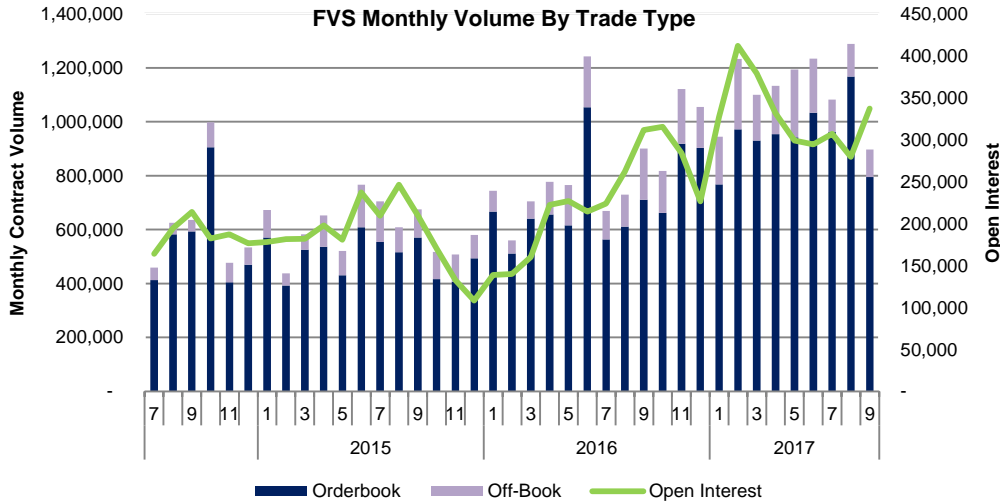


# Overview Of Listed European Volatility

November 2017

# A Path to Liquidity: Average Daily Volume and Open Interest Growth

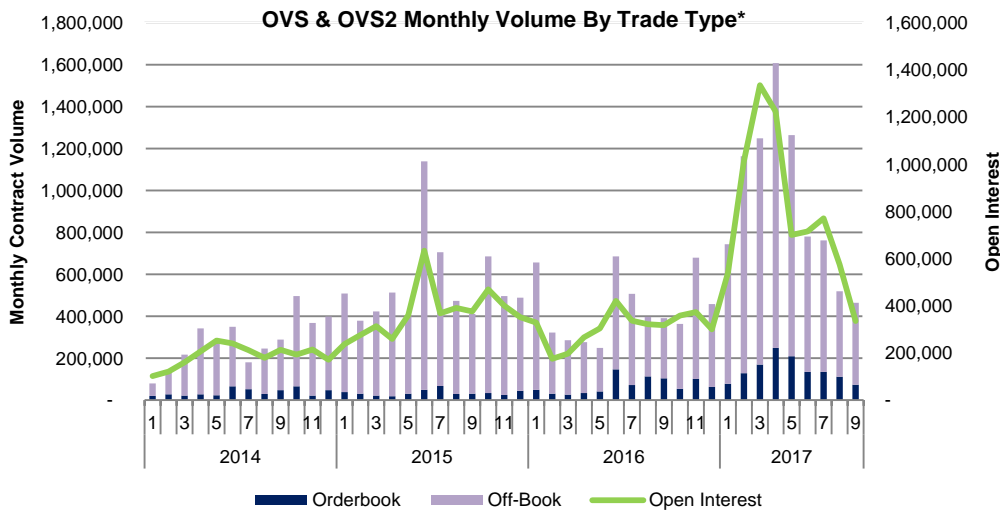


	FVS ADV	OVS/OVS2 ADV
2012 ADV	15,000	5,638
2013 ADV	21,000	7,947
2014 ADV	27,500	13,380
2015 ADV	29,500	27,000
2016 ADV	38,200	19,000
2017 ADV	52,632	44,563

VSTOXX® Futures and Options are seeing sustainable growth year over year since receiving no-action relief from the CFTC in 2012.

Futures order book: The new market making program has produced a healthy orderbook

Options order book: Eurex is actively monitoring steps to improve the liquidity picture now that the underlying market has reached required liquidity



### Orderbook volume growth 2012 vs 2017

FVS	2012	2017
Order book	71.93%	84.35%

OVS/OVS2	2012	2017
Order book	2.66%	15.08%

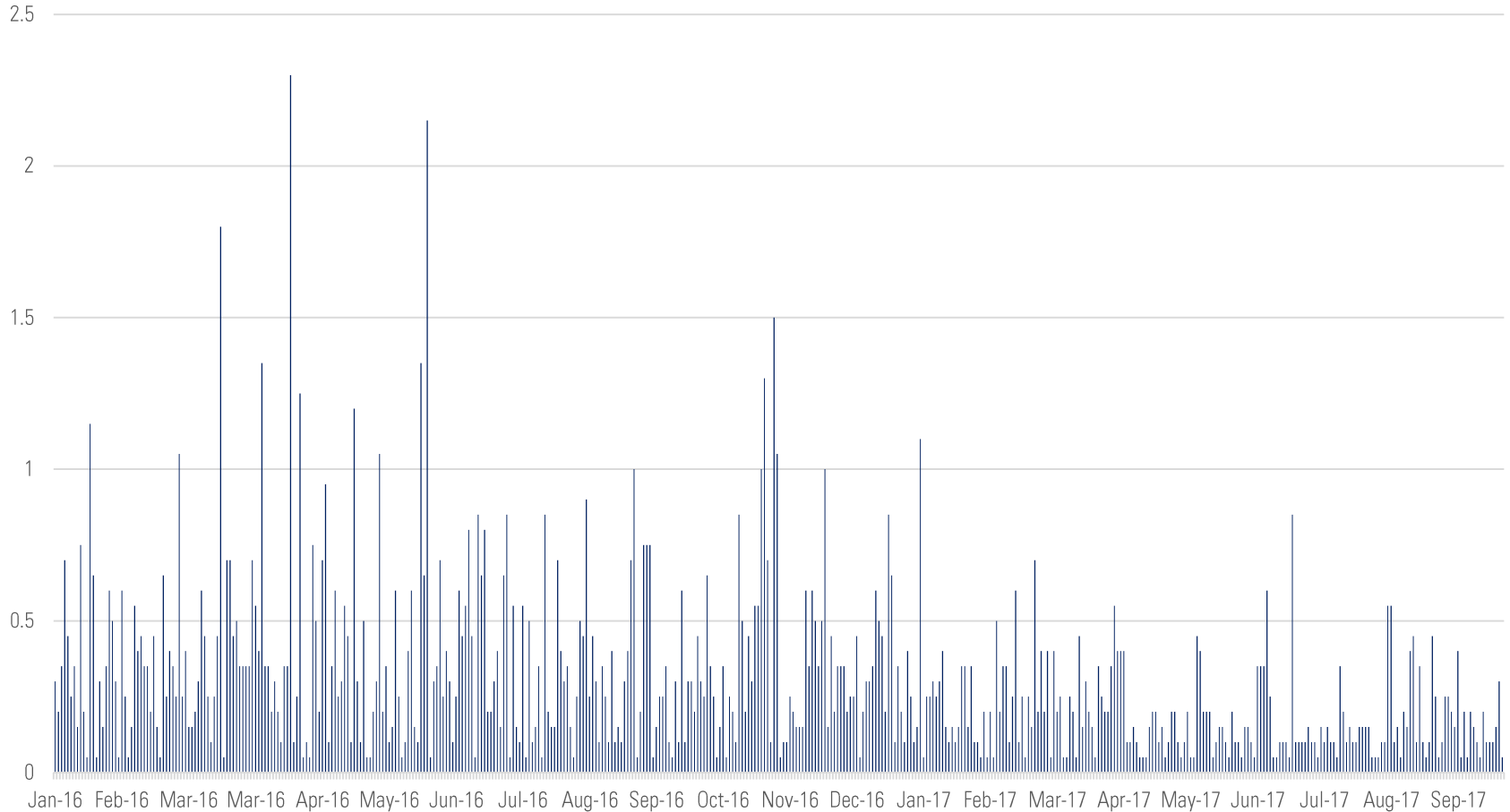
\*Values include OVS2 volume and open interest starting Feb. 2017.



# VSTOXX® Futures - Bid / Ask Spread

- Bid/Ask spread on VSTOXX futures is tighter by 49% in 2017 compared to 2016 ; **€0.2003 vs €0.3925**

VSTOXX Futures - Daily Bid/Ask Spread (Jan. 4, 2016 to Sep. 29, 2017)



# VSTOXX® Futures – Volume Breakdown by Hours and Trade Size

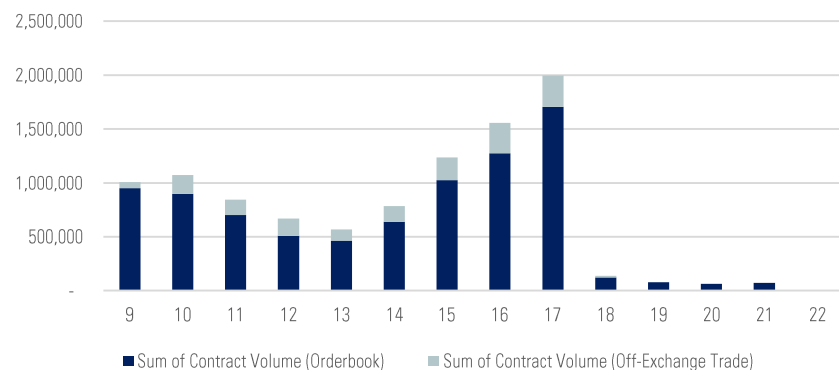
- In both the options and futures on VSTOXX, US hours (14:00 Hours CET onwards) constitute majority of the trading day volumes (see table).

Product	Year	% Volume During US Hours	Average Notional Trade Size - Orderbook	Average Notional Trade Size - Offbook	Average Notional Trade Size - Total	Average Trade Size (Contract)- Orderbook	Average Trade Size (Contract)- Offbook	Average Trade Size (Contract)- Total
FVS	2016	58.74%	22,535	1,964,598	26,631	13	804	11
	2017	57.57%	21,272	1,265,492	25,295	12	688	14
OVS/OVS2	2016	58.65%	296,953	3,256,233	1,284,772	108	1,255	468
	2017	56.78%	232,174	3,085,731	1,106,925	116	1,482	535

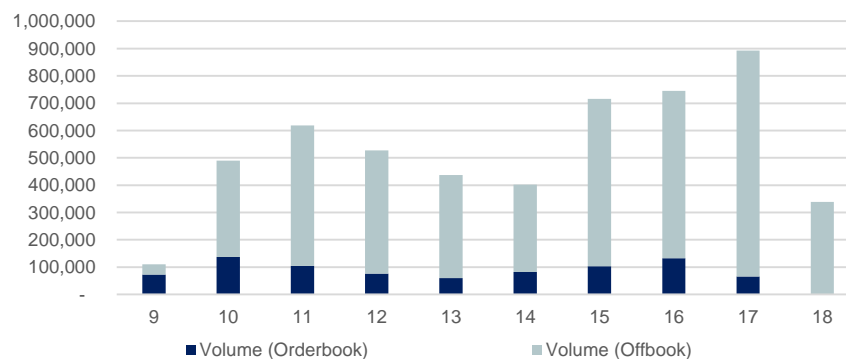
Note: a) 2017 Includes Data Till end of September. b) Average Notional Trade Size is measured in Euros. c) Options stats include OVS2 starting February 2017.

- Also evident from the table is that average trade size has increased in 2017 for both FVS and OVS as compared to 2016, and this increase stems mainly from increase in average orderbook trade size.
- Charts below depict the trend of hourly volumes in 2016 (2016 has been chosen here in order to obtain a complete picture of the hourly volume flow) for both FVS and OVS. Again, the increasing trend in volumes is evident during the US hours.

VSTOXX Futures – 2016 Hourly Volumes By Trade Type



VSTOXX Options – 2016 Hourly Volumes By Trade Type

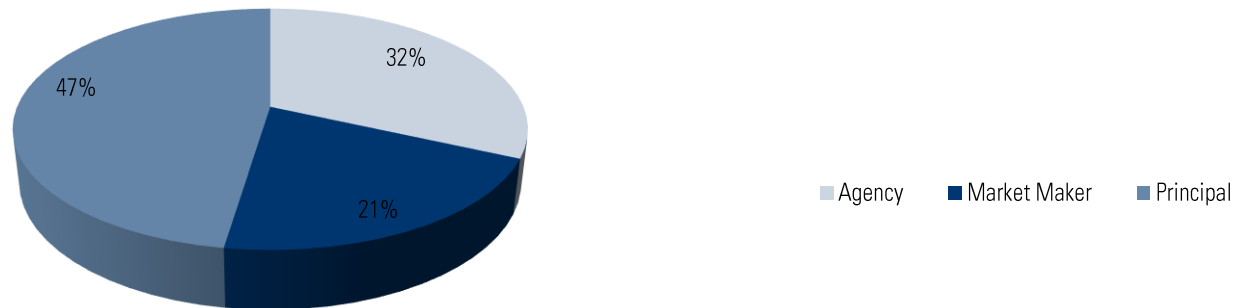


# VSTOXX® - Volumes By Account Type

## VSTOXX Futures Breakdown By Account Role - 2017



## VSTOXX Options Breakdown By Account Role - 2017

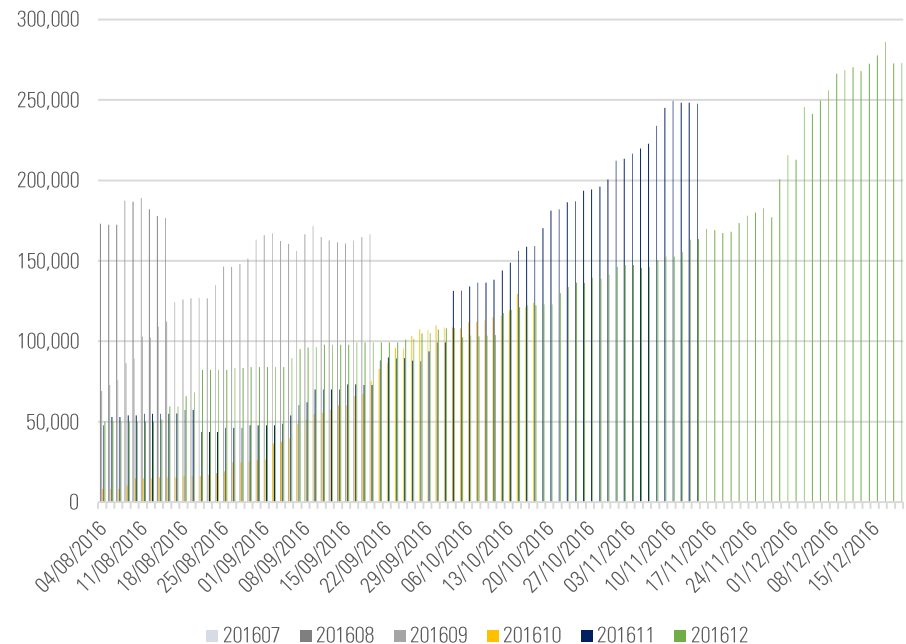
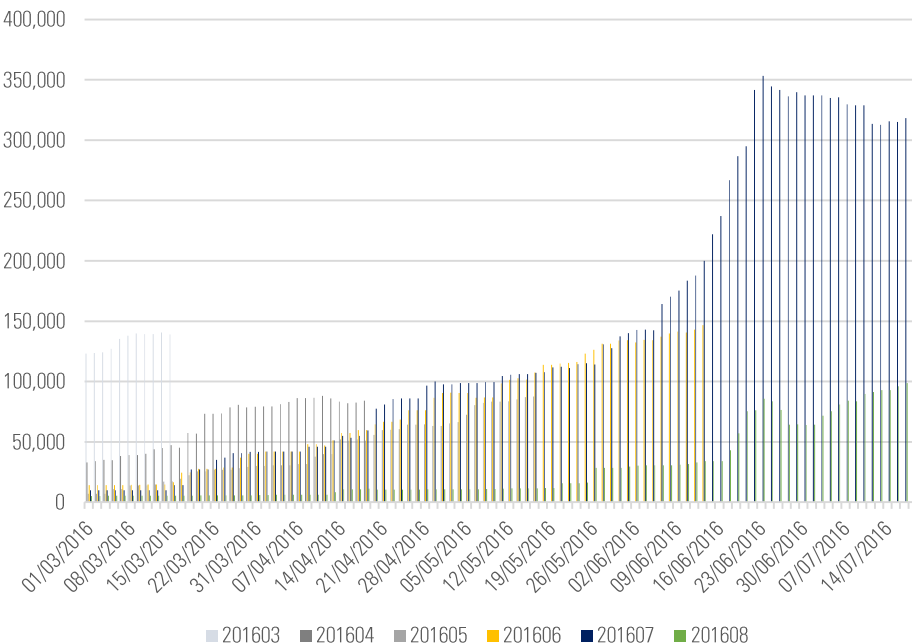


# VSTOXX® Options During Macroeconomic Events

- VSTOXX Options act as effective tools to hedge against macroeconomic events that could cause uncertainty.
- In 2016 two such macroeconomic events that stood out from the rest were the EU Referendum and the US presidential election.
- During Brexit, Open Interest (OI) in OVS - July expiry (which was the front contract on June 23) dominated the OI of every other expiry, not just during Brexit but also in the months leading to Brexit. On several days in April, May and June, this contract had higher open positions than even the front contracts at the respective times.
- During US Presidential election, both the November and December expiries were highly active, indicating that uncertainty persisted in the Financial market's movements following the election.

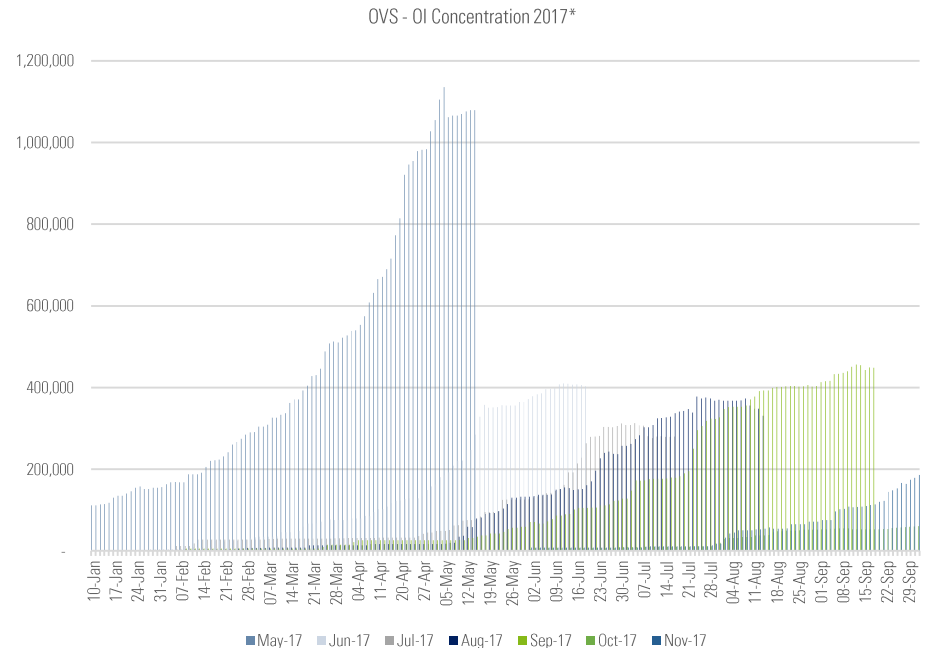
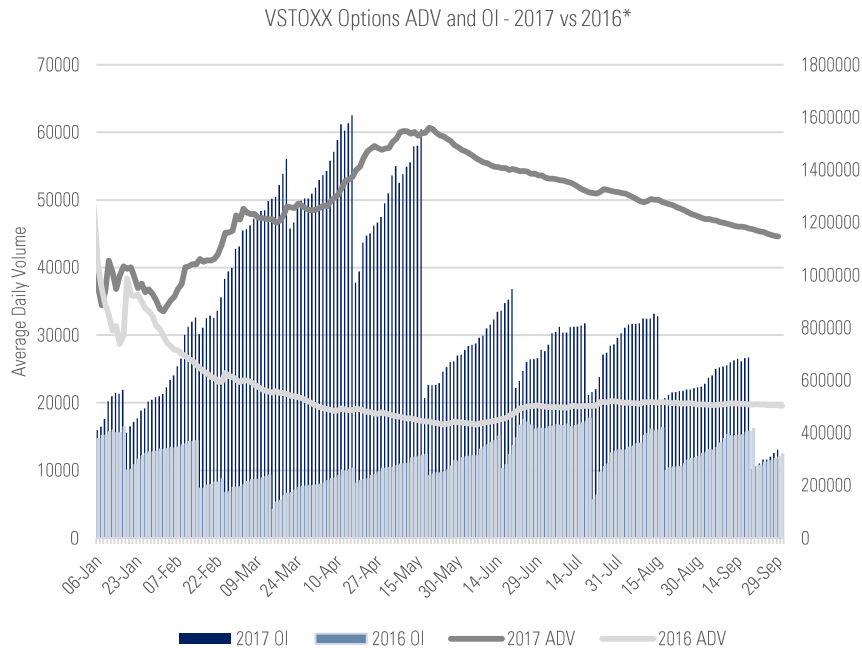
OVS - Open Interest By Expiry During Brexit

OVS - Open Interest By Expiry During US Presidential Election



# VSTOXX® Options – Strong 2017

- VSTOXX Options have been very strong in 2017 – ADV of 44,563 (as of September 29, 2017) as compared to 19,556 at the same time last year. **Year-on-Year growth of 128%**. Growth in Open Interest – 335,839 this year vs 318,676 last year, indicating a year-on-year growth of 5%.
- The main participants we see are asset managers & pension funds (e.g. using V2X for a volatility selling strategy), volatility-arbitrage hedge funds (taking opinions on the vol. curve or on events) and bank exotics/structured products desks (using V2X futures to hedge residual vega risks on their books).



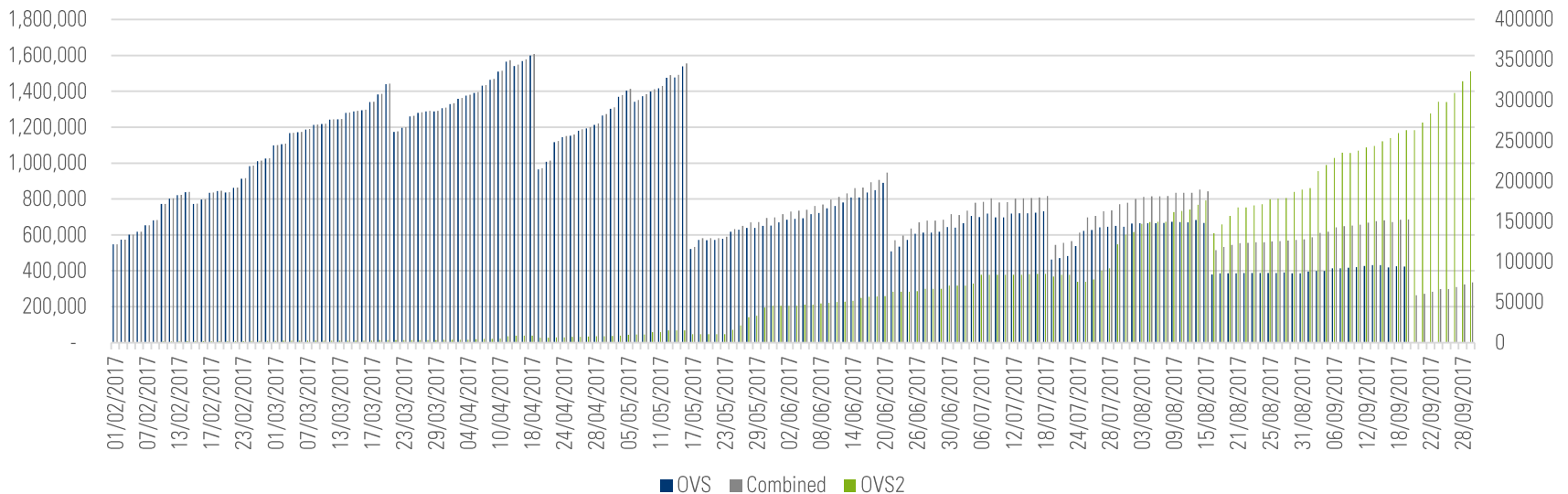
\*Values include OVS2 volume and open interest starting Feb. 2017.

# Looking Forward – Strengthening the ecosystem

## Launching CFTC approved VSTOXX Options

- On February 1, 2017, Eurex launched a new listed volatility product – Options on VSTOXX Futures (OVS2).
- OVS2 is CFTC-approved and is therefore accessible to US participants.

OVS / OVS2 Open Interest Transition Since Launch



## VSTOXX ETNs will be added to the European Volatility ecosystem

- 2 ETNs will be launched Q2 2017;
  - 1X Long VSTOXX Futures ETN
  - 1X Inverse VSTOXX Futures ETN





# Margin savings between EURO STOXX 50 Index Futures and VSTOXX Futures



Name	Eurex	Long	Short	Exp. Date	Initial Margin (in EUR)	Liquidity add on (in EUR)	Margin Total (in EUR)	Portfolio Margin Total (in EUR)	Margin savings
EURO STOXX 50 Index Future	FESX	500	0	Sep 2017	1,257,572	4,344	1,261,916	527,252	78%
VSTOXX Futures	FVS	1700		Sep 2017	1,096,144	39,332	1,135,476		

\*Calculation date: 2017/09/01