Xetra Functional System Training

Proof of practical experience for admission as trader at FWB

July 2014

1

Introduction

2

Continuous trading

3

Continuous auction

4

Rules and regulations

5

Basic trading functions
(Xetra J-Trader)

Xetra Overview

Trading platform (MIC)	Xetra (XETR)	Frankfurt Stock Exchange (XFRA)
Tradable instruments	- Shares - ETFs/ETPs - Company Issued Warrants	In principle all instruments listed at FWB
Trading models	Continuous trading with auctions	- Continuous auction – Specialist model – Market Maker model (structured products only) - Single auction within the Specialist model
Trading participants	- Traders (agent/proprietary trading) - Designated Sponsors - Block Agents - BEST Service Providers	- Traders (agent/proprietary trading) - Specialists - Market Makers (for structured products)

Overview trading interfaces

Trading functionality		Enhanced Transaction Solution	FIX Gateway	VALUES API	Web-Trading (J-Trader)
Order types	Non persistent orders	Yes	Yes	Yes	No
	Intelligent Orders	No	Yes	No	No
	TOP / TOP+ Order	Yes	No	No	No
Quotation	Designated Sponsor	Yes	No	Yes	Yes
	Specialist	No	No	Yes	Yes
OTC entry & reporting		Yes	Yes	Yes	Yes
Cross request		Yes	No	Yes	Yes
Clearing member stop button		Yes	No	Yes	Yes
User administration		No	No	until March 2014	Yes

Overview market data Interfaces

Market data	Enhanced Broadcast Solution	Xetra Market Data Interface	VALUES API	Web-Trading (J-Trader)
Order book depth in continuous trading	Up to 20 limits	Up to 5 limits	Up to 10 limits	Up to 10 limits
Netted broadcast	No	Yes	Yes	Yes
Reference data	Yes	No	Yes	Yes

Trading segments (XETR)

- Similar trading parameters for each segment (except tick sizes)

- Criteria for segmentation are e.g.: instrument type, currency, index membership and country of origin

  - ETFs (EUR, GBP, USD, CHF)

  - Shares

    - DAX, MDAX, STOXX …

    - Asia, Great Britain, …

  - German Government Bonds

  - Company Issued Warrants

Continuous trading (XETR)

Pre trading	Main trading phase	Post trading

Continuous trading in connection with auctions

Opening auction
8.50 to 9.00 am
for DAX instruments

Continuous trading
(interrupted by auction)

auction
1.00 to 1.02 pm

Closing auction
5.30 to 5.35 pm
for DAX instruments

7.30 am	8.50 am	All times without safeguards	5.35 pm	8.30 pm

CET

Information about the auction plan and trading parameters are available on
www.xetra.com > trading&clearing > trading

Trading forms

	Continuous trading	Auction
Order book transparency	Open order book	Partially closed order book Display of indicative auction price with turnover and surplus or best bid/ask with volume
Price determination	Continuous price determination Price/time priority	Concentration of liquidity Principle of most executable volume
Trading phase	Trade	CALL RE PD Call with random end Price determination if possible*
Safeguards	Volatility interruption	Market order interruption Volatility interruption

* Display of valuation price without turnover for selected ETFs in closing auctions, if price determination is not possible

Safeguards

Volatility interruption

- Occurs if potential execution price lies outside a pre-defined price range

- Change of trading form (continuous trading) or call phase extension (auction)

- Ensures price continuity, extended volatility interruption in the event of significant divergence

Market Order interruption

- Occurs in the event of a market order surplus at the time of price determination (only in auctions)

- Call phase extension

- Improves the execution probability of market orders during auctions

Price ranges

Dynamic price range: reference price (1) = last traded price of a security

Static price range: reference price (2) = last auction price of a security

Price ranges

A price range defines the maximum percentage (symmetrically positive and negative) deviation of a reference price in one security.

- Price ranges are stipulated individually for each security

- Price ranges are not published

- Price ranges are regular verified and adjusted to correspond with the actual market situation

Volatility interruptions at slight indicative price variations

A steady increase/decrease of prices will lead to a volatility interruption if the next indicative price breaks the static corridor

A volatility interruption occurs if the indicative price lies outside the static price corridor. The determined auction price leads to new reference price

Volatility interruption during continuous trading

Time

Volatility interruption

Interruption of continuous trading, as the potential execution price is outside a pre-defined price range

Market participants may react by modifying/deleting existing orders, or by entering new orders

Continuous trading

Continuous trading

Vola   PD

Auction only orders are not considered, orders from continuous trading only

PD = Price Determination (if possible)

Volatility interruption in an auction

Time

Extended call phase

CALL

Indicative price

Outside the pre-defined price range at the end of the call phase

Market participants may react by modifying/deleting existing orders, or by entering new orders

Extended call phase   PD

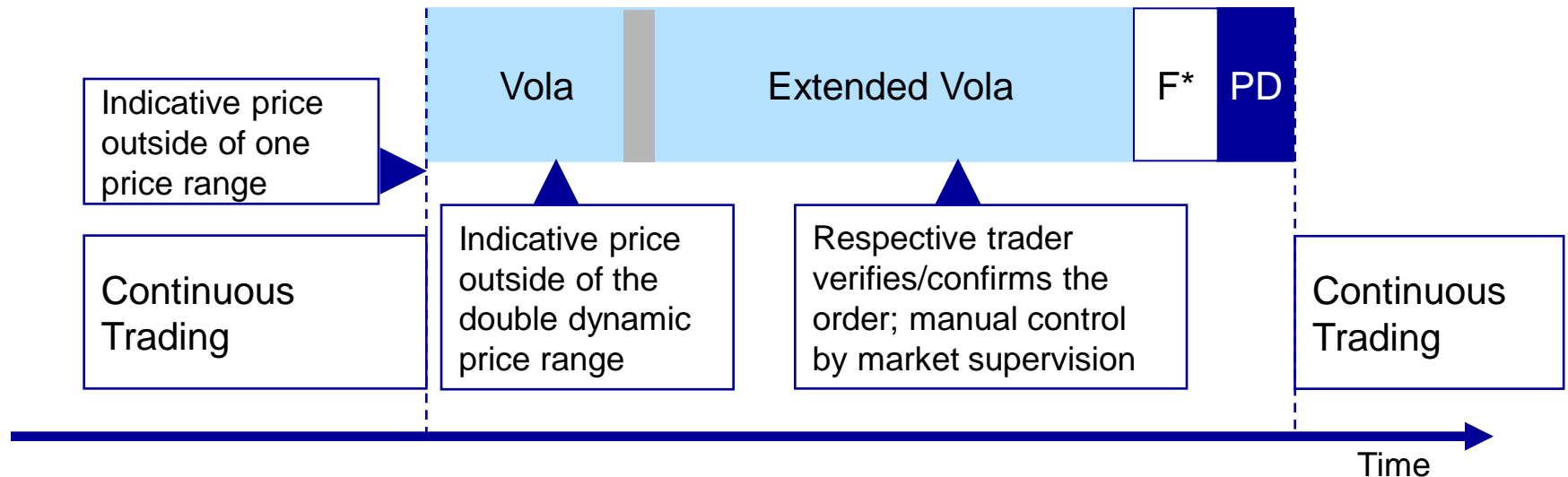Non-executed orders which are not restricted to auctions

Continuous trading

PD = Price Determination (if possible)
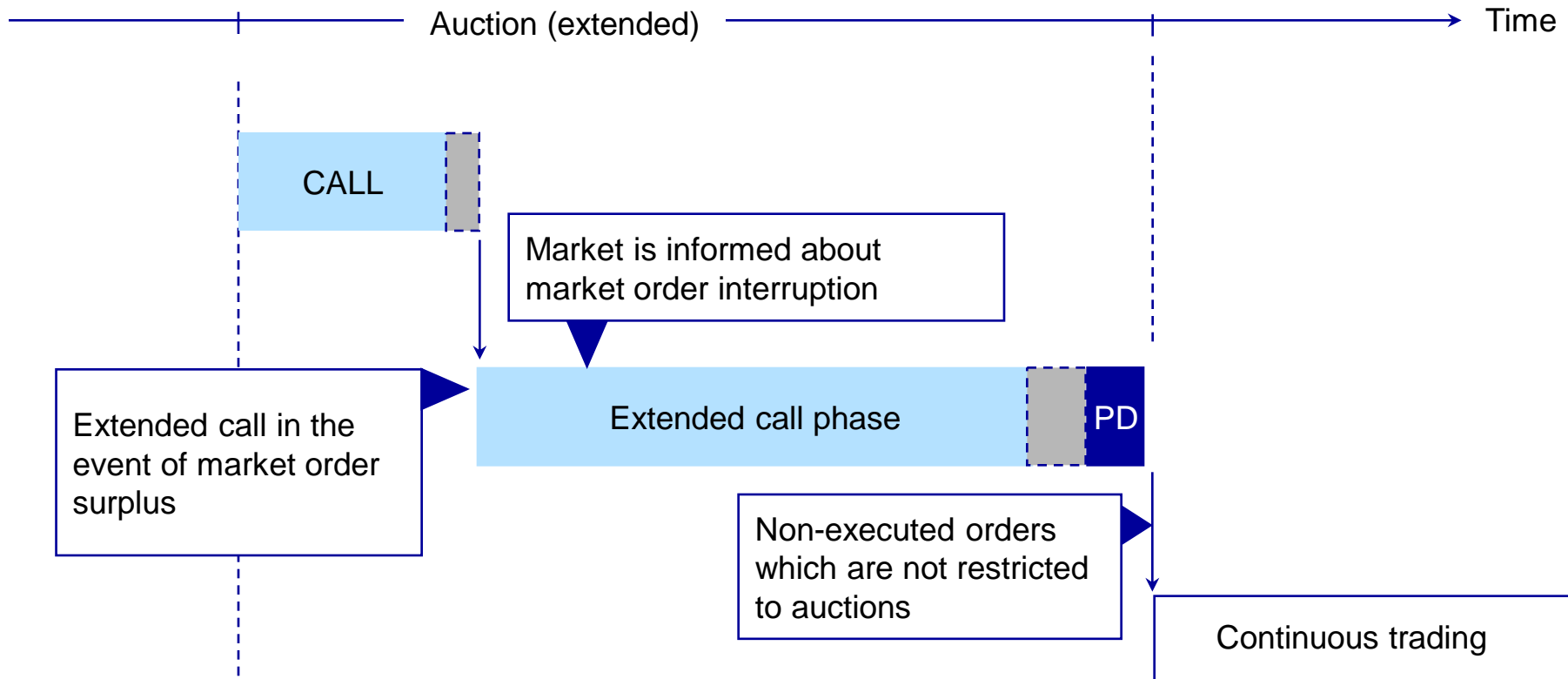
Extended volatility interruption

Aim: Avoidance of mistrades

- Further extension of the call phase if the potential execution price lies outside of the double dynamic price range
- Volatility interruption is terminated manually
- Trader who had entered the order will be contacted by the exchange

Indicative price outside of one price range	Vola	Extended Vola	F*	PD

Continuous Trading

Indicative price outside of the double dynamic price range

Respective trader verifies/confirms the order; manual control by market supervision

Continuous Trading

Time

* Freeze phase is started and terminated manually by market supervision

Market order interruption

Time

Auction (extended)

CALL

Market is informed about
market order interruption

Extended call phase   PD

Extended call in the
event of market order
surplus

Non-executed orders
which are not restricted
to auctions

Continuous trading

PD = Price Determination (if possible)

Basic order types and attributes

Market order	Limit order	Market-to-limit order
to be executed at the next price determined	be executed at their specified limit or better	unlimited order, to be executed at the best limit in the order book*

Validity constraints	Good-for-day (GFD) / Good-till-date (GTD)** / Good-till-cancelled (GTC)**
Trading restrictions	Opening Auction only (OA) / Closing Auction only (CA) / Auction only (AU)

* Any unexecuted part of a market-to-limit order is entered into the order book with a limit equal to the price of the first partial execution

** max. 360 calendar days (T+359)

Execution conditions in countinuous trading

FOK fill-or-kill	Immediate full execution, if not possible it is rejected
IOC immediate-or-cancel	Immediate execution as far as possible, non executed parts are deleted
BOC book-or-cancel (limit orders only)	Placed as resting liquidity to ensure passive execution, if immediate execution is possible it is rejected
TOP top-of-the-book (Enhanced Transaction Solution only)	Accepted if the limit is narrowing the current order book spread otherwise it is rejected
TOP+ Order (Enhanced Transaction Solution only)	Accepted without reducing the visible spread if the volume of equal or better priced orders on the same order book side is below a predefined threshold of the exchange

Stop Market and Stop Limit Order

- A buy (sell) stop order is triggered as soon as the last price is equal to or higher (lower) than the stop limit (trigger limit)

- Upon entry, stop orders are written into a separate stop order book which is not transparent to the market

- After a stop market order is triggered, the order is transferred without limit into the order book, a stop limit order with the respective limit

- If the order is still in the stop order book each modification leads to a new time stamp (even internal text field)

Additional limit for Stop limit order

Iceberg Order

- Only peak size is visible in continuous trading

- Each subsequent peak is submitted with a new timestamp

- Full size activated during auctions

- Potential visibility during auctions (full size)

- Minimum overall volume 1.000, minimum peak size 100

- Peak size has to be at least 5 % of the overall volume (PeakQty*20=Qty)

Hidden Order

- Non-visible limit orders, must be large in scale compared with normal market size (pursuant to MiFID)

- Same matching rules as limit orders, i.e. execution generally follows price/time priority

- If at one price both visible and hidden orders exist, the visible orders (including the hidden volume of iceberg orders) are always executed with priority (price-visibility-time priority)

- For determination of the auction price, hidden orders are fully considered (according to strict price/time priority)

- If determination of an indicative auction price is not possible, hidden orders are not considered for disclosure of the best bid and/or best ask limit

Strike Match Order

- Usage generally in closing auctions on option settlement days

- Allows to define an additional restrictive minimum (maximum) limit for a buy (sell) market or limit order, the order is only executable, if the closing auction price is above/below this limit

- Only valid for the closing auction of the respective trading day, deletion during the end of day processing

- Changing the additional limit is possible, but the execution restriction (strike match) and the trading restriction (closing auction only) cannot be modified

Midpoint Order

- Hidden in a separate order book (Block Agent receive restricted information)

- Block Agents increase liquidity and improve execution probability (admission as Block Agent if a Multilateral Trading Facility within the European Union or a similar trading system (Dark Pool MTF) outside the European Union is operated)

- Limit or minimum acceptable quantity are optional

- Execution only against other midpoint orders

  - at the midpoint of Xetra best bid/best ask spread
  - only within the dynamic and/or static price range
  - according to volume/time priority

- Execution conditions immediate-or-cancel or fill-or-kill are supported

Intelligent order types (FIX Gateway only)

One-Cancels-Other (OCO)

- Combines a limit and a stop order
- Execution of the order which limit or stop limit is reached first

Trailing Stop Order

- In addition to the regular stop limit an absolute or percentage distance between the stop limit and the current reference price have to defined
- The stop limit adjusts automatically to the development of the reference (price determination or quote depending on trading form)
- Monitoring of effective Trailing Stop Limit via web based solution possible

Order-on-Event

- Execution will be possible after a predefined reference price level is reached, exceeded or fallen below (trigger event)
- A reference can be a future or an index level

Order deletion

Reason for deletion	Code in the Report „Daily Order Maintenance"	Explanation
Corporate action	CPA	Next trading day is ex-capital adjustment for the instrument
Last trading day	LTD	Last trading day of the instrument was reached today
Expired validity	VAL	Order is no longer valid for next business day
Change of trading parameters	CTP	A trading relevant instrument parameter has changed, e.g. the Trading Model
Instrument suspension	SUS	Trading is suspended e.g. because of ad-hoc information.
Clearing Member Stop Button	CMS	Clearing Member has stopped its Non-Clearing Member's trading activity because agreed risk limits were exceeded

Price Determination

Principle

- Only existing order limits or the reference price are considered for price determination
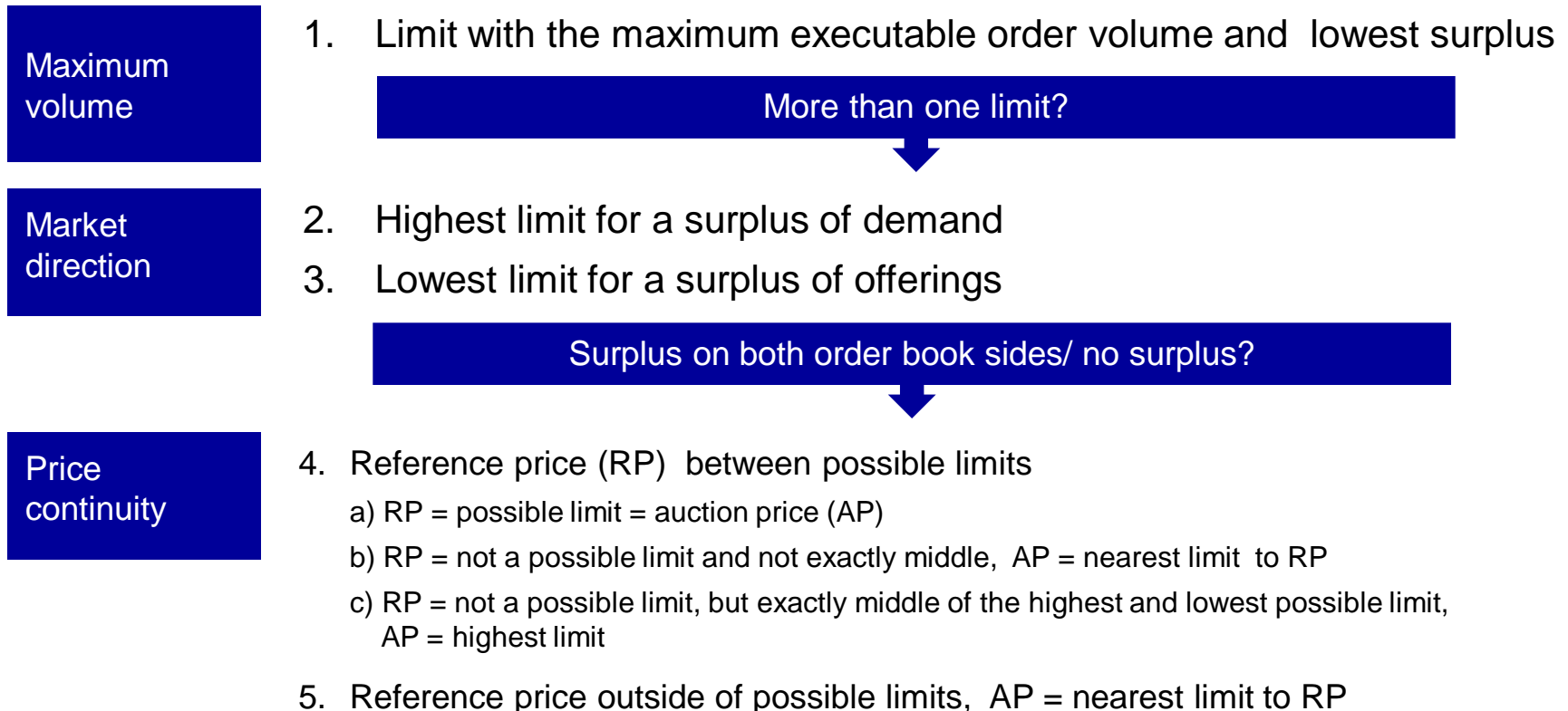
Auction

- Limit with maximum executable order volume (principle of maximum executable volume)
- More than one limit possible: lowest surplus or reference price is considered.
- Only market orders in the order book: the auction price is the reference price

Continuous Trading

- Price determination is carried out according to price/time priority
- Only market orders involved: orders are executed at the reference price

Price Determination in Auctions

The auction price is determined on the basis of the order book situation stipulated at the end of the call.

| Maximum volume |

1. Limit with the maximum executable order volume and lowest surplus

More than one limit?

| Market direction |

2. Highest limit for a surplus of demand

3. Lowest limit for a surplus of offerings

Surplus on both order book sides/ no surplus?

| Price continuity |

4. Reference price (RP) between possible limits

a) RP = possible limit = auction price (AP)

b) RP = not a possible limit and not exactly middle, AP = nearest limit to RP

c) RP = not a possible limit, but exactly middle of the highest and lowest possible limit,
   AP = highest limit

5. Reference price outside of possible limits, AP = nearest limit to RP

Price Determination in Auctions

Example re. No. 1

There is exactly one limit at which the highest order volume can be executed and which has the lowest surplus.

Bid				Limit					Ask
	Quantity	Acc. Quantity	Surplus		Surplus	Acc. Quantity		Quantity	
Limit	200	200		202	500	700			
Limit	200	400		201	300	700			
Limit	300	700		200		700		100	Limit
		700	100	198		600		200	Limit
		700	300	197		400		400	Limit

Corresponding to this limit, the auction price is fixed at € 200.

Price Determination in Auctions

Example re. No. 2

There are several possible limits and there is a surplus of demand.

Bid								Ask
	Quantity	Acc. Quantity	Surplus	Limit	Surplus	Acc. Quantity	Quantity	
Limit	400	400		202	100	500		
Limit	200	600	100	201		500		
		600	100	199		500	300	Limit
		600	400	198		200	200	Limit

Corresponding to the highest limit, the auction price is fixed at € 201.

Price Determination in Auctions

Example re. No. 4

There are several possible limits and there is both a surplus of demand and offerings.

Bid				Limit				Ask
	Quantity	Acc. Quantity	Surplus		Surplus	Acc. Quantity	Quantity	
Market	100	100		Market	100	200		
		100		202	100	200	100	Limit
Limit	100	200	100	199		100		
		200	100	Market		100	100	Market

RP between the possible limits

Auction price either equals the reference price or is fixed according to the limit nearest to the reference price (exception c)

a) RP € 199.00, auction price is € 199.00

b) RP € 200.00, auction price is € 199.00
    RP € 201.00, auction price is € 202.00

c) RP € 200.50, auction price is € 202.00

Price Determination in Auctions

Example re. No. 5

There are several possible limits and no surplus on hand.

Bid
Ask

	Quantity	Acc. Quantity	Surplus	Limit	Surplus Quantity	Acc.	Quantity	
Limit	300	300		202	200	500		
Limit	200	500		201		500		
		500		199		500	300	Limit
		500	300	198		200	200	Limit

RP outside of possible limits
Auction price is fixed according to the limit nearest to the reference price

Reference price = € 202 auction price is € 201

Reference price = € 198 auction price is € 199

Reference price = € 199 auction price is € 199

Price Determination in Continuous Trading

Existing orders on the opposite side of the order book

Incoming order	Market order	Limit order	Market and limit order
Buy market order	Reference price	Lowest ask limit	Lower of reference price or ask limit
Sell market order	Reference price	Highest bid limit	Higher of reference price or bid limit
Buy limit order	Lower of reference price or buy limit	Lowest ask limit	Lower of reference price or limits
Sell limit order	Higher of reference price or sell limit	Highest bid limit	Higher of reference price or limits

Price Determination in Continuous Trading

Existing orders on the opposite side of the order book

Incoming order	Market order	Limit order	Market and limit order
Buy market order	Reference price	Lowest ask limit	Lower of reference price or ask limit
Sell market order	Reference price	Highest bid limit	Higher of reference price or bid limit
Buy limit order	Lower of reference price or buy limit	Lowest ask limit	Lower of reference price or limits
Sell limit order	Higher of reference price or sell limit	Highest bid limit	Higher of reference price or limits

Bid				Ask	
Time	Quantity	Limit	Limit	Quantity	Time
	500	Market			
	500	201			

Bid				Ask	
Time	Quantity	Limit	Limit	Quantity	Time
	~~500~~	~~Market~~	198	500	
	~~500~~	~~201~~			

Incoming order:
Sell order, limit € 198
quantity 1500 shares

The reference price is € 202.
The incoming sell order is partial executed in two steps. 500 against the market order at € 202 (reference price) and 500 against the limit order at € 201.

1

Introduction

2

Continuous Trading

3

Continuous Auction

4

Rules and regulations

5

Basic trading functions
(Xetra J-Trader)

Overview Continuous Auction - Frankfurt Stock Exchange (XFRA)

All times CET	Structured products	Funds	Equities ETFs & ETPs	Bonds
Trading time Single auction	9.00 am - 8.00 pm 11.00 am - 1.00 pm	8.00 am - 8.00 pm -	8.00 am - 8.00 pm -	9.00 am - 5.30 pm 11.00 am - 1.00 pm
Trading model	Market Maker / Specialist model*	Specialist model	Specialist model	Specialist model
Quote	binding / indicative	indicative	indicative	indicative
Quote display/ dissemination	via CEF**	Xetra (MR Bid/Ask)	Xetra (MR Bid/Ask)	Xetra (MR Bid/Ask)

*   Defined by the issuer

** Consolidated Exchange Feed, central information dissemination system of Deutsche Börse AG, quotes are displayed on www.scoach.de

Continuous Auction

| Pre trading | Main trading phase | Post trading |

Continuous Auction with 1 to n auctions
(number of auctions depends on trading activity
in the respective instrument)

Auction   Auction   Auction   Auction

Market Maker model

Auto-execution

| Pre-Call | Call | Price determination |

Specialist model

| Pre-Call | Freeze | Price determination |

7.00 am   8.00 / 9.00 am   5.30 / 8.00 pm   8.30 pm   CET

Continuous Auction with Specialist

PreCall (XPREC)	Freeze (XFRZ)	PD	XPREC	XFRZ	PD	XPREC

. . .

XPREC

- Order entry, modification, deletion
- Quote request input option (required entries: buy/sell and volume)
- Basically the order book is closed, indicative quote is displayed only or for structured products disseminated via CEF

XFRZ

- Order book freeze initiated by the Specialist as soon as the limit control system indicates an executable order book situation
- Order book transparency analogue XPREC
- New orders, modifications or order deletions are entered in a looked stock queue and not used for the next price determination
- Specialist is able to enter, modify or delete orders on behalf of other trading participants

PD

- Price determination by the system after entry of a matching quote (if still executable orders in the order book) according to the modified principle of highest executable volume

Modified principle of highest executable volume
Example midpoint

Several possible limits with no surplus or same surplus on bid and ask.

The midpoint of the highest and lowest possible limit is calculated and used as auction price.

Bid								Ask
	Quantity Quantity	Acc.	Surplus	Limit	Surplus Quantity	Acc.	Quantity	
				200	1400	1400	400	Quote
Limit	100	100		199	900	1000		
Limit	100	200		198	800	1000	200	Limit
Limit	200	400		197	400	800	400	Limit
Quote	400	800	400	196		400	400	Limit

Corresponding to the midpoint of 196 and 197 the auction price is fixed at 196.50 €.

Order types and attributes

Basic order types	Market and limit order
Validity constrains	Good-for-day (GFD) Good-till-date (GTD)* Good-till-cancelled (GTC)*
Trading restriction	Special Auction (SA)
Execution conditions	Stop Market and Stop Limit order Triggered by bid or ask limit of the specialist or market maker quote
Intelligent order types (FIX Gateway only)	Trailing Stop (reference is the quote) One-Cancels-Other order (Stop order is triggered by the quote) Order-on-Event (reference can be a price determination in a future or an index level)

* max. 360 calender days (T+359)

Cancellation of Transactions upon Application (Mistrade Rule)
§§ 23 - 28 Conditions of transactions (in extracts)

Mistrade Application	Continuous Trading with Auctions	Continuous Auction
Reason	Price not in line with market conditions*	Price not in line with market conditions*, exchange rate does not comply with the requirements
Applicant	Counterparties	Counterparties Specialist Quote Provider
Deadline	Latest 10 minutes upon receipt of the execution confirmation	Latest upon 2 hours (in case of application via phone 1 additional hour to inform in writing)
Form	in writing, via telephone, fax or e-mail	
Details	Company and contact person of applicant Name of security and ISIN Time, volume and price of transaction Details regarding the price in line with the market	
Contact	+ 49 (0)69 - 211 - 1 14 00 xetrahelpdesk@deutsche-boerse.com	+ 49 (0)69 - 211 - 1 38 70 mistrade@deutsche-boerse.com

* In sections 25 to 28 of the Conditions for Transactions on FWB the parameters for prices in line with market conditions are defined

Official Cancellation of Transactions
§ 29 Conditions of transactions (in extracts)

The Management Board cancels a transaction if

- the price of the transaction is obviously not in line with market conditions and a mistrade application is missing

- it based on an error in the technical system of the exchange

- an event leading to a cancellation of existing orders have not or erroneously been realized by according system entries (e.g. dividend payment)

- the price was determined outside of the predefined period in which the Specialist should determine prices in single auction in continuous auction with Specialist

- the price was determined outside the trading hours

Deletion of Orders
§ 31 Conditions of transactions

The Management Board may officially delete orders if it becomes aware of orders:

- which, in case of their execution, would result in transactions which would have to be cancelled by the Management Board upon application or officially, and

- for which the companies admitted for trading for whom the orders have been entered, are not available for feedback concerning the entered orders.

Cross trades and pre-arranged trades
§ 3 Conditions of transactions

Orders and binding quotes concerning the same security must not be entered if they are immediately executable against each other

- neither knowingly by one or more traders of the same company (cross trade)

- nor, after prior arrangement by traders of two different companies
  (pre-arranged trade)

Exception

If a cross request with the respective volume has been entered prior and the orders/quotes are entered within the required period in continuous trading

- Order-/quote entry earliest 5 seconds and latest 35 seconds after the cross request

Trading on behalf

In cases of technical problems on the trading participant's side, there is the possibility to give instructions via telephone to Market Supervision

- Application by the trader

- Trading on Behalf service will only be offered if sufficient staff resources available at Market Supervision Xetra/Scoach

- Authorization by the valid Xetra trader ID

- Market Supervision will enter or modify on behalf of the market participant

- Immediate confirmation of the entry/modification by fax

1

Introduction

2

Continuous Trading

3

Continuous Auction

4

Rules and regulations

5

Basic trading functions
(J-Trader)

Order Entry

Fast Order Entry

- Entry of new orders into the order book

- Window opens automatically upon login (depending on trading authorisation)

- Pre-filled by selecting a limit within a market overview window

- Average price displayed when multiple limits are selected

- Most fields are supported by context menus

- Quote Request input option

- Entered limit is checked for plausibility in trading model continuous trading only, not in continuous auction

Market Overview Continuous Trading (XETR)

Order Market Overview

- Displays market data for multiple instruments

- Choice of best bid/best ask or variable market depth (2-10)

- Display of own persistent orders (POwnBidQty/POwnAskQty) next to the respective limit

Market Overview Continuous Auction (XFRA)

Own Orders Continuous Auction (XFRA)

Own Order Overview

PD (pending) in the column „TrdRes" shows that the order was entered during the freeze phase and is not considered for the current price determination (looked stock queue)

Order Maintenance Continuous Auction

- Modification of an existing order

- Access via the "Own Order Overview" window

- Can be opened via the „modify" button in the "Own Order Overview" window when an order is selected

- Modification of ISIN, order book side (buy/sell) or order **volume** is not possible

- New time stamp if
  - the limit is modified or
  - a longer validity is chosen

Trade Information

- Dynamic display of execution confirmations for own orders

- Settlement related trade details are <u>not</u> displayed within this window - can be retrieved using *Back Office Information* window

Calculation of average price and accumulated quantities for selected execution confirmations

Trading Board

The *Trading Board* window is an individual configurable frame set which includes the information and functionality of several windows

Xetra J-Trader Screencasts

- Find more information on the Trading Board and other functionalities of the J-Trader front end on Capital Markets Academy web page

  www.deutsche-boerse.com/cma

  – under E-learning and mobile learning

  – Screencasts trading systems

Thank you for your attention!

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