

Guideline

Derivatives Market Statistics December 2010

Version 1.5

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1 General Concept

This section illustrates the general concept of statistics for the Eurex® derivatives market, starting with a description of some technical characteristics of derivative products. This is followed by a discussion of the fundamental structure and different ways of representation, before the contents of the various statistical analyses are described in greater detail.

1.1 Basic features of options and futures

In principle, there are two kinds of products which are traded on a forward basis: options and futures. Most of the Eurex derivatives are based on financial instruments that are traded in the cash market, with these cash instruments forming the so-called underlying instrument of an option or a future. In addition, there are several products which are based on a futures contract (e.g. options on capital market futures), and which are therefore derivatives on a derivative.

1.1.1 Options

Trading option contracts always involves trading a certain right.

Options terminology distinguishes different option types, option classes and option series.

- n Option type: a product, i.e. an option, is either a call or a put. A call option gives the purchaser (long position) the right to buy the underlying instrument, whereas the purchaser of a put option has the right to sell it. Upon exercise, the seller of an option position (short position) is required to deliver, or take delivery of the underlying instrument. In return, the seller receives the option premium (cf. 2.3.1).
- n Option class: a class is formed by options of the same type which are based on the same underlying instrument, e.g. all puts on DaimlerChrysler shares.
- n Option series: a series comprises options belonging to the same class and featuring the same exercise price as well as the same expiration month, e.g. all calls on Siemens shares with an exercise price of €72.00 and the expiration date of August 2011.

Thus, an option defined by way of reference the underlying instrument has the following characteristics:

- n Option type (call or put)
 - n Option term (defined by the expiration month)
 - n Exercise price
-

This can be summarized by the following diagram:

Product	Deutsche Telecom (DTE)	C	June 2011	€10.50	Series
		C	June 2011	€18.00	
		...			
		C	September 2011	€11.00	
		P	December 2011	€11.50	
		Type	Expiration month	Exercise price	

1.1.2 Futures

Futures contracts traded at Eurex® are based on financial instruments (money market instruments and bonds) or equity indices, and are thus referred to as 'financial futures'. In addition, there are commodity futures which are based on physical goods (commodities), especially cereals and raw materials. At Eurex, however, such commodity futures contracts do not exist.

A futures contract represents a binding agreement between two counterparties to buy and take delivery of (if the future has been bought – long position) or to sell and deliver (if the futures has been sold – short position) a certain amount and kind of the instrument on which the contract is based (underlying instrument) at a prearranged price, when the contract falls due.

The different futures contracts are defined by the various maturity dates. For instance, maturity months for the Euro Bund Future are the three successive quarterly months of the March, June, September and December cycle. The Euro Bund Future is a futures contract on a notional, long-term debt security of the Federal Republic of Germany with a remaining lifetime of 8.5 to 10.5 years and a coupon of 6 percent.

Euro Bund September 2011

Euro Bund December 2011

Euro Bund March 2011

1.1.3 Listing of options and futures

New series are listed upon expiration of existing options contracts. In this context, at least three series are listed for every option class, each of them with exercise prices that are in-the-money, at-the-money, and out-of-the-money, respectively. These three terms are illustrated by the examples in the table shown below:

	Calls	Puts
In-the-money	Share price > exercise price	Share price < exercise price
At-the-money	Share price = exercise price	Share price = exercise price
Out-of-the-money	Share price < exercise price	Share price > exercise price

For more details regarding price gradations and terms of the various options, please refer to the corresponding contract specifications, and to the comments in section 4.

For futures, there is a minimum of three different contracts available for trading at any time, usually the successive end-of-quarter months of the March, June, September and December cycle. For money market futures there are maturity dates defined by the successive three to six calendar month and if applicable there are the successive eleven end-of-quarter months available. Please also refer to the respective contract specifications.

1.2 Structure and representation

There are various aspects according to which trading activity at Eurex® is captured statistically. Specifically, the statistical analyses are prepared according to different aggregation levels, contents and timeframes.

They give a comprehensive overview of the most important indicators of trading activity, and provide a detailed insight into the trading data of the various products.

1.2.1 Vertical aggregation

In this context, information is shown on a product level, i.e. all series/contracts tradable in a certain product are represented on an aggregated basis, where appropriate, options data is additionally broken down by option types (calls and puts).

1.2.2 Horizontal aggregation

This involves the aggregation of several products to form certain product groups, as illustrated below:

Eurex Total	1st product group level	2nd product group level
	Credit products	
		Credit futures
	Interest rate products	
		Options on money market futures
		Money market futures
		Options on Fixed Income futures
		Fixed Income futures
	Equity index products	
		Equity index options
		Equity index futures
	Exchange-traded funds products	
		Exchange-traded funds options

	Exchange-traded funds futures
Equity products	
	Options on EURO STOXX 50 [®] component equities
	Options on SMI [®] component equities
	Options on other stocks
	Futures on EURO STOXX 50 [®] component equities
	Futures on SMI [®] component equities
	Futures on other stocks
Volatility products	
	Futures on volatility
Inflation products	
	Inflation futures
Commodity products	
	CO ₂ options and futures
	Agricultural Index Futures
	Commodity Index Futures
	Precious Metals Futures and Options
Dividend products	
	Equity Dividend Futures and Options
Weather Products	
	Storm Futures
Property Products	
	Property Futures

1.2.3 Timeframes

Statistics are prepared on a daily and monthly basis. In addition, there are certain values which are disclosed at the end of the respective reporting period.

1.2.4 Content structure

Eurex® statistics can be structured according to content, reflecting the different possible ways of representation, as set out below:

- n Price information: representation of price developments in the various products (on a series/contract level) and, in the case of options, of actual cash flow in terms of premium payments
- n Turnover information: representation of liquidity in the individual products and product groups, prepared according to various perspectives (number of traded contracts, contract equivalents etc.)
- n Open interest: information on open risk positions, possibly serving as an indicator for future trading activities or settlement

The various statistical analyses available for the Eurex derivatives market and their contents are described in section 2.

2 Description of Contents

The information covered by the various statistical analyses is explained in this section.

2.1 Master data

2.1.1 Eurex products

Overview of all products currently available for trading at Eurex, including the product name and symbol.

2.2 Turnover data

2.2.1 Trades

Number of trades concluded in a certain product, or product group, during the respective reporting period. A trade may involve one single contract in a certain product or a multiple thereof. Only one side of each trade is taken into account ('single counting').

2.2.2 Traded contracts

Number of contracts traded in a certain product, or product group, during the respective reporting period. Only one side of each trade is taken into account ('single counting'). Some statistics for options involve an additional breakdown into calls and puts.

The number of traded contracts is often understood as a measure for the liquidity of a certain product and serves to indicate how fast that product can be traded. This provides information about the opportunity to open or close positions.

Where OTC basis trades or OTC block trades (see explanations given below) exist for the respective product, the number of traded contracts includes volumes generated by such OTC trades.

2.2.3 Volume/contract equivalent

This indicator reflects the equivalent of traded contracts when converted into the respective product currency or euro. The purpose is to reflect the actual trading volume achieved for a given product, with a view to facilitating comparisons between various products. Only one side of each trade is taken into account ('single counting').

In arithmetic terms, the volume is achieved by multiplying the contract size with the number of contracts traded in the respective individual series/contracts, and with the product prices of these series/contracts. For futures, the settlement price (cf. 2.3.2) is used as the product price, whereas the exercise price is used for options.

The formula used is set out below:

$$Volume = CS \cdot \sum_{i=1}^n p_i \cdot TC_i$$

whereby

i = series/contract i

n = number of different series in a product

CS = contract size (e.g. for the DAX Future: €25 per index point, for the Bund Future €100,000)

p_i = product price of series/contract i (option: exercise price, future: settlement price)

TC_i = number of contracts traded in series/contract i

The contract size is the result of multiplying the minimum price change (ts = tick size) by the value of such price change (tv = tick value): $CS = ts \cdot tv$

For detailed parameters valid for each individual product, refer to the respective contract specifications.

2.2.4 Market share per account group

This analysis reflects the respective percentage share in traded contracts attributable to each individual account groups (agent, principal and market-maker), and thus gives an insight into the structure of market participants and market users.

As far as position accounts are concerned, all trades concluded by exchange participants are recorded in the Eurex® system on internal accounts for principal, agent or market-maker positions. The principal position accounts only cover those transactions that have been entered into by the exchange participant for his own account, whereas transactions concluded on behalf of customers must be registered on the exchange participant's agent position account. Trades resulting from market-maker quotes are recorded on the 'M' position account.

2.3 Price information

2.3.1 Paid premiums

Volume of premiums paid for options contracts (equity and index options) in the reporting period, converted into the respective product currency or euro.

The purchaser of an options contract is required to pay the purchase price for the option right to the seller. For equity and index options, a one-off payment is to be effected after the option's purchase ('traditional style' premium posting).

In the case of options on money market and capital market futures, the premium is paid pursuant to the so-called 'futures style' premium posting – i.e. within the framework of daily settlement over the holding period of each option position. This means that on every exchange trading day, such positions are valued on the basis of the respective option price or daily settlement price (cf. 2.3.2) of the previous and current exchange trading days ('mark-to-market procedure'). Such premiums are not included in the 'paid premiums' statistics.

2.3.2 Opening/high/low/settlement price

Specification of the opening price, high/low and settlement price for each individual series/contract on the respective day.

Open futures and option positions are settled on the basis of the daily settlement price, applying the difference between the price of a transaction or the previous day's settlement price and the settlement price of the current exchange trading day. For options without immediate premium payment, the settlement price is used as the basis for the calculation of margin requirements.

For further details concerning the calculation and significance of the settlement price, please refer to the contract specifications.

2.4 Open interest data

2.4.1 Open interest

Number of open risk positions at the end of the respective reporting period, i.e. contracts which have not yet been closed out or exercised at a given point in time.

n Futures:

Open interest = (all open long positions + all open short positions) / 2

= all open long positions = all open short positions

A position can be closed out by entering into the corresponding offsetting transaction, i.e. a long (short) position is closed out by the sale (purchase) of the same futures contract.

n Options: number of option positions for which opening but no closing transactions have been declared. A position is closed out by selling (buying) a certain series (closing transaction) which has previously been bought (sold) (opening transaction).

In conjunction with the corresponding trading volume, open interest data may provide a useful guidance when analysing the current and likely future market sentiment, the prevailing expectations and the degree of liquidity.

In the case of futures, the open interest can be regarded as an indicator with respect to the prospective turnover reached in a certain contract prior to maturity, since a major part of such futures positions is actually closed out before the end of the respective contract term.

At the same time, the composition of market participants or market users can be inferred from the information given. Institutional participants (e.g. insurance companies) with longer-term hedge positions tend to maintain open positions over a prolonged period of time, whereas most participants pursue short-term positions which are likely to be closed out more quickly.

2.4.2 Value of open interest

This value represents the equivalent amount of open interest when converted into the product currency or euro.

In arithmetic terms, in line with the corresponding volume calculation, the volume of open interest is achieved by multiplying the contract size with the number of open positions in the respective individual series/contracts, and with the product prices of these series/contracts. For futures, the settlement price is used as the product price, whereas in the exercise price is used for options.

The formula used is set out below:

$$Volume_{OI} = CS \cdot \sum_{i=1}^n p_i \cdot OI_i$$

whereby

i = series/contract i

n = number of different series in a product

CS = contract size (e.g. for DAX[®] Future: €25 per index point, for Bund Future €100,000)

p_i = product price of series/contract i (option: exercise price, future: settlement price)

OI_i = open interest in series/contract i

3 Statistical Products

Statistics for the Eurex derivatives market can be found on the Internet, at www.deutsche-boerse.com/mda, menu item Analytics & Statistics > Cash/Derivates Market or on the Eurex homepage www.eurexchange.com

3.1 Daily statistics

3.1.1 Daily Eurex statistics

The daily Eurex[®] statistics comprise the daily accumulated turnover on the basis of traded contracts, and the open interest at the start of trading of the respective day, shown separately for each product. A put/call ratio is added to the traded contracts data for options.

Moreover, the traded contracts are recorded on an accumulated basis for the current month and on a year-to-date basis, with the corresponding daily averages.

3.1.2 Daily contract statistics/time and sales sheets

On the one hand, these statistical analyses comprise all daily tick data of a certain month for each of the various product series (daily contract statistics); on the other hand, they also provide a daily summary of trading activity in individual series/contracts for each month (time and sales sheets). Tick data is defined as the contract volume and matching price for every transaction. The daily summaries state the daily trading volume on the basis of traded contracts, the open interest at the start of the trading day, as well as the price information (opening, high and settlement price) for each series/contract.

The Eurex[®] tick data statistics are chargeable and available on the WebShop Historical Data at <http://datashop.deutsche-boerse.com> or by contacting Customer Service (for contact see page 20).

3.1.3 Eurex market statistics

This report contains the same price information as the time and sales sheets, as well as the trading volume on the basis of traded contracts, and the open interest in all series/contracts at the start of trading. Additionally, it comprises a certain amount of master data, such as the ISIN and exchange of the underlying instrument (for the calculation of the settlement price) as well as the product currency.

The Eurex® Daily Aggregated Market Data statistics are chargeable and available on the WebShop Historical Data at <http://datashop.deutsche-boerse.com> or by contacting Customer Service (for contact see page 20).

3.2 Monthly statistics

3.2.1 Monthly derivatives market summary

This statistical analysis indicates the trading volume on the basis of traded contracts and the contract volume (contract equivalent/capitalisation), the open interest and value of open interest per end-of-month, as well as the paid premiums (options only) for the respective month.

All positions are recorded on a product-by-product basis (vertical aggregation) and according to various product groups (horizontal aggregation). The corresponding data for the previous month, the same month of the previous year, the current year as well as the same period of the previous year are also disclosed for comparison. Daily averages are given with respect to traded contracts, volume and paid premiums.

This can be summarized as shown below:

	Current month	Previous month	Year-to-date	Same period /previous year	Daily averages
Traded contracts	√	√	√	√	√
Volume (in euros)	√	√	√	√	√
Paid premiums	√	√	√	√	√
Open interest	√	√	√	√	
Value of open interest	√	√	√	√	

3.2.2 Monthly derivatives market statistics

As the most comprehensive statistical report, the monthly derivatives market statistics comprise most of the information presented in section 2 on a monthly basis. All values are reported for each month since the beginning of the preceding year, with year-end balances for the current and previous years included additionally. Therefore, a horizon for monthly comparisons is always available across 13 months.

Every single product is subsequently represented in greater detail (excel version), comprising all turnover data referred to in section 2.1 above, paid premiums, open interest and value of open interest. With regard to their specific product group, equity options data is aggregated for EURO STOXX 50, SMI® and other stocks including detailed data information about the current month.

The table shown below summarizes the information available in addition to the master data referred to in section 2.1 above, and the analyses in the international part:

	Comparisons for a horizon from 1 to 13 months	Remarks
Master data	√	cf. 2.1
Trades	√	
Traded contracts	√	
OTC trades	√	if available
Volume (in euros)	√	
Market share per account group	√	
Open interest	√	
Value of open interest	√	
Paid premiums	√	

3.2.3 Eurex Newsletter Xpand

The Eurex Newsletter Xpand is an extract from the monthly derivatives market summary comprising the entire information shown there, however, only for the current month and year-to-date.

4 How to Find the Data You Are Looking For?

The following short overview serves as a brief guide to the various statistics and additional information.

Eurex® Rules and Regulations, Eurex Clearing Conditions, contract specifications	www.eurexchange.com under the headings 'rules and regulations' or 'products' (cf. sitemap), also available from the publication service
Daily Eurex® statistics	www.deutsche-boerse.com/mda , menu item Statistics + Analysis > Cash/Derivates Market www.eurexchange.com – under the heading 'market data' (cf. sitemap)
Daily contract statistics/time and sales sheets	Available from Market Data & Analytics http://datashop.deutsche-boerse.com
Eurex® market statistics	www.eurexchange.com – under the heading 'downloads' (cf. sitemap)
Monthly derivatives market summary	www.deutsche-boerse.com/mda , menu item Statistics + Analysis > Cash/Derivates Market www.eurexchange.com - under the heading 'market data' à statistics (cf. sitemap)
Monthly derivatives market statistics	www.deutsche-boerse.com/mda , menu item Statistics + Analysis > Cash/Derivates Market www.eurexchange.com – under the heading 'market data' (cf. sitemap)
Eurex Newsletter Xpand	www.eurexchange.com – under the heading 'Documents' à publications à Selection by type à Newsletter Xpand (cf. sitemap)

5 Appendix

5.1 Your direct line to Deutsche Börse

n Information about prices and index concepts

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n Licenses for price data and indices

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