

# Trading Safeguards at Eurex Exchange

Eurex Market Supervision

May 2025



# Agenda

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# 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:



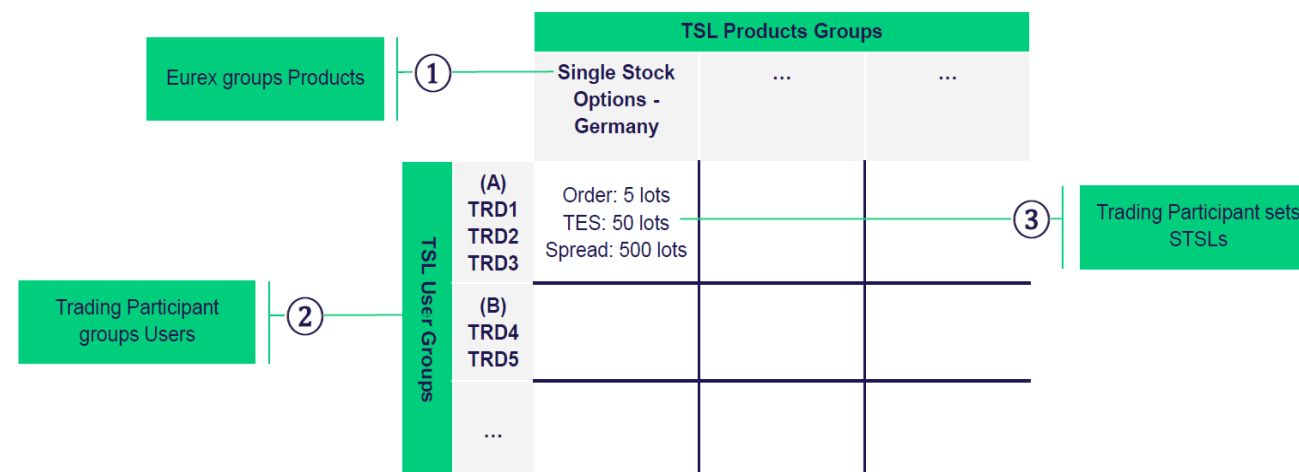
# 2 Transaction Size Limits (TSL)

# 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

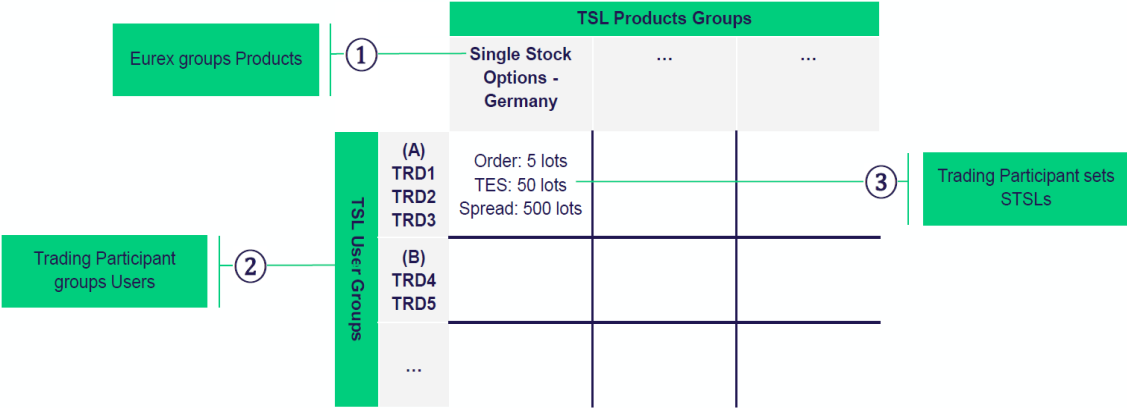
## Trading Participant Defining Standard TSLs (STSLs)

- 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



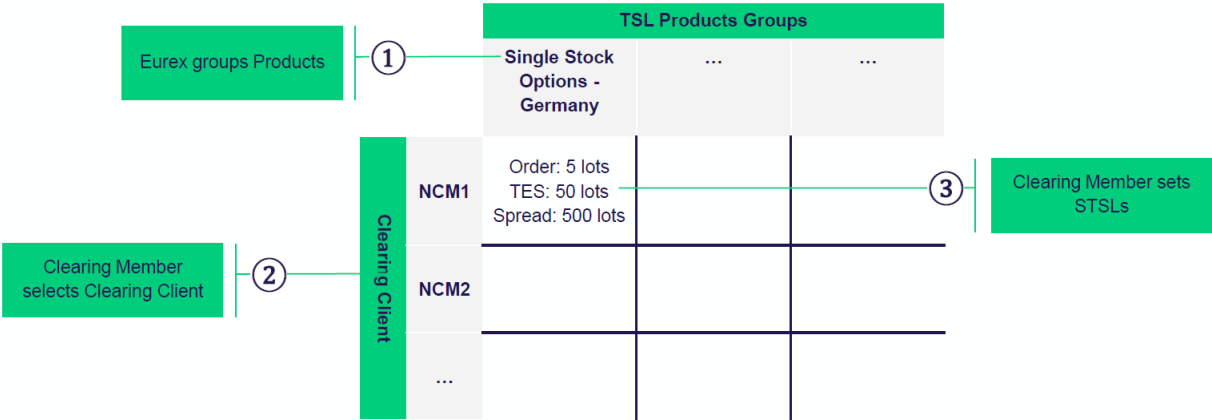
# Transaction Size Limits (TSL)

## Trading Participant Defining Standard TSLs (STSLs)



- 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

## 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)

#	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 Participant defines exceptions

- 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?
<ul style="list-style-type: none"><li>• 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</li><li>• 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</li><li>• 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</li><li>• The exchange enables or disables this feature on a product basis</li></ul>	<ul style="list-style-type: none"><li>• T7 calculates for each session and product several statistics on the traded volume: Volume, Delta, Vega and Percent statistic<ul style="list-style-type: none"><li>a) Only trades during instrument state “continuous” trading are taken into consideration for the calculation of the statistics</li><li>b) Only trades that occurred before the last trade are considered for the calculation for these statistics</li><li>c) The statistic value is reset to 0 when the corresponding limit is exceeded</li></ul></li><li>• The size of the time window and the limit values of the four statistics are configured by the market maker</li><li>• The statistics can be set either at product level or at instrument level (for each instrument type)</li></ul>

# 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:

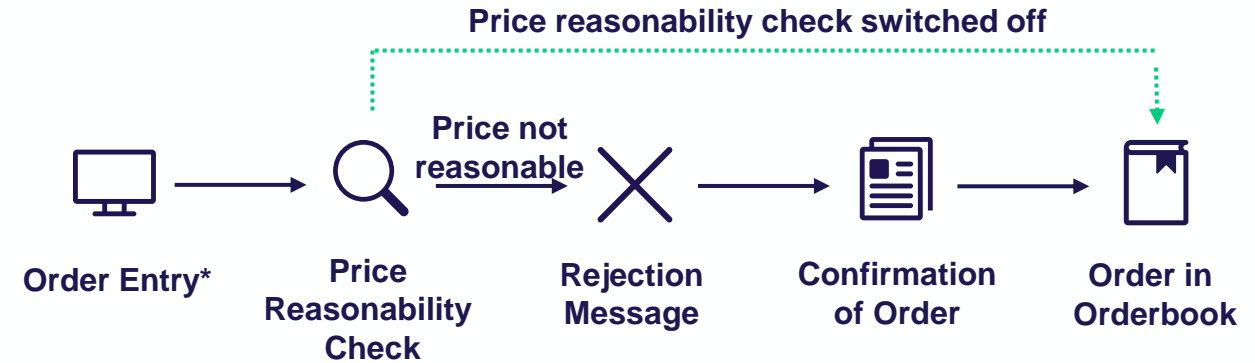
Statistic Figures	Options	Futures
Volume Statistic	$\#BC + \#BP + \#SC + \#SP$	$\#BF + \#SF$
Delta Statistic	$(\#BC - \#SC) - (\#BP - \#SP)$	$\#BF - \#SF$
Vega Statistic	$(\#BC + \#BP) - (\#SC + \#SP)$	N/A

- 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
- $\text{Percent Statistic} = \sum \text{Round}(100 \times \text{Traded Quantity} \div \text{Total Quantity})$

# 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**

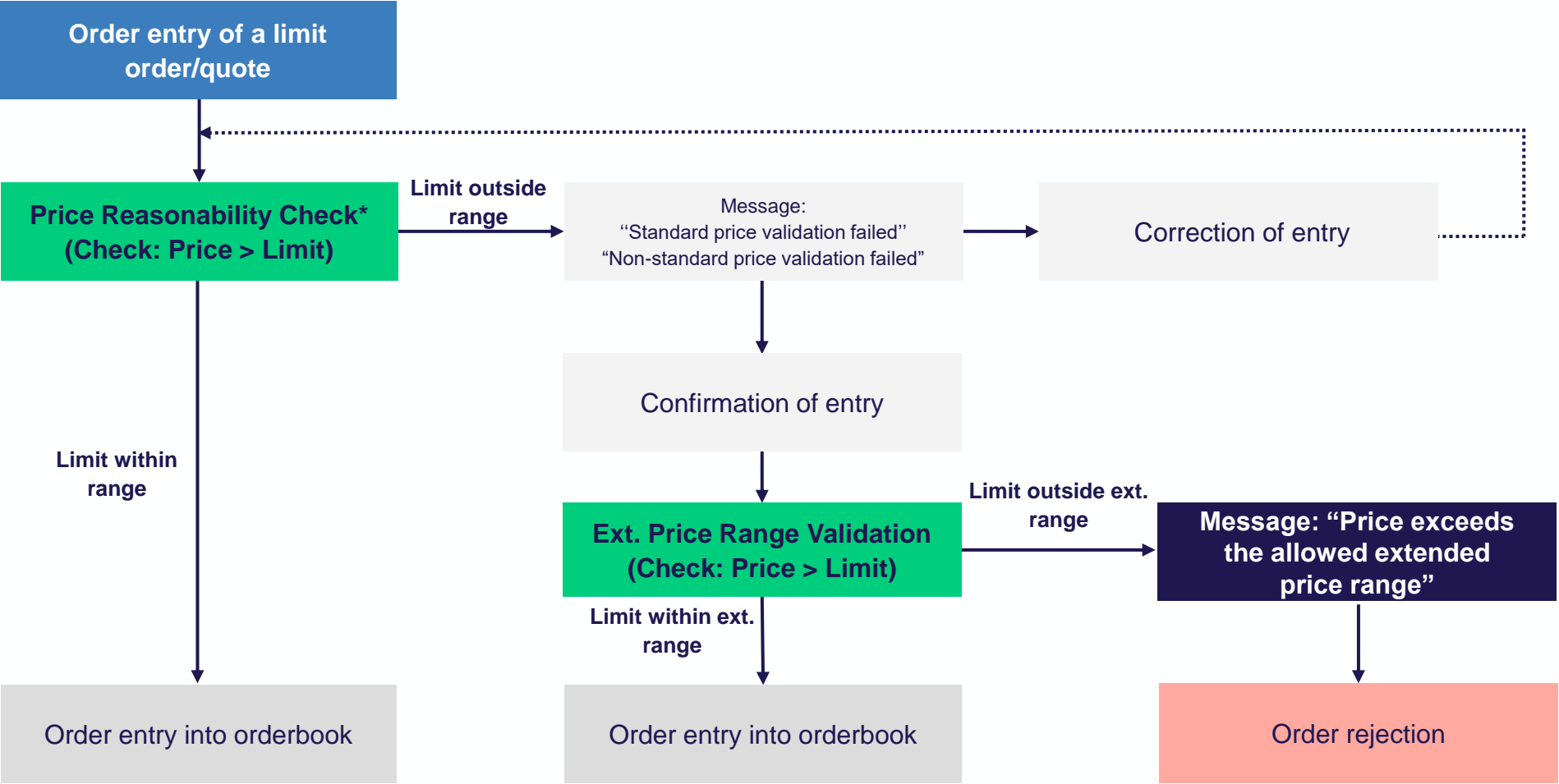
Relevant parameters: order book situation, availability of an additional reference price.

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.	<ul style="list-style-type: none"><li>• Best buy and sell price are available</li><li>• Price difference between best buy and best sell price equal or smaller than applied price range</li><li>• Exception: No best buy price available &gt; smallest allowed limit price is used (OTM options)</li><li>• 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.</li></ul>
Non-Standard Procedure	Conditions
<ul style="list-style-type: none"><li>▪ Alternative reference price must be available</li><li>▪ Reference price can be:<ul style="list-style-type: none"><li>▪ Last traded price</li><li>▪ Theoretical price</li><li>▪ Previous day's settlement price</li></ul></li></ul>	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	
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	

Price Range Table  
accessible via RDF/RDI

# Extended Price Range Table

Maximum permitted deviation from the reference price				
Product	Min Price	Absolute Value	Min Price	Relative Value
<b>FDAX</b> Future on DAX Index	0	4,00	400	1,00%
<b>FESX</b> Future on Euro STOXX® 50 Index	0	4,00	400	1,00%
<b>FSMI</b> Future on SMI Index	0	4,00	400	1,00%
<b>FSTX</b> Future on STOXX® 50 Index	0	4,00	400	1,00%
Futures on STOXX® Sector Indices	0	1,00	100	1,00%
<b>FGBL</b> Future on 8 ½ – 10 ½ Yr. German Gov. Bonds	0	0,15	50	0,30%
<b>FGBM</b> Future on 4 ½ – 5 ½ Yr. German Gov. Bonds	0	0,10	50	0,20%
<b>FGBS</b> Future on 1 ¾ – 2 ¼ Yr. German Gov. Bonds	0	0,05	50	0,10%
<b>FGBX</b> Future on 24 – 35 Yr. German Gov. Bonds	0	0,20	50	0,40%
<b>FBTP</b> Future on 8 ½ – 11 Yr. Italian Gov. Bonds	0	0,20	50	0,40%
<b>FBTM</b> Future on 4 ½ – 6 Yr. Italian Gov. Bonds	0	0,10	66	0,15%
<b>FBTS</b> Future on 2 – 3 ¼ Yr. Italian Gov. Bonds	0	0,20	50	0,40%
<b>FOAT</b> Future on 8 ½ – 10 ½ Yr. French Gov. Bonds	0	0,15	50	0,30%
<b>FOAM</b> Future on 4 ½ – 5 ½ Yr. French Gov. Bonds	0	0,15	50	0,30%
<b>FBON</b> Future on 8 ½ – 10 ½ Yr. Spanish Gov. Bonds	0	0,15	50	0,30%
<b>CONF</b> 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 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
- 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 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 are calculated based on Future Quotes but not 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 orders & quotes on sell side.

## Off-book Trading

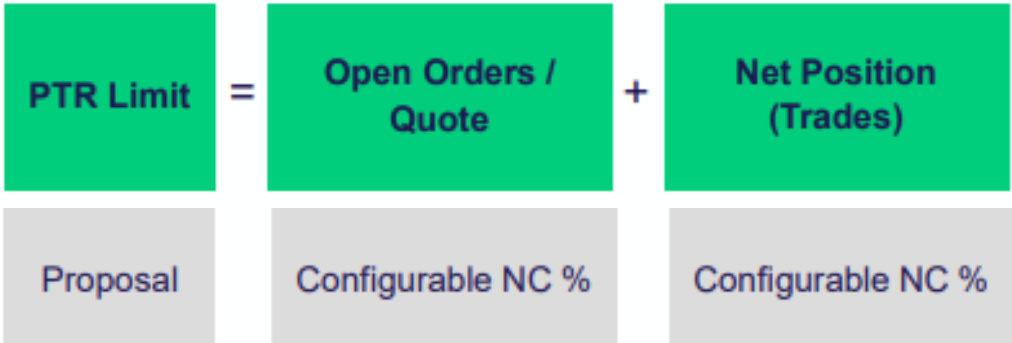
- Buy side off-book statistics
  - = Traded off-book quantity on buy side
  - Traded off-book quantity on sell side
  - + Quantity of pending off-book trades on buy side,
- Sell side off-book statistics
  - = Traded off-book quantity on sell side
  - Traded off-book quantity on buy side
  - + Quantity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



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

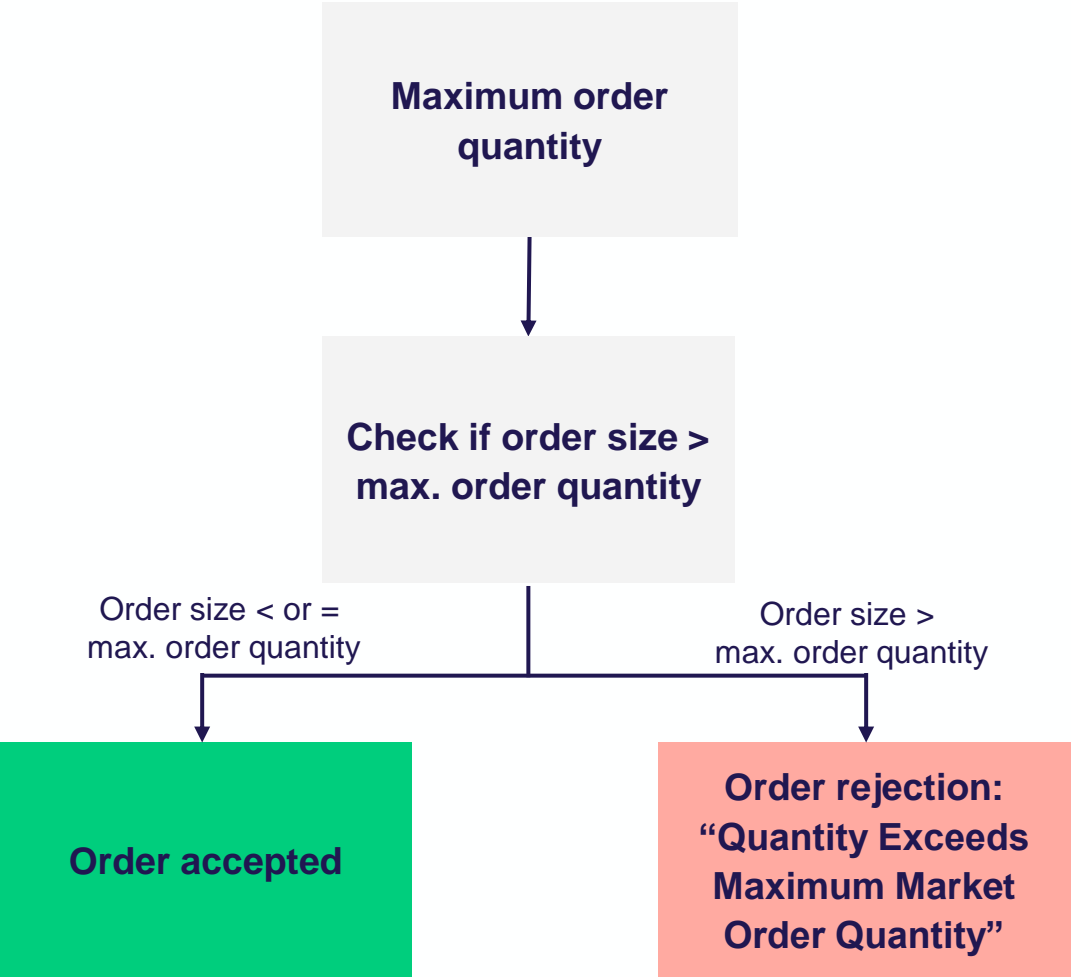
- For the risk profile of each options instrument – complex as well as simple – while consuming PTRL, Delta Equivalent Futures Instrument quantities will be applied for option PTRL consumption based on a fixed, end-of-previous day instrument specific option-delta that will weigh each order and quote 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
FSMI Future on SMI Index	500
FSTX Future on STOXX® 50 Index	250
Futures on STOXX® Sector Indices	250
Futures on Euro STOXX® Sector Indices	500
FFOX Future on HEX 25 Index	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 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

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

# 8 Market Order Matching Range

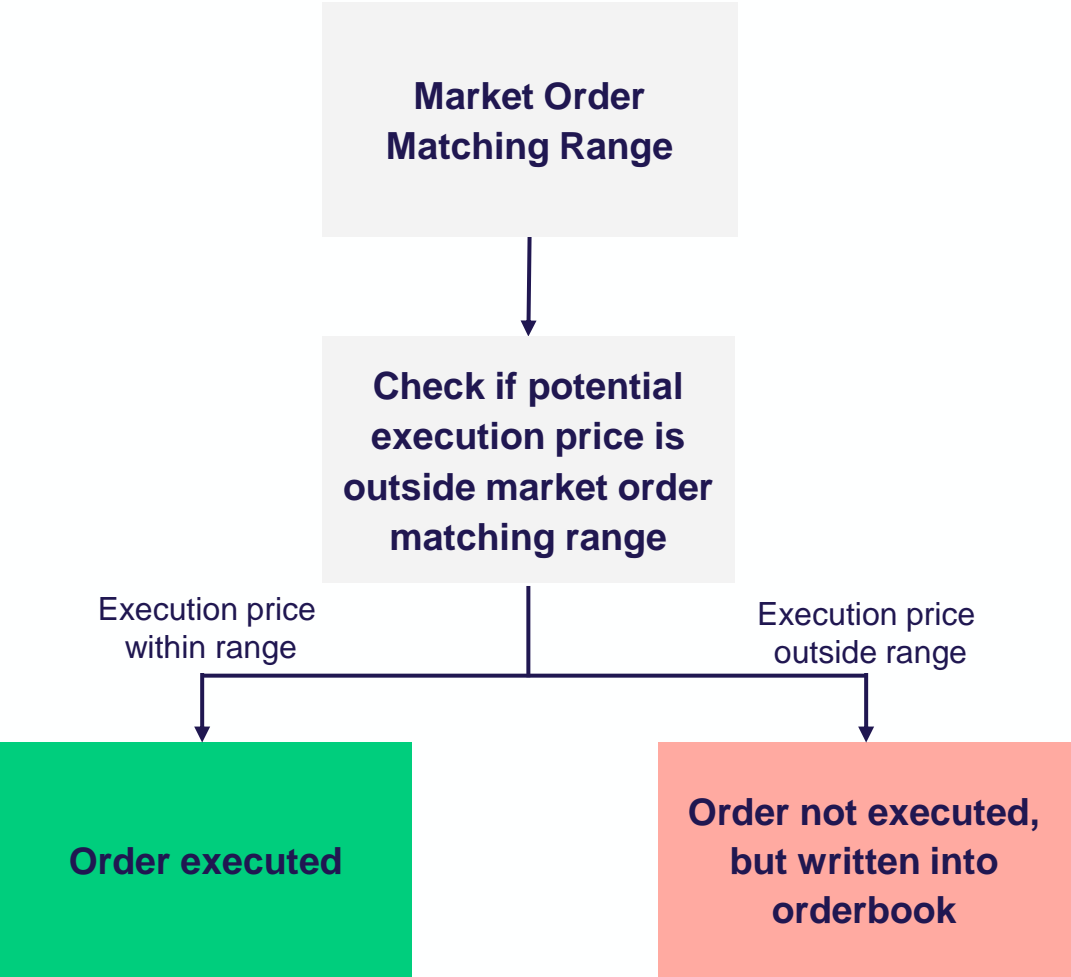
# Market Order Matching Range

## 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

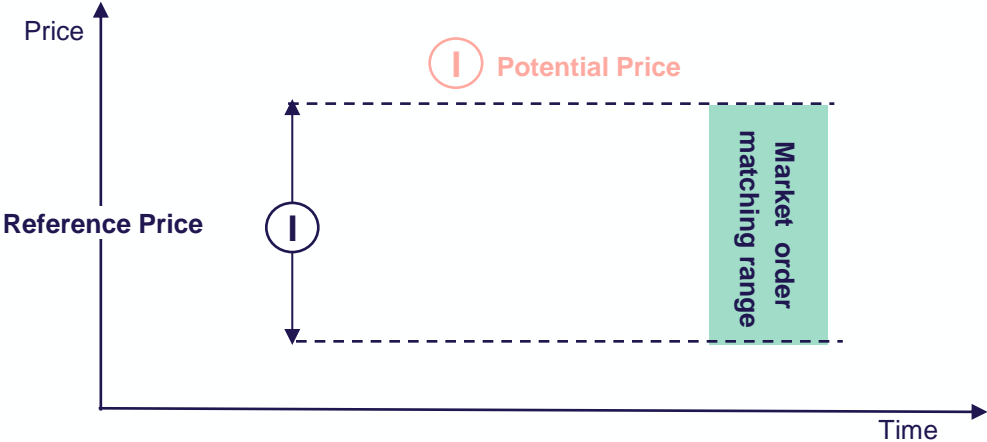


# Market Order Matching Range



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

Market

fexf

Edit

Up to: Expiry

Strike

+/-

☒ S ☒ C

=

Type

FM	CPhase	Contract	Curr	CPrevSetlPrc	CNetChg	SetlPrcNetChg	CBQty	CBid	CAsk	CAQty
[-]	Cont	FEXF Sep17	EUR	1,774.500		25.500	10	1,780.0	1,790.0	50
							10	1,770.0	1,800.0	40
							50	1,760.0		

Contract

Vol

O/C

Act

Tot

TotQty

BUY

FEXF

SEP17

O

A1

☒

50

BOOK: 10 EXECUTED: 50 ORDER NO: 1501218043252063032

## Order book after the first execution

Market											
fexf		Edit	Up to:	Expiry	Strike	+/-	<input checked="" type="checkbox"/> S <input checked="" type="checkbox"/> C	=	Type		
FM	CPhase	Contract	Curr	CPrevSetlPrc	CNetChg	SetlPrcNetChg	CBQty	CBid	CAsk	CAQty	
[-]	Cont	FEXF Sep17	EUR	1,774.500		25.500	10	1,780.0	1,800.0	40	
							10	1,770.0			
							50	1,760.0			

# 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

Market										
fexf		Edit	Up to:	Expiry	Strike	+/-	<input checked="" type="checkbox"/> S <input checked="" type="checkbox"/> C	=	Type	▼
FM	CPhase	Contract	Curr	CPrevSetlPrc	CNetChg	SetlPrcNetChg	CBQty	CBid	CAsk	CAQty
[-]	Cont	FEXF Sep17	EUR	1,774.500		25.500	10	1,780.0	1,800.0	40
							10	1,770.0		
							50	1,760.0		

## Order book after the second execution

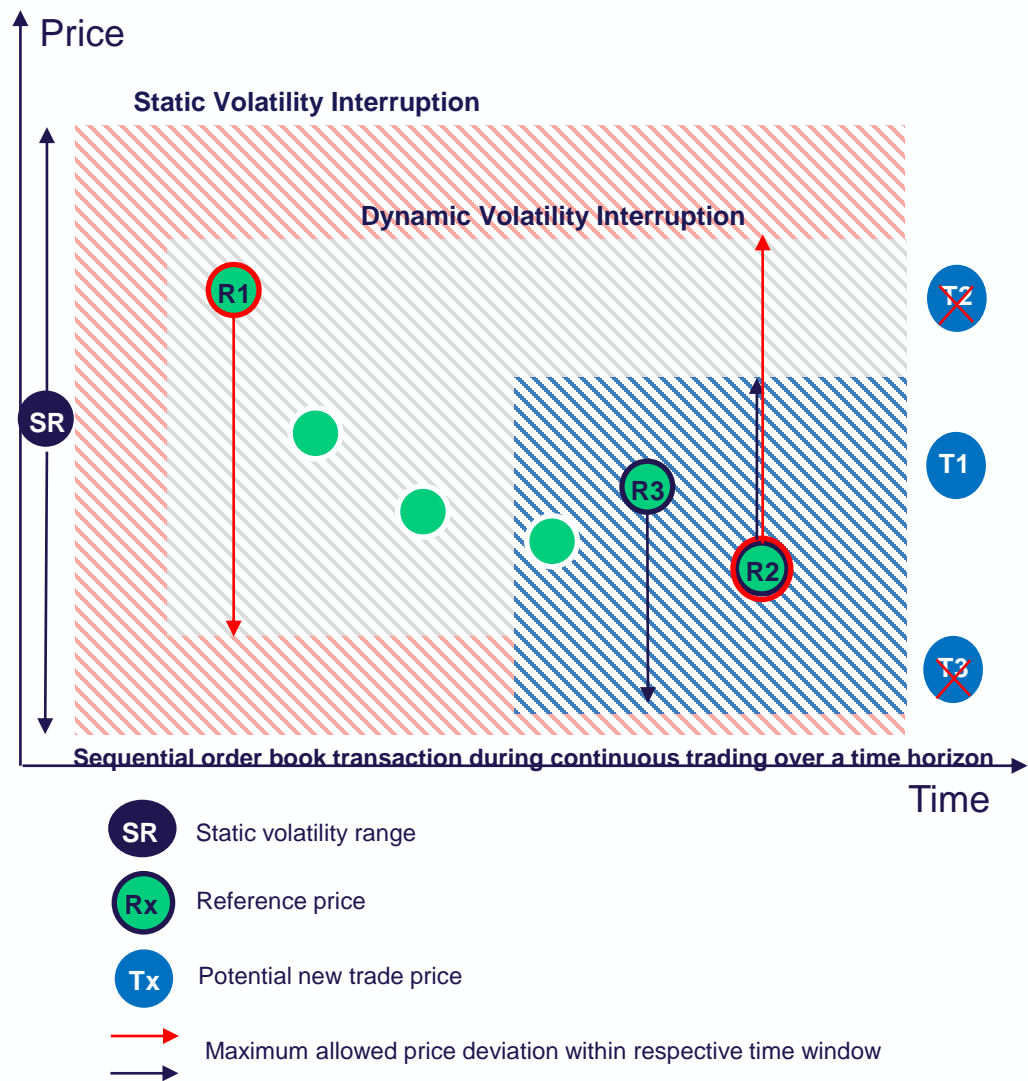
Market										
fexf			Edit		Up to: Expiry		Strike		+/-	
	FM	CPhase	TrdUnit	CPrevSetlPrc	CVol	CBQty	CBid	CAsk	CAQty	
		Cont	1.0000	1,774.500	90	10	1,780.0			
						10	1,770.0			
						50	1,760.0			
Contract		Vol		O/C	Act	Tot	TotQty	Limit		
BUY		FEXF	SEP17			O	A1	<input checked="" type="checkbox"/>	30	1800 EUR
EXECUTED: 30 ORDER NO: 1501218043252063062										

# 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	
<ul style="list-style-type: none"><li>▪ 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.</li><li>▪ There are two lookback time windows defined, the "Long" (grey area) and the "Short" (blue area) for each product</li><li>▪ Both short and the long time window have their own independent set of configurations for parameters of the maximum allowed price deviation on product level.</li><li>▪ The parameters take risk profile and volatility of products into consideration.</li><li>▪ 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).</li><li>▪ Potential trade price T1 is <u>inside</u> of parameters of both short and long time window and will therefore lead to an execution.</li><li>▪ Potential trade price T2 is <u>outside</u> of parameters of short time window and the match will be prevented. A volatility interruption is triggered.</li><li>▪ Potential trade price T3 is <u>outside</u> of parameters of the long time window and will therefore not be executed either. A volatility interruption is triggered.</li><li>▪ 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</li></ul>	

# Volatility Interruption: Static Volatility

Product Type / TSL Product Group	TSL Product Group Description	Static Volatility Threshold	Product Exemption
<b>FBND</b>			
FIFL	FIXED INCOME FUTURES - TENOR L	5%	FGBX (10%)
FIFM	FIXED INCOME FUTURES - TENOR M	5%	
FIFS	FIXED INCOME FUTURES - TENOR S	5%	
<b>FCUR</b>			
DUKCF	DAILY USDKRW CURRENCY FUTURES	5%	
FXF	CURRENCY FUTURES	5%	
<b>FINT</b>			
MMF	MONEY MARKET INDEX FUTURES	2,5%	
<b>FINX</b>			
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/FTU (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%	
<b>FSTK</b>			
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%	
<b>FVOL</b>			
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							
<input type="checkbox"/> SYSTEM-NEWS <input type="checkbox"/> MS-NEWS <input type="checkbox"/> GUI <input type="checkbox"/> LEGAL <input type="checkbox"/> RISK <input type="checkbox"/> 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
- Decision of counterparty

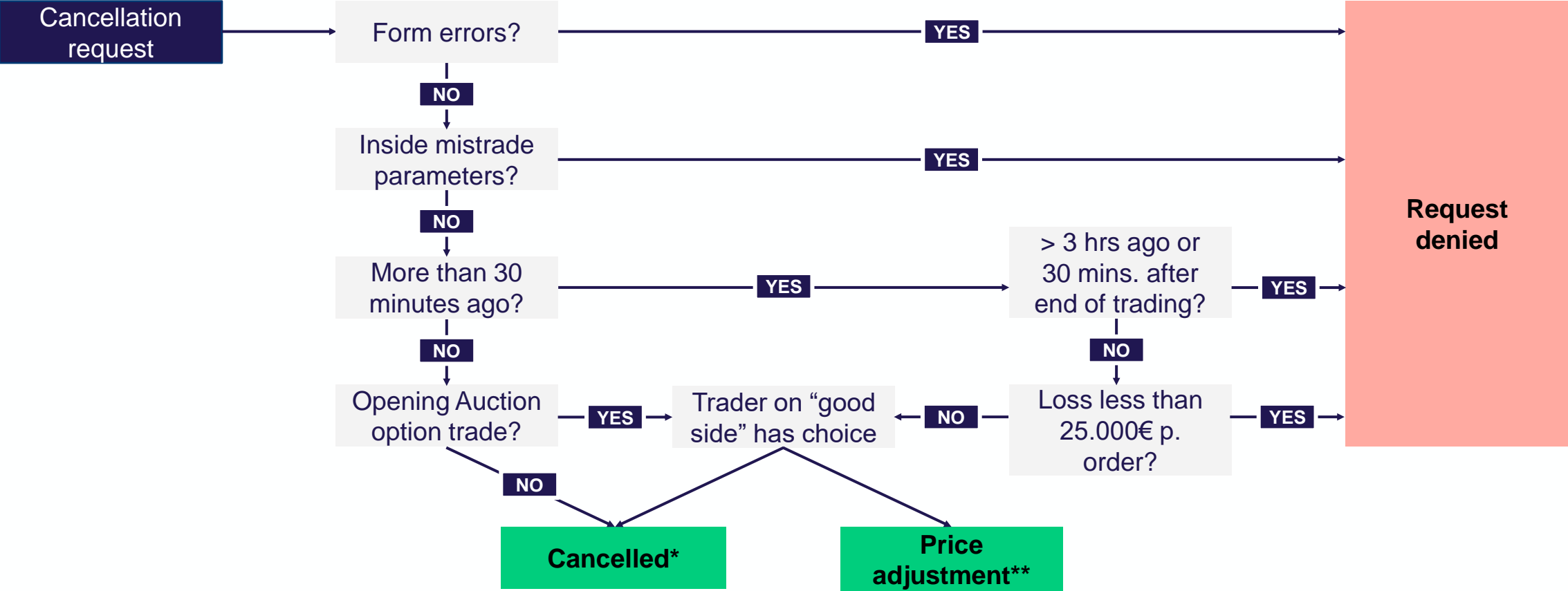
## Example:

- Product: FDAX Sep 20
- Fair value: 12990
- Mistrade range: 284.6 points
- Mistrade low/high corridor: 12705.4/13274.6

Mistrade  
Corridor

Upper Corridor: 13274.6	Reversal
▪ FDAX 12990 Fair Value	Reversal denied
	Reversal denied
Lower Corridor: 12705.4	Reversal

# Cancellation of Transactions



*\*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 applied to leg levels 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](http://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 Parameters (cont.)

## Example: 2x1 Ratio Call Spread on ODAX (2 legs strategy)

- Sell One ODAX SEP 2020 C, Strike 13600, Price 51.5
- Buy Two ODAX SEP 2020 C, Strike 13700, Price 32.5
- Strategy price 13.5

### Mistrade parameters:

ODAX mistrade parameters	
Reference price (currency units)	Mistrade Range (currency units)
0 - 25	2
25 - 300	8%
> 300	24

### Mistrade range calculation:

Basis	Buy / Sell	Reference price	Factor	Calculation	Mistrade range
net strategy premium	Buy	13.5	n.a.	2	2
13600 call price	Sell	51.5	1 (leg has 1 contract)	$1 \times 8\% \times 51.5$	4.12
13700 call price	Buy	32.5	2 (leg has 2 contract)	$2 \times 8\% \times 32.5$	5.2

\* The strategy has 2 legs, 3 values have to be calculated, one for each leg and one for the strategy. The highest of those values must be chosen as mistrade range. In the example above, the leg with mistrade range of 5.2

# 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](http://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 requirements, 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.*

*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 of the same instrument to match against each other
- The two types of optional SMPs are: **Type A** and **Market Wide SMP**

## SMP Type A

- Optional from a technical point of view
- SMP operates on **business unit level**, no need for SMP ID registration with Eurex, optional order entry with SMP ID
- Flexible SMP application per order or quote dependent on order layout field MatchInstCrossID (28744)
- If that is the case, the match between the two orders is prevented and the quantity, which would have matched, is **removed from the order quantity, for both the incoming order and the book order.**
- **Only continuous trading** and not operational across order books – i.e., no synthetic matching or auctions
- SMP Type A billed identical to order execution and is counted for MM rebates and into execution statistics

## Market-wide SMP

- Offered **optionally** and in parallel to SMP Type A, introduced in Release 12.1
- Both SMPs are **mutually exclusive** i.e., per order or quote either SMP Type A or market-wide SMP can be used – not together
- Will focus on **across business unit level**
- Market-wide SMP **requires registration of unique market-wide SMP IDs** via Eurex T7 – Eurex Admin GUI
- Market-wide SMP IDs can be shared among members and clients outside of T7
- Member must register to a market-wide SMP ID the member is not the to use it
- **SMP deletion scope will remain unchanged**
- Market-wide SMP billed identical to order execution and is counted for MM rebates and into execution statistics

\*Details on registration and maintenance of Market-Wide SMP ID 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)

## SMP Type A

- Optional from a technical point of view
- SMP operates on **business unit level**, no need for SMP ID registration with Eurex, optional order entry with SMP ID
- Flexible SMP application per order or quote dependent on order layout field MatchInstCrossID (28744)
- If that is the case, the match between the two orders is prevented and the quantity, which would have matched, is **removed from the order quantity, for both the incoming order and the book order.**
- **Only continuous trading** and not operational across order books – i.e., no synthetic matching or auctions
- Possibility to **group multiple business units into one district SMP group** for group wise operation of SMP ID (currently not used)
- SMP Type A billed identical to order execution and is counted for MM rebates and into execution statistics

Consider a scenario where participant X enters a sell order 600 @ 99.0 with SMP ID 123 for a certain instrument. The order book situation is:

Price Level	Price	Quantity	Order Owner	SMP ID Participant X
1	100.0	200	Participant Y	
1	100.0	50	Participant X	123
2	99.6	100	Participant X	123
3	99.5	50	Participant Z	

The matching is executed in the following steps:

Steps	Enhanced SMP workflow T7 10.0
1	Execute 200@100.0 against participant Y
2	Reduce incoming order by 50 due to SMP, while the sitting order at price level (1) is deleted.
3	Reduce incoming order by 100 due to SMP, while the sitting order at price level (2) is deleted.
4	executed 50@99.5 against participant Z
5	Incoming order with 200@99.0 remaining quantity gets written into the orderbook

# Thank you!

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