

Volatility Derivatives on Eurex Exchange: VSTOXX®

VSTOXX® is the European volatility benchmark

It is designed to reflect the investor sentiment and overall economic uncertainty by measuring the 30-day implied volatility of the EURO STOXX 50®. Futures and options on VSTOXX® offer the most accurate and cost-effective way to take a view on European volatility. Unlike trading volatility with hedged index options, there are no transaction costs in managing deltas for VSTOXX® Derivatives. They are exchange-traded and centrally cleared, providing independent mark-to-market valuation and robust liquidity.

VSTOXX® is a cost efficient way to get the most accurate hedge against exposure to European volatility.

In a price drop in equity markets, VSTOXX® futures can take a long position in the market while simultaneously hedging against downward moves in the equity market.

The EURO STOXX 50® Volatility Index (VSTOXX®) measures the implied variance across all options of a given time to expiry. The VSTOXX® Index features a negative correlation to the EURO STOXX 50® Index on a long term basis. Because of this correlation, the VSTOXX tends to move to the upside when all other asset classes are in decline as indicated in the chart below. Therefore the VSTOXX® has proven to be a relevant hedge in times of both global crisis like the 2008 financial crisis and Aug 24, 2015 market meltdown and EU-specific crisis like the Greek debt crisis in 2015 and Brexit in 2016. VSTOXX® can improve the efficient frontier and offer a cost efficient way to implement a tail risk hedge.

In a volatile equity market environment, tracking error and rebalancing costs increase in equity portfolios. Equity fund managers can go long volatility with VSTOXX® Derivatives to protect against increases in portfolio tracking error and rebalancing costs of passively indexed or benchmarked funds. Similarly, convertible bond arbitrage fund managers can use VSTOXX® Derivatives to hedge their imbedded volatility exposure. This is especially the case in periods of low dispersion/high correlation across equities, which make it difficult for fund managers to extract alpha in stock selection.¹

Trading opportunities for the relative value and spread trader

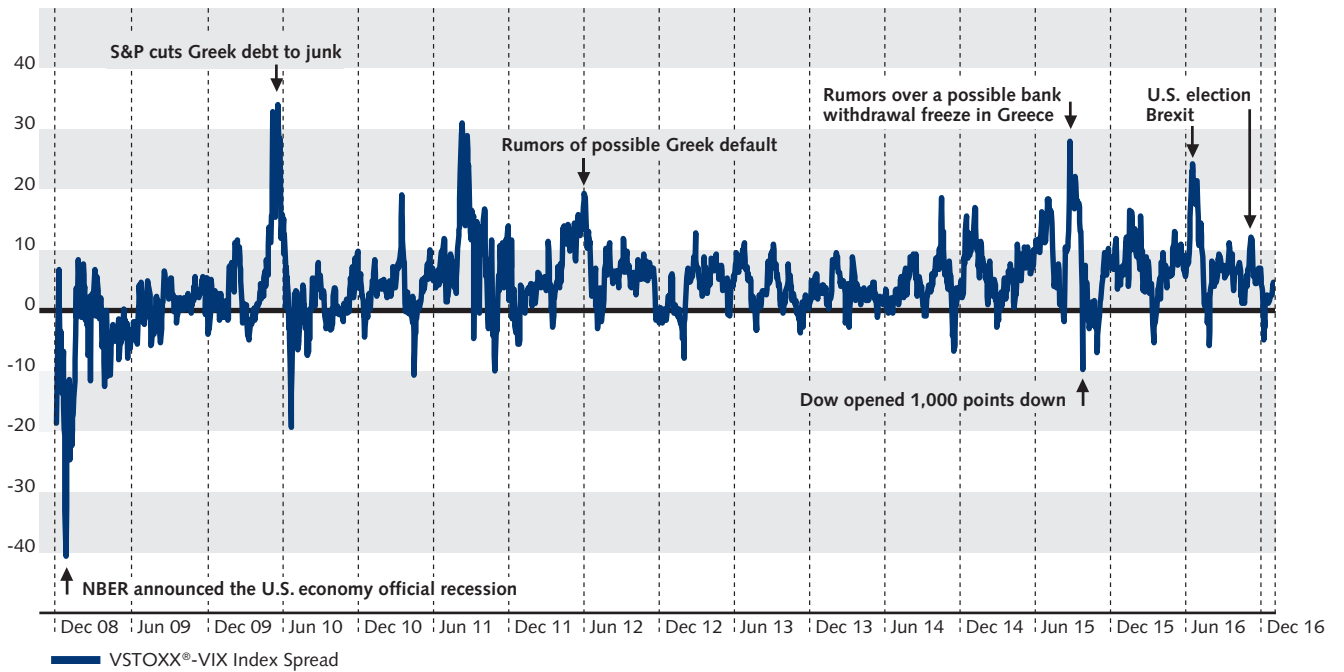
Volatility as an asset class is a growing market and strategy with sustained ADV and a developed term structure. As traders and investors look for new opportunities, VSTOXX® Derivatives offer the transparent orderbook and sustained liquidity necessary to trade spreads between European and Non European implied volatility.

Correlations ²	EURO STOXX 50®	S&P 500	CAC 40	FTSE 100
VSTOXX®	-0.6999	-0.7654	-0.7963	-0.6909
VIX®	-0.4180	-0.6729	-0.5724	-0.5980
VCAC	-0.6776	-0.7747	-0.7850	-0.6941
VFTSE	-0.5581	-0.7567	-0.6949	-0.5855

¹ "The Benefits of Volatility Derivatives in Equity Portfolio Management", EDHEC Risk Institute, May 2012

² 4 January 2016 – 30 December 2016

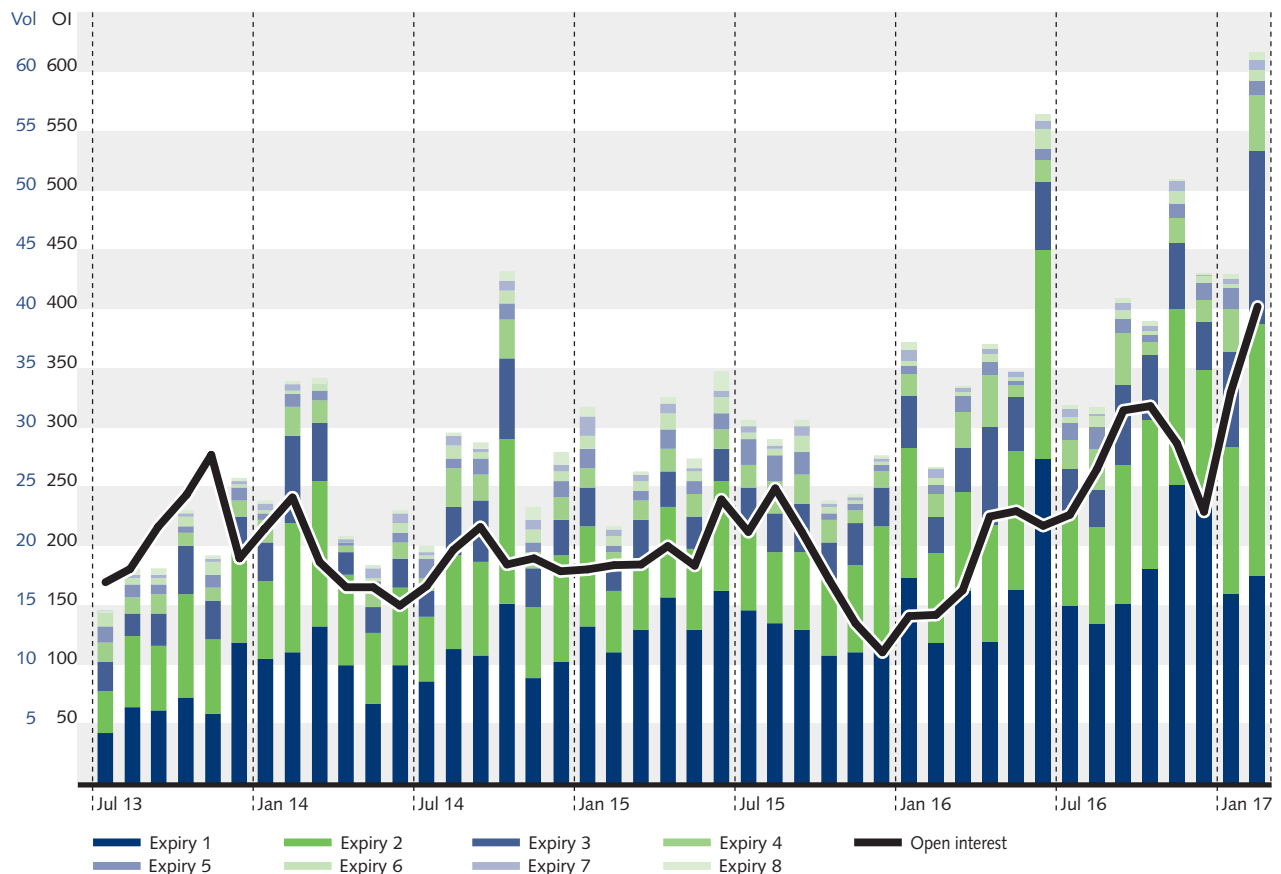
VSTOXX®-VIX Index Spread



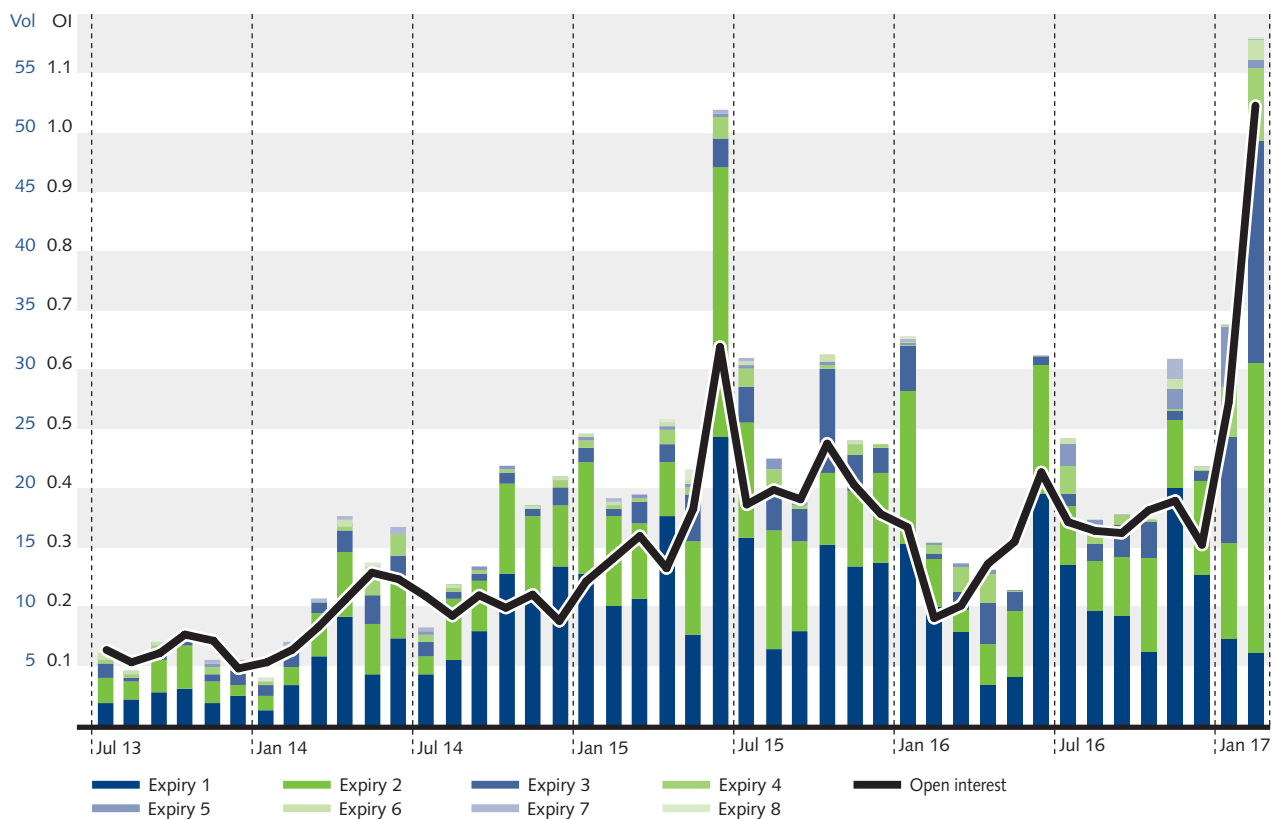
The correlation between the VSTOXX® and VIX often breaks down during Euro or US specific events and the terms structure between the two markets can narrow and widen in times of high and low volatility as observed when markets enter a period of stress and move from contango to backwardation.

13 Market Makers provide tight spreads (the minimum tick is five basis points) that have fostered liquidity in these products. As a result, we are seeing sustainable growth in both futures and options across the term structure.

VSTOXX® Futures – Average daily volume and open interest (in thousands)



VSTOXX® Options – Average daily volume (in thousands) and open interest (in millions)



Trading benefits at a glance

- Hedge your portfolio exposure in equity, credit and option portfolios
- Explore spreads between European and non-European volatility indices
- Diversify your portfolio by adding a new asset class
- Generate additional alpha, due to the mean-reversion nature of volatility
- Implement a tail risk hedge
- Trade directional positions on the level of a single volatility index
- Integrated spread matrix available for all futures maturities

Transparency

In compliance with the ESMA requirements, the components weightings of the VSTOXX® index are publicly available on <https://www.stoxx.com>. Both futures and options are supported by order books facilitating the best execution. Updated information is readily available on VSTOXX® Outlook Pages.

Eurex Trade Entry Services

Eurex Trade Entry Services (TES) enables Trading Participants to enter off-book transactions in the Eurex system. With these

services clients can benefit from the advantages offered by listed derivatives for bilaterally agreed trades, as well as the advantages of standardized clearing and settlement through Eurex Clearing.

To facilitate basis trading, the Exchange for Physical (EFP) and Exchange for Swap (EFS) facilities allow for simultaneous purchase (sale) of futures along with the sale (purchase) of the underlying equities.

Vola Trade Functionality allows participants to enter delta-neutral strategies trades with an integrated hedge in the underlying, Options on VSTOXX® against Mini-Futures on VSTOXX®. This facility provides straight through processing for all legs of a volatility strategy including the underlying.

TES provides additional enhanced trade types for wholesale business such as block trading, flexible contract terms and multilateral trade registration.

Eurex Clearing

Eurex Clearing is one of the leading central counterparties globally, providing fully automated, straight-through post-trade services for derivatives, equities, bonds and secured funding and financing, as well as industry-leading risk management technologies.

Key benefits of Eurex Clearing:

- Innovation in risk management
- Capital efficiencies
- Margin efficiencies
- Default Management
- Client Asset Protection
- Cross margining

Eurex Clearing Prisma

Eurex Clearing Prisma, our portfolio-based margining approach, offers numerous benefits:

- Greater accuracy and capital efficiency: cross-product scenarios facilitate a consistent method to account for portfolio correlation, diversification and margin reduction
- Robustness: methodology to enable stable margin requirements
- Reliable framework: consistent risk and default management process for listed and OTC products

Product specifications

Symbol	FVS	OVS
Product name	VSTOXX® Futures	VSTOXX® Options
Underlying	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	In points with two decimal places The Minimum Price Change is 0.05 points (equivalent to a value of EUR 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	–	European-style; an option can only be exercised on the final settlement day of the respective option series until 21:00 CET
Settlement	Cash settlement, payable on the first exchange day following the final settlement day	
Daily settlement price	Determined during the closing auction of the respective futures contract	Established by Eurex, determined through a binomial pricing model
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	1,000 contracts	500 contracts
Vendor codes	Bloomberg: FVSA INDEX Reuters: 0#FVS:	Bloomberg: V2X INDEX OMON Reuters: 0#FVS+

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