	SMP instruction	BID qty	BID price	ASK price	ASK qty
AAAFR			33	7,5		
BBBFR			67	7,5		
~~CCCFR~~	~~123~~	~~CA~~	~~50~~	~~7,5~~		
DDDFR			100	7,2		

(The incoming order with restriction CP is **not** displayed in the initial order book, but only sitting orders)

EUREX Architects of trusted markets

Thank you!

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