

VSTOXX®

The European Volatility Gauge

November 2024

VSTOXX

Index Objective and Benefits

Objective

The VSTOXX® Index is designed to reflect the investor sentiment and overall economic uncertainty in Europe, using the real-time prices of the EURO STOXX 50® options traded at Eurex to measure the 30-day implied volatility.

Benefits

The VSTOXX® index measures the implied variance across all options of a given time to expiry and offers a cost-efficient way to implement a tail risk hedge

VSTOXX has an observed negative correlation to the EURO STOXX 50 index and tends to move up, when other asset classes are in decline.

VSTOXX products proved as a relevant hedge instrument in times of global crisis

- 2008: Global Financial Crisis
- 2016: Brexit
- 2020: COVID-19 Pandemic

Volatility is a measure of uncertainty in financial markets and there are two approaches to estimate it:

1) Historical Volatility:

standard deviation of close prices from stocks or indices over a given period of time

2) Implied Volatility:

derived from values of exchange-traded options

Using Volatility in Financial Markets

Uses of Implied Volatility

Market Gauge

- Assessment of market expectations on future realized volatility

Directional Trading

- Volatility viewed as asset class, virtually uncorrelated with market returns and direction

Dispersion Trading

- Trade the difference in volatility between an index and its components

Spread Trading

- Trade the difference in volatility of two indices

Hedging

- Overlay against a naturally long or short volatility portfolio
- Offset increased tracking error in more volatile markets

VSTOXX Methodology¹

Relationship between Sub- and Main-Indices

The VSTOXX sub-indices are bound to actual option expiries and form the basis for the main indices with fixed maturities

Sub-Indices

- Each sub-index provides a measure of the option-implied volatility for a certain expiry, as prescribed by the variance swap pricing model
- At every index tick the fair value of a variance swap is recalculated
- Eight sub-indices are calculated, covering the corresponding first eight natural option expiries²
- Calculation occurs every 5 seconds, based on Eurex EURO STOXX 50 options (OESX) options

Main Indices

- The main indices provide a measure of implied volatility over a fixed term, e.g. 30 days
- Each main index is calculated by interpolating in time the two nearby sub-indices
- 12 fixed-term maturities are calculated ranging from 30 to 360 days, with regular 30-day intervals
- Calculation occurs every 5 seconds

1. Full methodology can be referenced: https://www.stoxx.com/document/Indices/Common/Indexguide/stoxx_strategy_guide.pdf

2. Eurex OESX expiries up to 24 months; the 3 nearest successive calendar months, the 3 following quarterly months of the March, June, September and December cycle thereafter, and the two following semi-annual months of the June and December cycle thereafter. Last Trading Day is the Final Settlement Day, the 3rd Friday of each expiration month. Close of trading on the Last Trading Day is 12:00:00 CET.

VSTOXX Main Index

Settlement Level

Current Calculation

- Main indices settlement levels are calculated on the 30th calendar day preceding the expiry of OESX options
- A settlement level is calculated as arithmetic average of all ticks, of the relevant main index, starting at 11:00:00 CET and ending at 12:00:00 CET
- The calculation takes place in the form of an expanding window, i.e. progressively expanding the observation period from 11:00 CET to the most recent calculation time

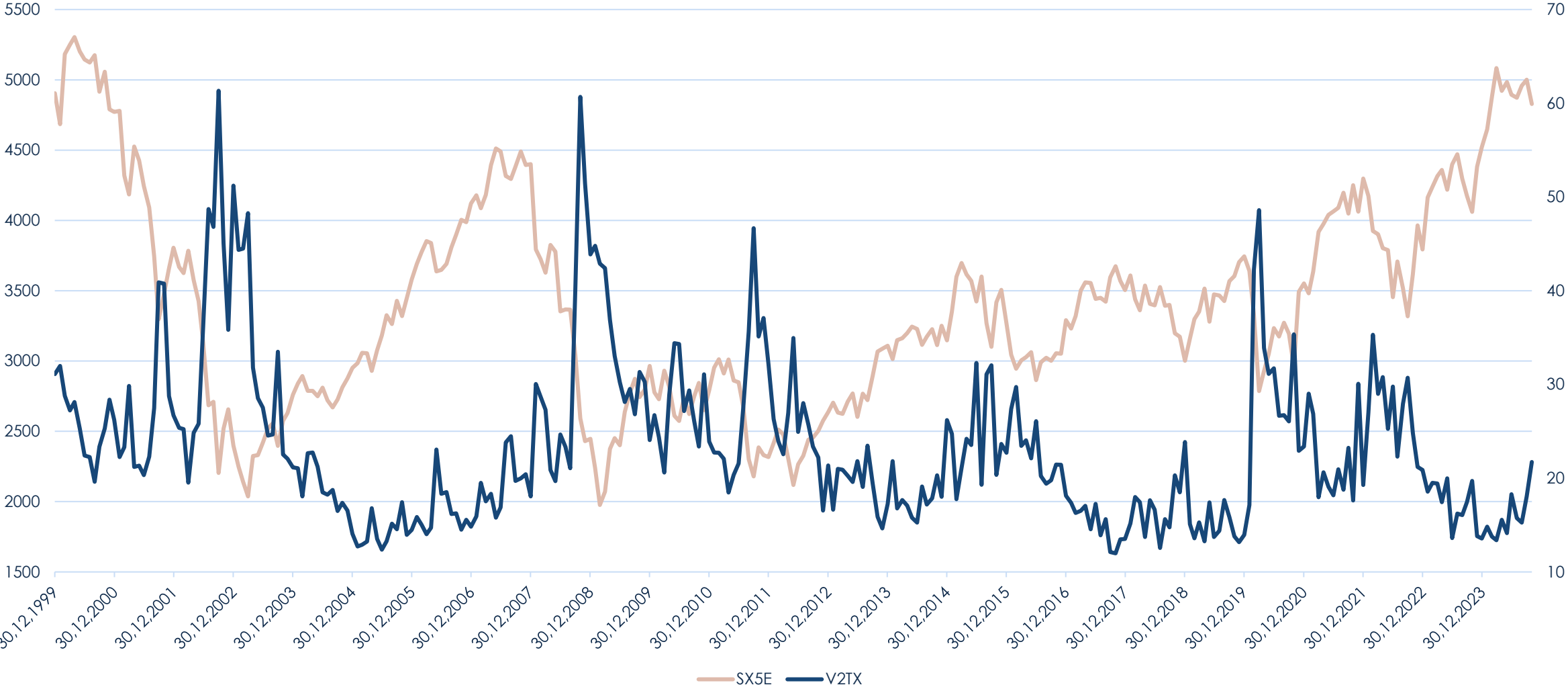
Option Price Screening

- The most recent among traded, mid and daily settlement prices is taken
- The price cannot be below 0.5
- Both, bid and ask price, must be available
- The bid-ask spread must be within the established spreads for Eurex Market Makers (8% or up to 16% in stressed markets)
- Mid-price is calculated as simple average of bid and ask price

1. [https://www.stoxx.com/document/Resources/MarketConsultation/Market_Consultation_on_proposed_changes_to_the_EURO_STOXX_50_Volatility_\(VSTOXX\)_family_of_indices.pdf](https://www.stoxx.com/document/Resources/MarketConsultation/Market_Consultation_on_proposed_changes_to_the_EURO_STOXX_50_Volatility_(VSTOXX)_family_of_indices.pdf);
[https://www.stoxx.com/document/Resources/MarketConsultation/Results_of_Market_Consultation_on_proposed_changes_to_the_EURO_STOXX_50_Volatility_\(VSTOXX\)_family_of_indices_20231206.pdf](https://www.stoxx.com/document/Resources/MarketConsultation/Results_of_Market_Consultation_on_proposed_changes_to_the_EURO_STOXX_50_Volatility_(VSTOXX)_family_of_indices_20231206.pdf)

VSTOXX Time Series

A Historical Comparison to the EURO STOXX 50



Source: STOXX, data as of October 31, 2024

Eurex Product Information

VSTOXX Derivatives

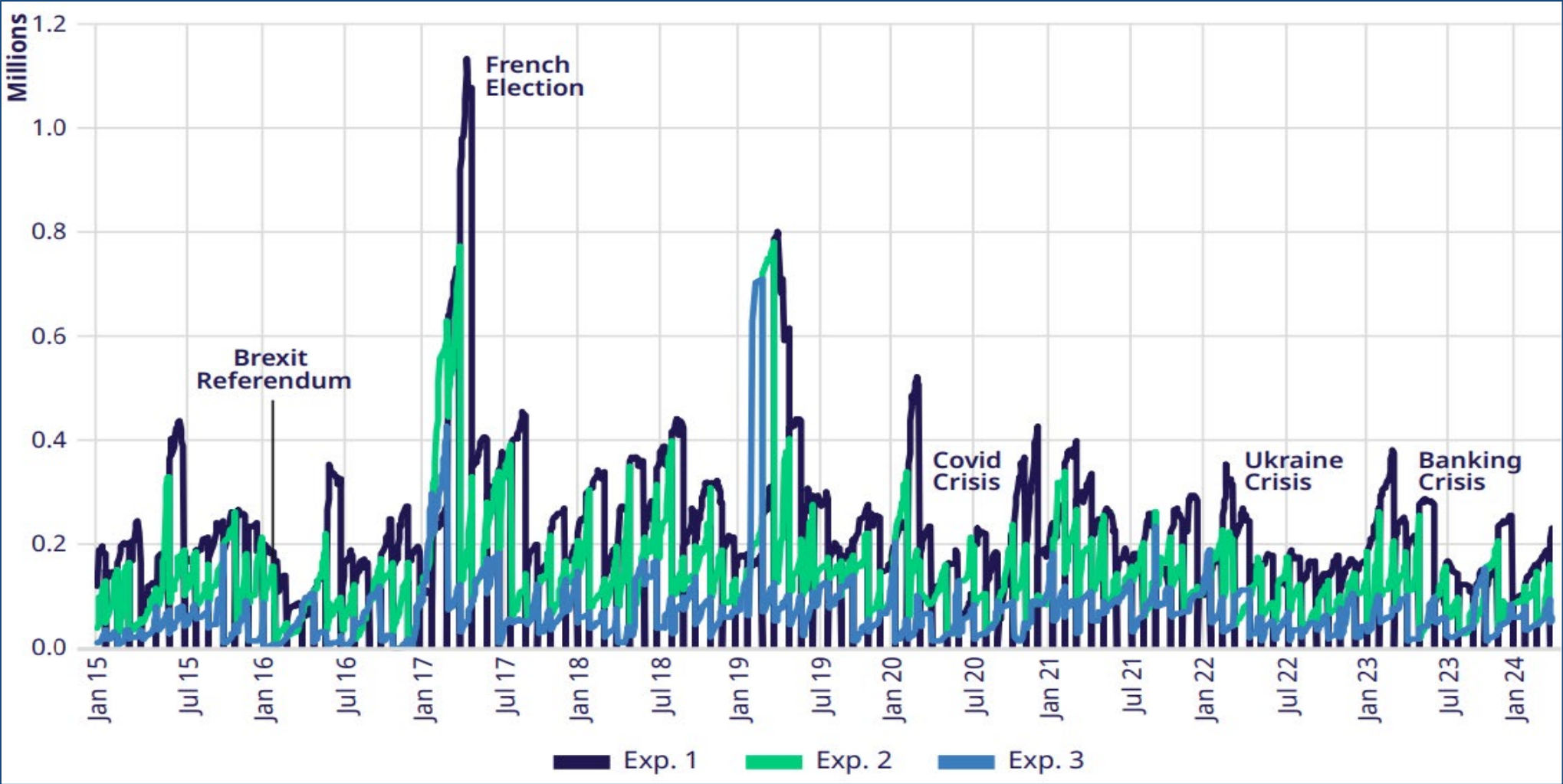
Contract Specifications for VSTOXX Futures & Options on VSTOXX Futures

Symbol	OVS2	FVS
Product Name	Options on VSTOXX® Futures	VSTOXX® Futures
Underlying	VSTOXX® Futures	The VSTOXX® Index, a market estimate of expected volatility that is calculated every 5 seconds by using real-time EURO STOXX 50® option bid/ask quotes
Contract Value	EUR 100 per index point of the underlying	
Price Quotation and Minimum Price Change	The Minimum Price Change is 0.05 points (equivalent to a value of EUR 5)	The Minimum Price Change is 0.025 points (equivalent to a value of EUR 2.5)
Contract Months	The next eight successive calendar months	
Exercise Price Intervals	Staggered by Volatility Index Level:	
	= < 20	- 1 Index Point
	> 20 and =< 50	- 2.5 Index Points
	> 50	- 5 Index Points
Exercise	American-style; an option can be exercised until the end of the Post-trading Full Period on any exchange day during the lifetime of the option.	-
Settlement	Physical delivery of the underlying. The underlying matures on the same exchange day and will be settled in cash.	Cash settlement, payable on the first exchange day following the Final Settlement Day.
Daily Settlement Price	Established by Eurex, determined through a binomial pricing model	Determined during the closing auction of the respective futures contract
Last Trading Day and Final Settlement Day	30 calendar days prior to the third Friday of the expiration month of the underlying options. This is usually the Wednesday prior to the second last Friday of the respective expiration / maturity month	
Final Settlement Price	Average of the VSTOXX® values on the Last Trading Day between 11:30 and 12:00 CET	
Block Trade Size	TES 1,000 Contracts; Enlight Min Block 500 Contracts	1,000 Contracts
Vendor Codes	Bloomberg: FVSA INDEX OMON Reuters: 0#FVS2+	Bloomberg: FVSA INDEX Reuters: 0#FVS:

Source: Eurex

VSTOXX Futures

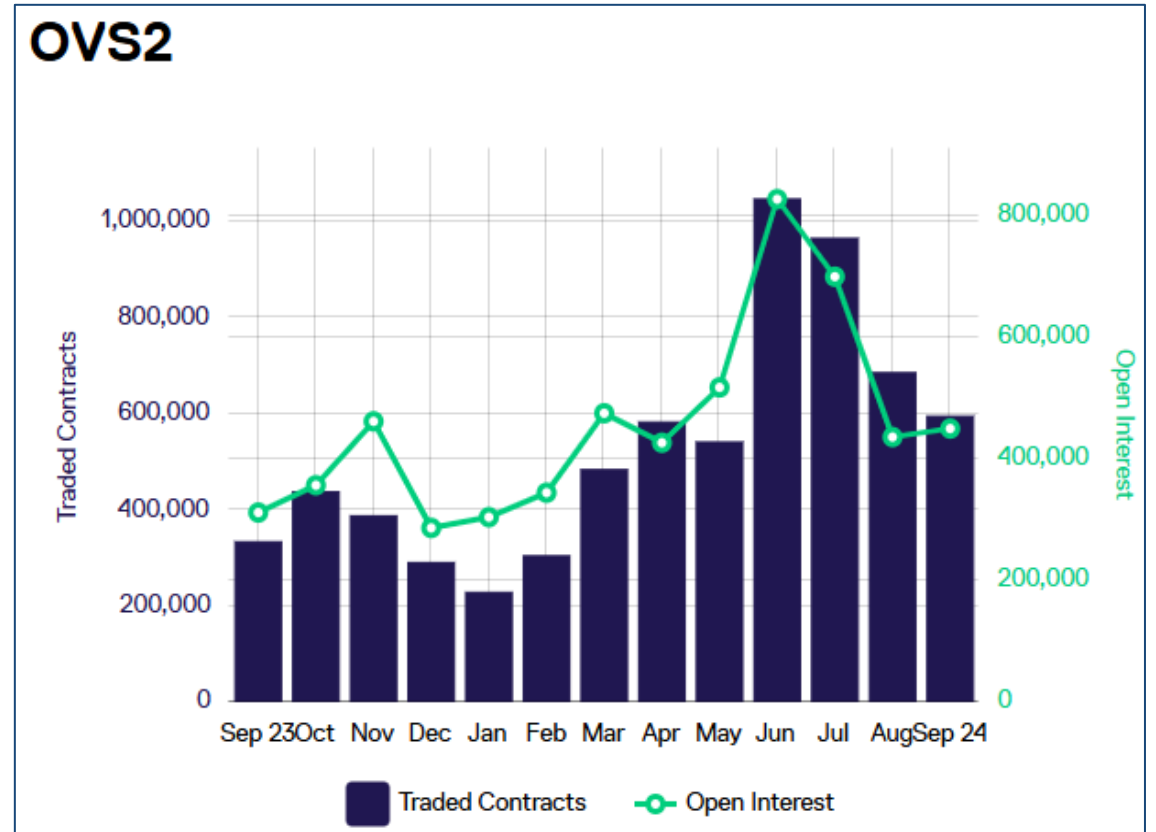
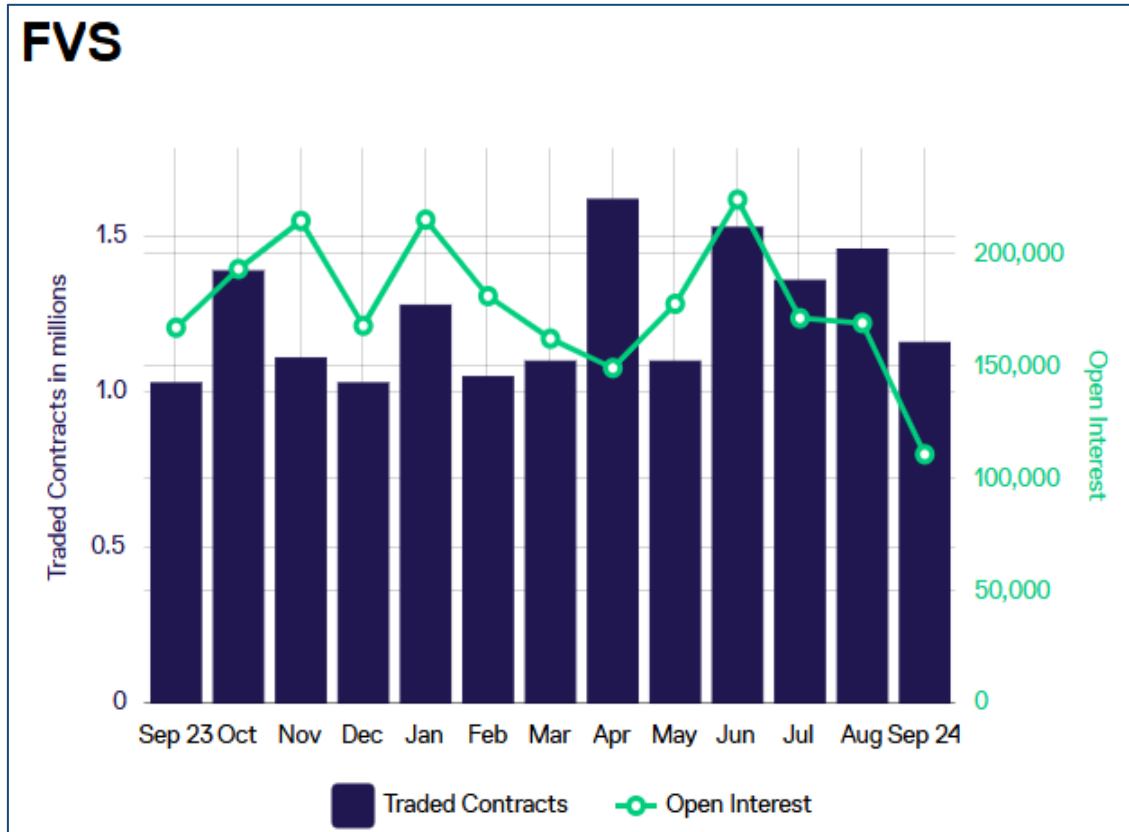
Open Interest Development in Context of Macroeconomic Events & Expiries



Source: Eurex

VSTOXX Statistics

Traded Contracts and Open Interest on VSTOXX Futures (FVS) & Options on VSTOXX Futures (OV2S)



Source: Eurex, <https://www.eurex.com/ex-en/markets/vol/vstoxx>

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Learn more about STOXX & DAX Indices on stoxx.com

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About STOXX & Disclaimer

About STOXX

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Thank you

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