

Volatility Derivatives on Eurex Exchange: VSTOXX®

VSTOXX® is the European volatility benchmark.

As investors have realized there is no global proxy for risk management, they look for more precise ways to manage European-specific risk. Using the real-time prices of the EURO STOXX 50® options to measure the 30-day implied volatility, the VSTOXX® Index is designed to reflect the investor sentiment and overall economic uncertainty in Europe.

With the increased liquidity in the VSTOXX® Futures and the launch of the CFTC-certified Options on VSTOXX® Futures, investors all over the world are able to accurately manage their European exposure in a cost efficient manner.

Launch of CFTC VSTOXX® Options

As of February 1, 2017, the VSTOXX® Options market opened up to U.S. investors with the launch of the Options on VSTOXX® Futures. As a result, all U.S. investors have the ability to access the VSTOXX® Futures and Options market directly from the US. The VSTOXX® market has grown consistently since the CFTC approval of the VSTOXX® Futures in August 2012 and the launch of CFTC options looks to build on this momentum.

Hedging opportunities for traditional asset managers

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

With the growth of Market Makers in both the futures and options and new more robust Market Making programs, the VSTOXX® Futures and Options orderbook has improved across the entire term structure. Volume and open interest is spread out across all eight expiries.

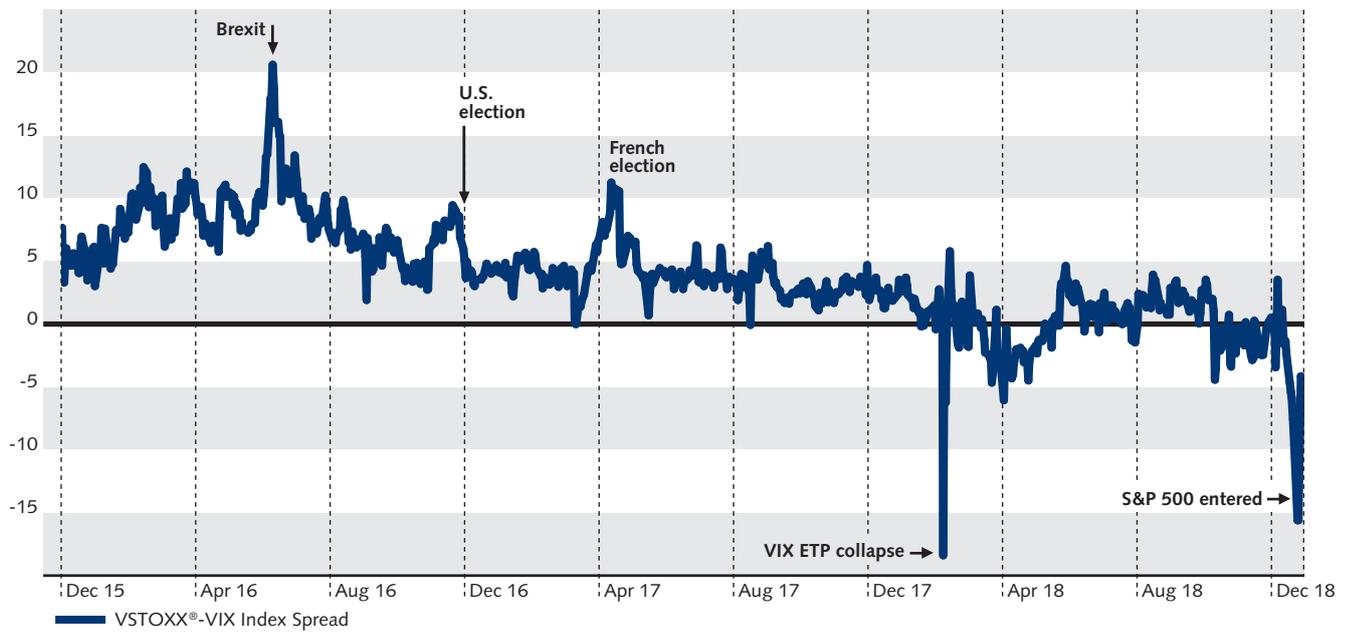
As a result, participation from relative value and spread traders looking for asset classes with term structure has increased. Additionally, these traders have looked to the VIX/VSTOXX® spread for more relative value opportunities.

Correlations ²	EURO STOXX 50®	S&P 500	CAC 40	FTSE 100
VSTOXX®	-0.9100	-0.4757	-0.8988	-0.8397
VIX®	-0.8990	-0.6353	-0.9153	-0.7658
VCAC	-0.8546	-0.4913	-0.7035	-0.8177
VFTSE	-0.9050	-0.5400	-0.9288	-0.7604

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

² 31 May 2018 – 28 Dec 2018

VSTOXX®-VIX Index Spread

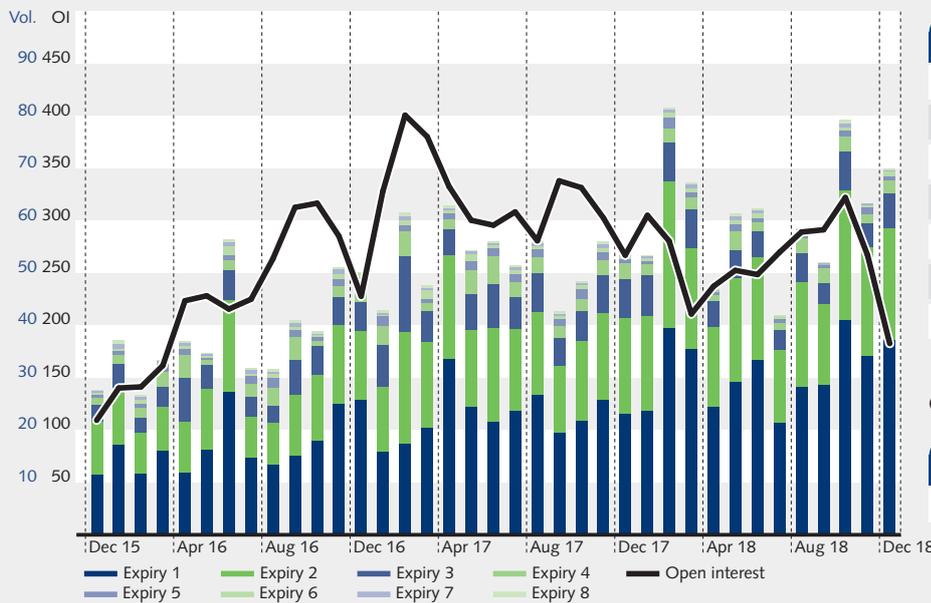


The correlation between the VSTOXX® and VIX often breaks down during Euro or US specific events and the terms structure between the two markets can narrow and widen

in times of high and low volatility as observed when markets enter a period of stress and move from contango to backwardation.

VSTOXX® Futures (FVS)

Average daily volume by expiry and open interest (in thousands)



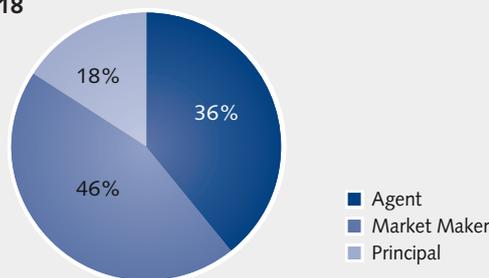
Average daily volume growth

	FVS ADV
2012	15,000
2013	21,000
2014	27,500
2015	29,500
2016	38,200
2017	52,640
2018	61,176

Orderbook volume growth

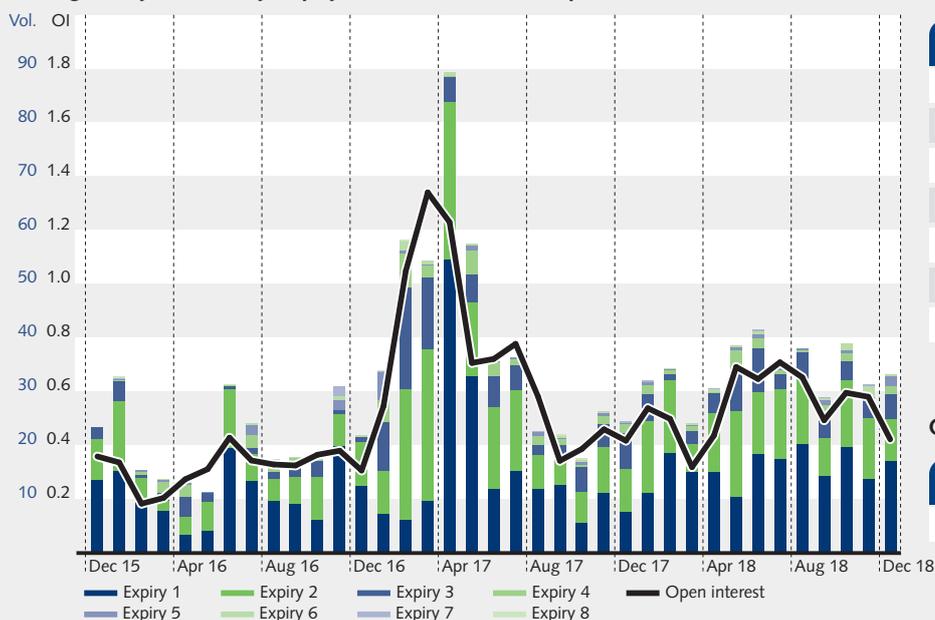
FVS	2012	2018
Order book	71.93%	93.61%

Volumes by account type 2018



VSTOXX® Options (OVS/OVS2)

Average daily volume by expiry (in thousands) and open interest (in millions)



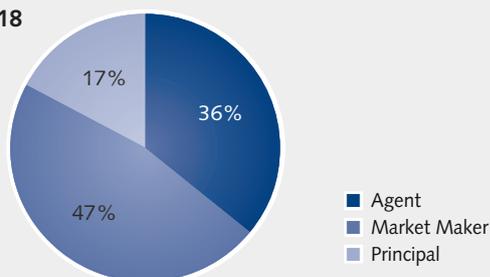
Average daily volume growth

	OVS/OVS2 ADV
2012	5,638
2013	7,947
2014	13,380
2015	27,000
2016	19,000
2017	39,795
2018	33,794

Orderbook volume growth

OVS/OVS2	2012	2018
Order book	2.66%	26.62%

Volumes by account type 2018



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 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 T7 Entry Services

Eurex T7 Entry Services enable Trading Participants to enter order information for off-book transactions to 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 Facility allows Participants to enter delta-neutral strategies trades with an integrated hedge in the underlying, Options on VSTOXX® Futures against Futures on VSTOXX®. This facility provides straight through processing for all legs of a volatility strategy including the underlying.

T7 Entry Services provide additional enhanced trade types for wholesale business such as block trading, additional contract terms and Multilateral Trade Registration.

Product specifications

Symbol	FVS	OVS2
Product name	VSTOXX® Futures	Options on VSTOXX® Futures
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	VSTOXX® Futures
Contract value	EUR 100 per volatility index point	
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	–	American-style; an option can be exercised until the end of the Post-Trading Full Period (20:30 CET) on any exchange day during the lifetime of the option.
Exercise price intervals	–	All option series have exercise prices with price gradations in the amount of not less than one point.
Settlement	Cash settlement, payable on the first exchange day following the final settlement day.	Physical delivery of the underlying. The underlying is maturing on the same exchange day and is settled in cash.
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: FVSA INDEX OMON Reuters: 0#FVS2+

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