

# EURO STOXX 50<sup>®</sup> Index Quanto Futures

March 2016



# Your benefits trading EURO STOXX 50® Quanto Futures

Separate underlying Index performance from FX risk

- EURO STOXX 50® Index Quanto Futures allow to separate the EURO STOXX 50® index performance from the EUR/USD FX development.

An alternative to the OTC market

- Separate the Quanto spread by trading EURO STOXX 50® Index Quanto vs EURO STOXX 50® Index Futures.

Broad interest from USD exposed customers

- USD exposed investors are keen to trade a listed USD denominated EURO STOXX 50® Index futures contract with the transparency of a central order book and benefits of cross-margining.

CFTC approved

- The EURO STOXX 50® Index Quanto Futures received CFTC approval and is consequently available to U.S.-based firms

Arbitrage opportunities

- With a liquid listed EURO STOXX 50® Index Quanto Futures, arbitrage opportunities between OTC and different listed contracts appear at low transaction costs.

Competitive transaction costs

- Eurex offers competitive all-in transaction and clearing fees for the new launched EURO STOXX 50® Index Quanto Futures (USD 0.60 per contract for A-Account transactions, USD 0.50 per contract for M and P-Account transactions).

Central clearing & capital efficiency and transparency

- Eurex Clearing guarantees safe and stable markets as well as established straight-through post-trade services.
- Benefit from margin netting effects across all equity derivatives – incl. the broadest range of EURO STOXX 50® Index derivatives - within our Portfolio Margining Eurex Clearing Prisma.

# Strategic rationale

## Market environment

- The EURO STOXX 50® Index is the leading European equity markets index and the EURO STOXX 50® Index Futures contract is the most liquid derivatives instrument in Europe.
- EUR/USD is the leading currency pair globally in terms of traded volume.
- Market participants look for alternatives for OTC traded products, to trade centrally cleared products in a transparent way.
- Decoupling of FX and equity underlying performance.

## Eurex positioning

- Eurex traded products combine best-practice OTC market conventions with the transparency and minimized risk of exchange-traded and centrally cleared derivatives.
- Eurex offers the largest liquidity pools in European equity and equity index derivatives with a global customer base across various client segments.
- Clients benefit from regulatory capital requirement reliefs and margin netting effects across listed equity derivatives within our Portfolio Margining (Eurex Clearing Prisma) setup.

## Enhancement of listed offering

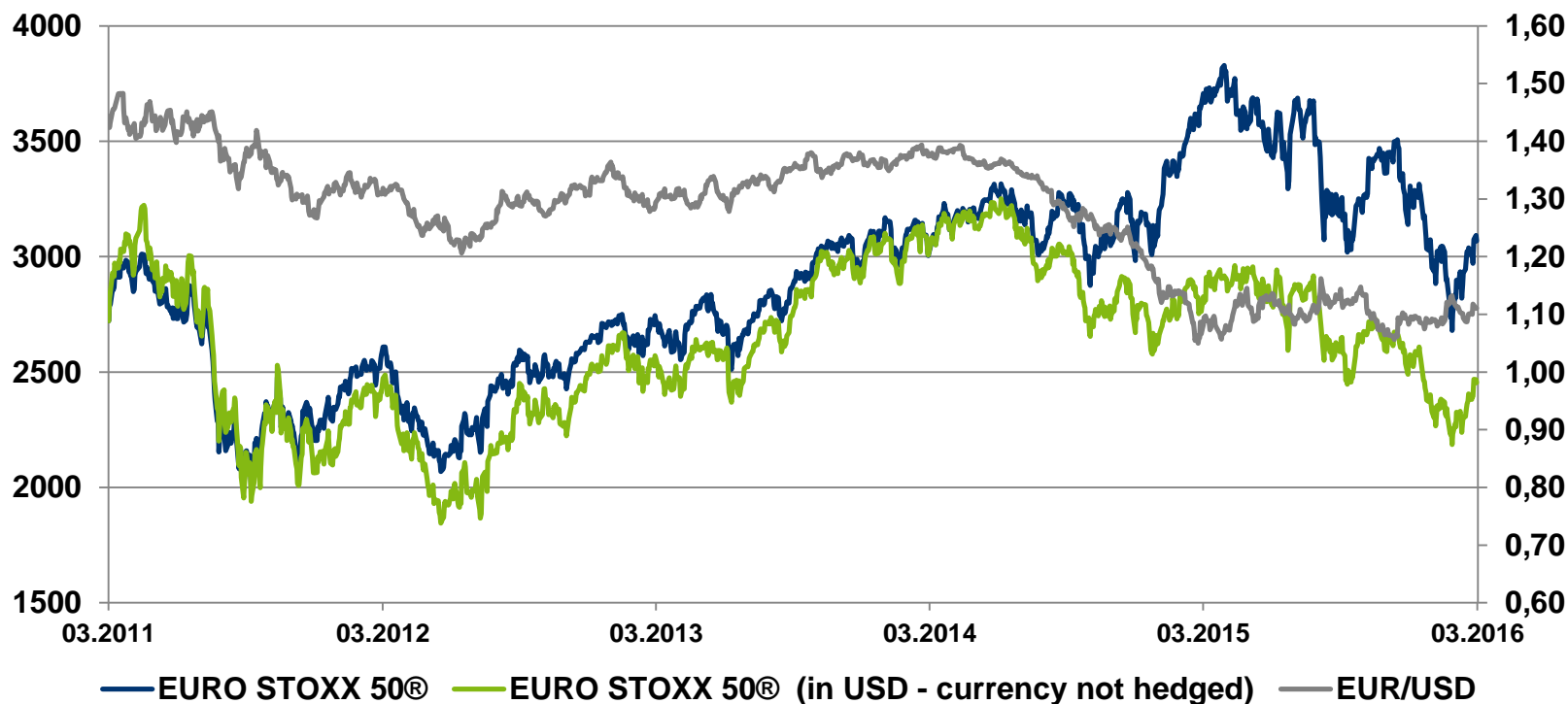
- Integration of the product within the equity Liquidation Group under Eurex Clearing Prisma that leads to margin netting effects across the Entire Equity & Equity Index Derivatives exposure at Eurex Clearing.
- Offering of standard contracts with maturities of up to 9 months and Flexible Futures with flexible maturities.

# Contract specifications

| Product name                            | EURO STOXX 50® Futures (FESX)   | EURO STOXX 50® Quanto Futures (FESQ)         |
|---|---|--|
| Underlying                              | EURO STOXX 50® Index  |  |
| Contract value                          | EUR 10 per index point  | USD 10 per index point                       |
| Price quotation                         | In points with one decimal place  |  |
| Minimum price change                    | 1 point (equivalent to EUR 10)  | 1 point (equivalent to USD 10)               |
| Contract months                         | <b>Standard – up to 9 months:</b> the three nearest quarterly months of the March, June, September and December cycle.  |  |
| Settlement                              | Cash settlement, payable on the first exchange day following the final settlement day.  |  |
| Daily settlement price                  | Determined from the volume-weighted average of the prices of all transactions during the minute before 17:30 CET, provided that more than five trades transacted within this period.                          |  |
| Expiration day and final settlement day | Third Friday of each maturity month, if this is an exchange day; otherwise the exchange day immediately preceding that day. Close of trading in the maturing futures on the last trading day is at 12:00 CET. |  |
| Final settlement price                  | The final settlement price is established by Eurex on the final settlement day and is based on the average of the respective EURO STOXX 50® Index values calculated between 11:50 and 12:00 CET.              |  |
| Trading hours                           | 7:50 – 22:00 CET (1:50am – 4:00pm ET)   |  |
| Orderbook fee                           | 0,30 EUR  | A- Account 0,60 USD<br>P-M Account: 0,50 USD |
| Minimum block trade size                | 1,000 contracts   |  |
| Bloomberg/Reuters                       | VGA Index / 0#STXE:   | VLA Index / 0#FESQ:                          |

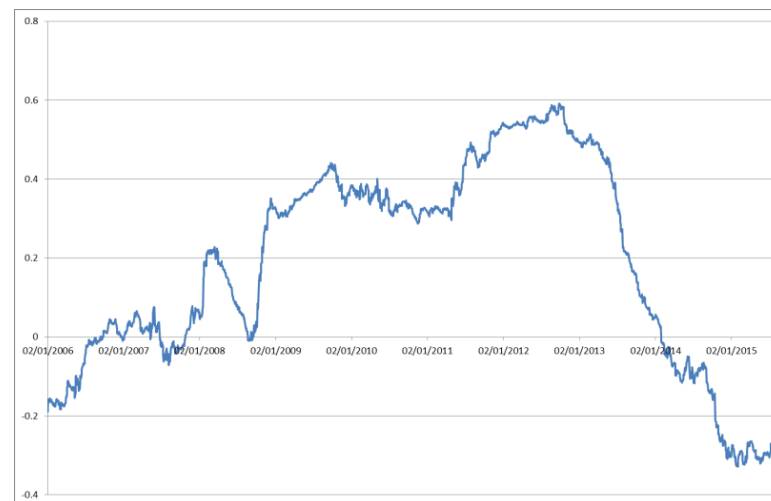
# EURO STOXX 50® Index performance in EUR and USD

- For USD-exposed investors the depreciation of the EUR against the USD in 2014 impacted the performance calculated in USD significantly negative without a currency hedge.
- Ongoing uncertainty about diverging monetary policy measures between the two currency areas makes future FX development even more unpredictable.



# Theoretical pricing

- The spread between the USD Quanto Futures (or Forward) and the Futures or Forward in EUR (local currency) is driven by:
  - **EURO STOXX 50® implied volatility** – implied from listed EURO STOXX 50® Index Options
  - **EUR/USD volatility** – implied volatility from FX options contracts
  - **Correlation** between the index and the exchange rate - typically implied by the current (or past) spread or alternatively evaluated using realized historical correlations
- If the EUR appreciates and the correlation between EUR/USD and the EURO STOXX 50® is positive, the FESX should outperform the FESQ – i.e. the quanto spread should be negative.
- But as the graph shows, the correlation turned negative in 2013, which means that the quanto spread should currently be positive.
- A good estimation for the theoretical price of the Quanto Futures is:
 
$$\text{FESQ} = \text{FESX} * e^{(- \text{Corr} * \text{Vol} (\text{SX5E}) * \text{Vol} (\text{FX}) * t/365)}$$
- Hereby is **Corr** the correlation between the returns of the EURO STOXX 50® (SX5E) and the FX rate (EUR/USD) and **Vola (SX5E)** and **Vola (FX)** being the two implied volatilities. t is days to maturity.
- At maturity on third Friday, both contracts will be settled against the same index level, i.e. the Quanto spread moves towards 0.
- Let's assume that this level will be 3,020 index points, then each long position in FESX will deliver 30,200 EUR and each long position in FESQ will return 30,200 USD.



## Ways for non-European investors to invest in European indexes (EURO STOXX 50® / MSCI Europe) via Futures / ETFs

| Investors currency | Index                   | Product                                   | Product currency | Description   | Result  |
|--------------------|-------------------------|---|------------------|---|---|
| USD                | Index calculated in EUR | FESX (= Futures on EURO STOXX 50®)        | EUR              | USD-investor converts USD into EUR and buys normal futures.                                       | Equity risk, and <b>FX risk</b> over the full period. |
| USD                | Index calculated in USD | FMED (= Futures on MSCI Europe in USD)    | USD              | USD-investor buys index, in which the EUR prices are converted daily into USD.                    | Equity risk, and <b>FX risk</b> over the full period. |
| USD                | Index calculated in EUR | HEZU (= Currency-hedged iShares ETF)      | USD              | USD-investor buys ETF, in which currency risks are hedged via FX forwards over 1m.                | Equity risk, <b>no FX risk, but imperfect hedge.</b>  |
| USD                | Index calculated in USD | n.a. (= Futures on currency-hedged index) | USD              | USD-investor buys futures on an index, which includes a currency hedge (over 1m).                 | Equity risk, <b>no FX risk, but imperfect hedge.</b>  |
| USD                | Index calculated in EUR | FESQ (= Quanto Futures on EURO STOXX 50®) | USD              | USD-investor buys index, but with quanto spread, which guarantees FX rate over investment period. | Equity risk, but <b>no FX risk.</b>                   |

# Current EURO STOXX 50® Derivatives offering

## EURO STOXX 50® Derivatives

| Product   | Eurex code | ADV 2015  |
|---|------------|-----------|
| EURO STOXX 50® Index Futures  | FESX       | 1,351,084 |
| EURO STOXX 50® Index Options  | OESX       | 1,185,303 |
| EURO STOXX 50® Index 1 <sup>st</sup> , 2 <sup>nd</sup> , 4 <sup>th</sup> and 5 <sup>th</sup> Friday Weekly Options (“Weeklies”) | OES1-5     | 57,619    |
| EURO STOXX 50® Index Dividend Futures   | FEXD       | 19,456    |
| EURO STOXX 50® Index Dividend Options   | OEXD       | 5,990     |
| VSTOXX® Futures   | FVS        | 28,558    |
| VSTOXX® Options   | OVS        | 26,220    |
| EURO STOXX 50® Variance Futures   | EVAR       | -         |
| EURO STOXX® Sector Index Futures  | -          | 146,084   |
| EURO STOXX® Broad based Index Futures   | -          | 1,623     |



# Local Equity & Equity Index Derivatives Specialists

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# Appendix

# Market-Making program

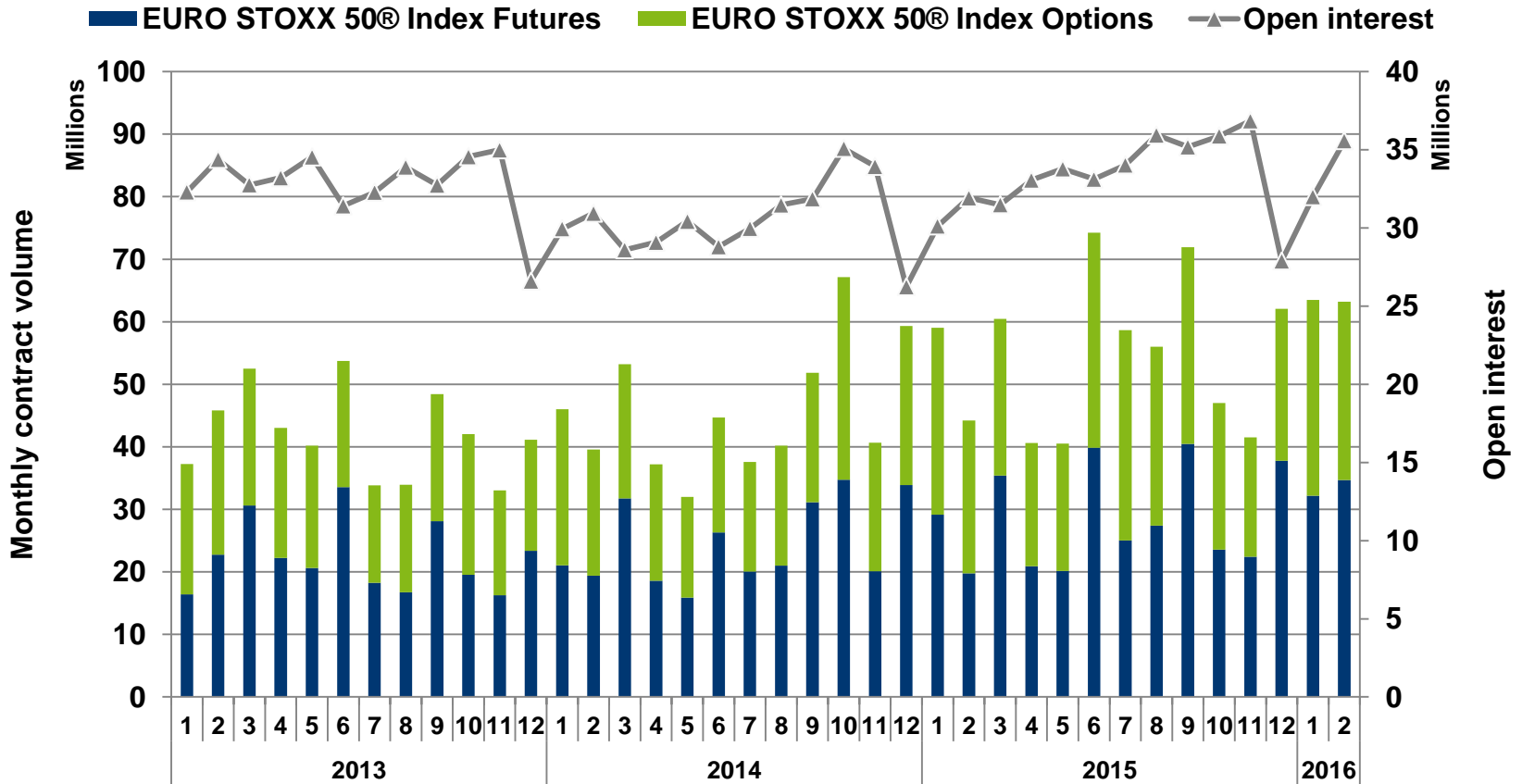
|   |  |
|---|--|
| <b>Duration</b>                           | <ul style="list-style-type: none"> <li>9 months: from launch until December 2016</li> </ul>  |
| <b>Maximum spread and size obligation</b> | <ul style="list-style-type: none"> <li>Two different programs exist (either all three expiries or front month only)</li> <li>DMM1 (all expiries): 25 contracts / 20 bps spread (front month) and 10 contracts / 40 bps spread (2<sup>nd</sup> &amp; 3<sup>rd</sup> expiry)</li> <li>DMM2 (only front month): 25 contracts / 20 bps spread</li> </ul> |
| <b>Required coverage</b>                  | <ul style="list-style-type: none"> <li>85% from 9:00 to 17:30 CET or</li> <li>85% from 15:30 to 22:00 CET on a monthly average</li> </ul>  |
| <b>Rebates</b>                            | <ul style="list-style-type: none"> <li>75% rebates on all M-Account transaction fees on a monthly basis if requirements are fulfilled</li> </ul>   |
| <b>Revenue sharing</b>                    | <ul style="list-style-type: none"> <li>20% of net revenues (= transaction fees minus rebates)</li> <li>10% equally distributed for Market Makers qualifying for DMM1 and</li> <li>10% based on orderbook liquidity for Market Makers qualifying for DMM2</li> <li>maximum 5 Market Makers per month</li> </ul>                                       |
| <b>Early adapter clause</b>               | <ul style="list-style-type: none"> <li>During the first 6 months (until end of August 2016) the revenue sharing DMM1 is limited to a maximum of three Market Makers, whereby those who fulfill first in a full month will keep their slot as long as they keep fulfilling the obligations</li> </ul>   |

# Market Makers

| Member                    | Member ID | Contact        | Phone            |
|---------------------------|-----------|----------------|------------------|
| Barak Capital             | BCLTA     | Uri Peles      | +972-747100 657  |
| DRW Investments (UK) Ltd. | LOTLO     | Chad Miller    | +44-20 7031 1369 |
| J.P. Morgan               | JPMFR     | Rachid Alaoui  | +44-20 7779 2454 |
| Jump Trading              | JUMLO     | Peter Deaner   | +44-20 7382 4374 |
| Positive Equity Ltd.      | POSDB     | Chico Franke   | +353 1 525 0505  |
| Spire Europe              | SPELO     | Alan McGroarty | +44-20 7809 1995 |

# EURO STOXX 50® Index Futures & Options volume development

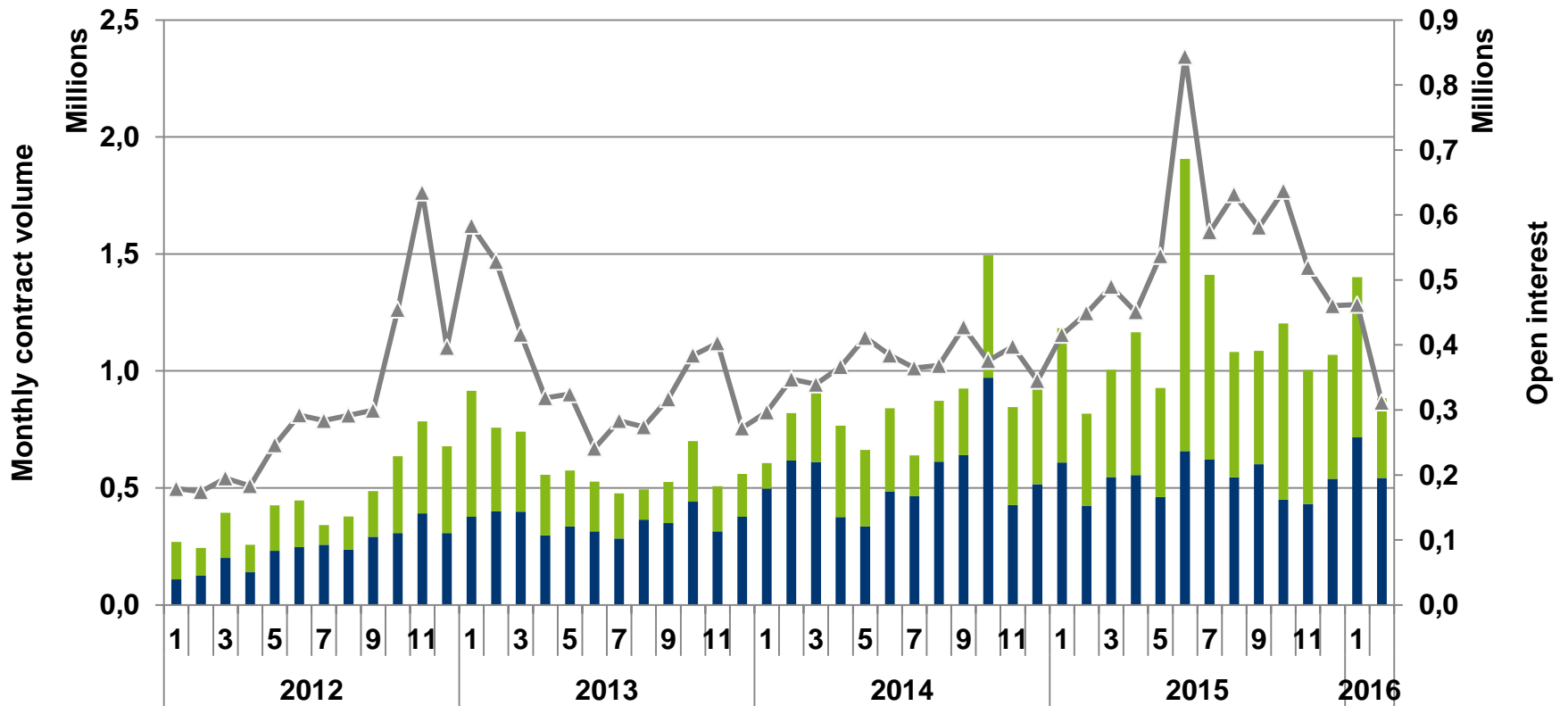
## EURO STOXX 50® Index Futures and Options (incl. Weeklies)



# VSTOXX® Futures & Options volume development

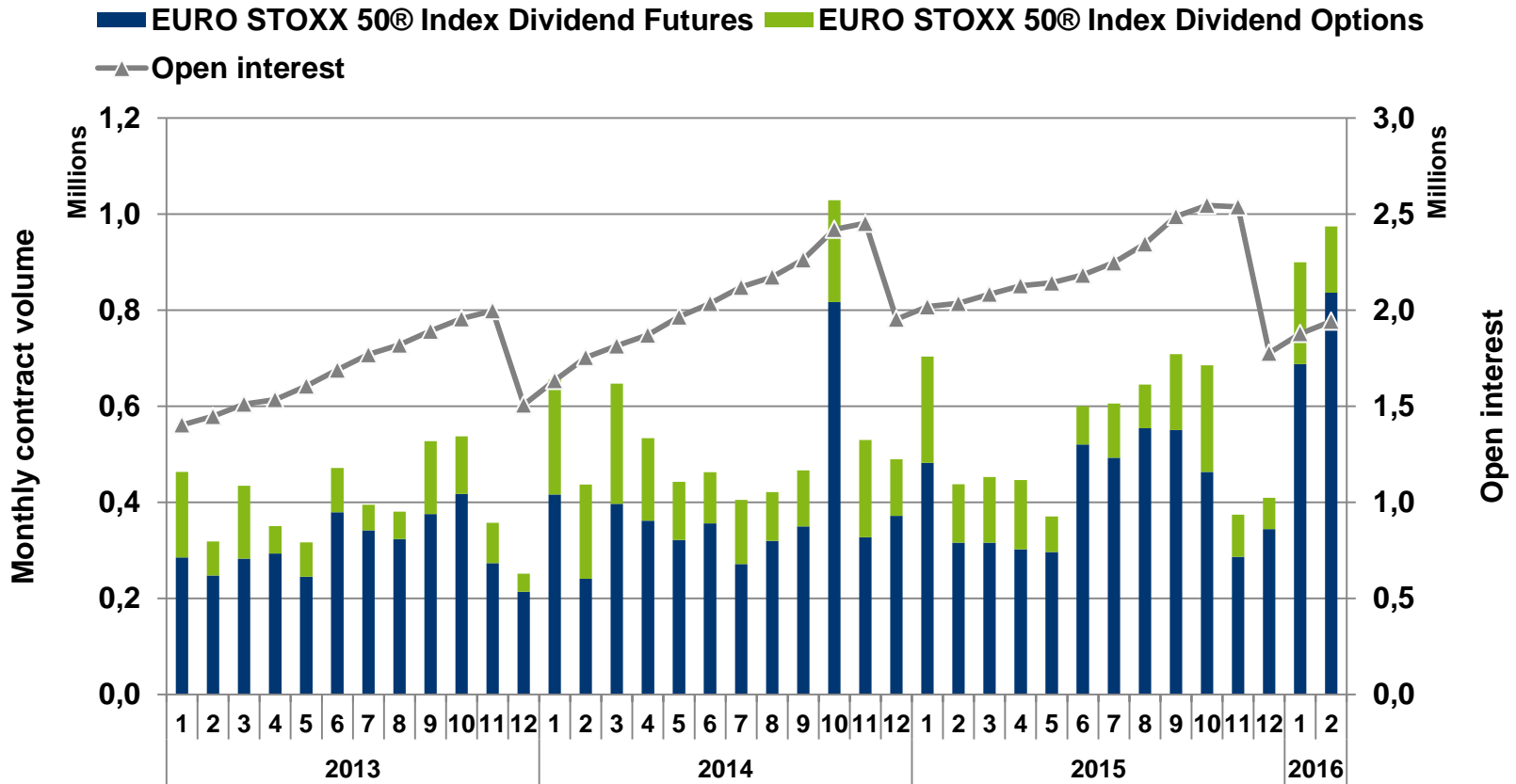
## VSTOXX® Futures and Options

Orderbook TES Open interest

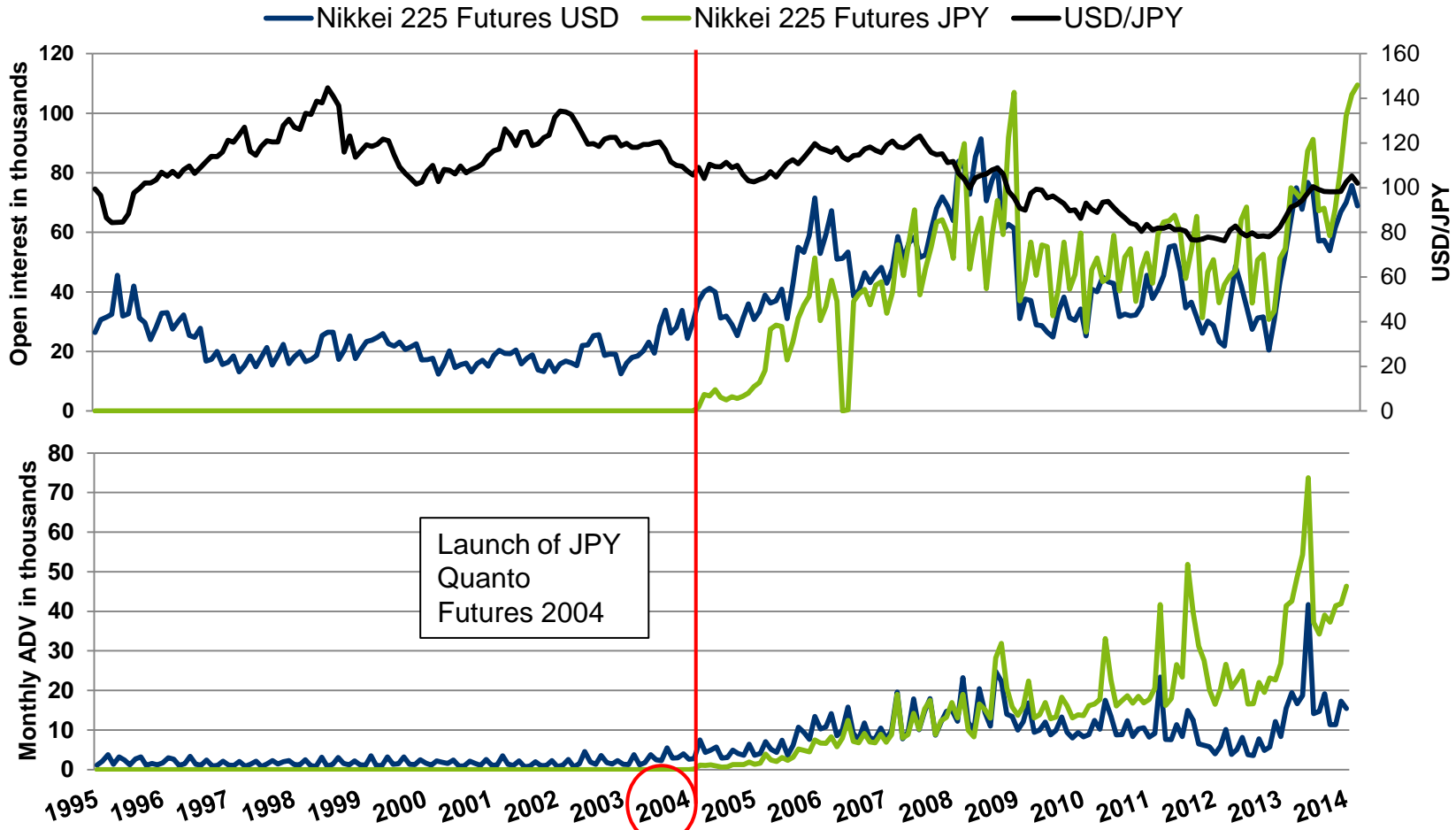


# EURO STOXX 50® Index Dividend Derivatives volume development

## EURO STOXX 50® Index Dividend Futures and Options



# The case of CME Nikkei 25 Futures



Source: Bloomberg



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