

Mark Shore on VSTOXX[®] Derivatives Part 1: Utilizing a European volatility index for Pan-European volatility



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Mark Shore has more than 25 years of experience in the futures markets and managed futures, publishes research, consults on alternative investments and conducts educational workshops (see full biography on page 18).

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In past articles, I've discussed the negative correlation between the VSTOXX[®] volatility index and the EURO STOXX 50[®] Index and how the volatility index tends to rally when equities decline (downside volatility).

The recent passing of the Brexit vote on 23 June 2016 introduced immediate uncertainty and downside volatility to the global capital markets. The results of several upcoming European elections could introduce more uncertainty and volatility into the capital markets. According to Bloomberg News, 40 percent of the EU economy will be voting in 2017. Market reactions to the Brexit vote are still being determined and several European elections right around the corner, this is a timely opportunity to examine various moments of global macro volatility and how several European equity indexes behaved during these moments.

Does this discussion begin to identify a larger macro story of positive correlation behavior of several European equity indexes? If so, could investors find potential utility in the VSTOXX® Futures volatility index?

	Total volume	YOY change	Daily average volume	Open interest
2016	7,090,656	26.1%	36,739	295,348
2015	7,226,833	3.8%	28,341	108,132
2014	6,962,188	30.8%	27,519	173,986
2013	5,324,708	36.5%	21,046	184,900
2012	3,901,530	106.5%	15,300	224,061
2011	1,889,492	337.7%	7,352	68,088
2010	431,669	2,834.0%	1,686	58,700
2009	14,715	12.0%	58	1,304

Table 1: VSTOXX[®] Futures yearly volume and open interest as of Sept 2016

Source: Eurex Exchange monthly statistics

Table 2: Correlation matrix of daily spot returns of VSTOXX[®], EURO STOXX 50[®] Index, CAC 40 index, FTSE 100 index, DAX[®] index and STOXX[®] Europe 600 index from 2 Jan 2007 to 30 Sept 2016 (in EUR)

	VSTOXX®	EURO STOXX 50 [®] Index	CAC 40	FTSE 100	DAX®	STOXX® Europe 600
VSTOXX®	1.00	-0.77	-0.76	-0.67	-0.74	-0.76
EURO STOXX 50 [®] Index		1.00	0.98	0.85	0.95	0.96
CAC 40			1.00	0.87	0.93	0.97
FTSE 100				1.00	0.82	0.94
DAX®					1.00	0.93
STOXX [®] Europe 600						1.00

Source: Bloomberg data

Liquidity is always important to an investor or trader. Table 1 gives readers an overview of the VSTOXX® Futures liquidity over the last years.

When examining the correlation of several European equity indexes, Table 2 demonstrates the relatively high positive correlation among various European spot equity indexes and a relatively high negative correlation the equity indexes tend to experience relative to VSTOXX[®] spot. An initial observation indicates the volatility index may offer added value to multiple European equity indexes if the indexes tend to be positively correlated. When analyzing correlations on a dynamic basis of a 20-day rolling correlation in Chart 1 (page 3), the positive correlation of the EURO STOXX 50° Index remains relatively consistent to the CAC 40, DAX° and STOXX° Europe 600 indexes. This result begins to build an argument for the VSTOXX° volatility index to offer an added value for investors with exposure to multiple European equity indexes. There is greater variance of correlation of the EURO STOXX 50° Index to the FTSE 100 index.

When the FTSE 100 index is removed from the Chart 2 (page 3), a relatively high consistent positive correlation between the CAC 40, DAX[®] and STOXX[®] Europe 600 indexes to the EURO STOXX 50[®] Index on a 20-day rolling basis becomes more apparent.





Chart 2: 20-day rolling correlations of EURO STOXX 50° Index to CAC 40, DAX°, & STOXX° Europe 600 indexes



Chart 3: Spot prices of EURO STOXX 50° Index, DAX° index, CAC 40 index, STOXX° Europe 600 index FTSE 100 index and VSTOXX° from Jan 2007 to Sept 2016

No one has a crystal ball to identify when equity markets will decline. The so-called rare "Black Swan" events have occurred several times over the last decade. Beginning in 2008 with the Financial Crisis and followed by the Greek Debt Crisis, and followed by the European Debt Crisis, and followed by the Chinese Financial Turmoil and followed by the Brexit vote. In each of these global macro events the five European stock indexes declined and VSTOXX[®] volatility index rallied.

As noted in Chart 3, the equity indexes tended to peak, decline and find support around the same time. This suggests when the global macro events occur, investing in equities geographically across Europe may not offer enough diversification to reduce the portfolio correlation risk and tail risk. The returns in Table 3 (page 5) are based on when the EURO STOXX 50[®] Index peaked and bottomed surrounding each event and how the VSTOXX[®] volatility index and the four European equity indexes behaved during each period. During the five volatile periods the five equity indexes experienced similar negative returns. In the same periods the VSTOXX[®] spot index rallied. This is in-line with the previous correlation data showing negative correlation of the VSTOXX[®] index to the European equity benchmarks.

Table 3: Returns of spot European equity indexes and VSTOXX[®] spot index during each of the volatile periods when the EURO STOXX 50[®] Index declined from peak to trough

	Financial Crisis	Greek Debt Crisis	European Debt Crisis	Chinese Financial Turmoil	Brexit
VSTOXX®	167%	106%	172%	87%	72%
EURO STOXX 50 [®] Index	-60%	-18%	-35%	-21%	-14%
CAC 40	-59%	-18%	-31%	-17%	-13%
FTSE 100 (in EUR)	-61%	-6%	-17%	-18%	-12%
DAX®	-54%	-6%	-32%	-24%	-11%
STOXX [®] Europe 600	-60%	-10%	-25%	-18%	-12%

Source: Bloomberg data

Chart 4: 5-day rolling returns of European equity index front month futures contracts prior and post the Brexit vote (23 May 2016)



Based on 5-day rolling returns, Chart 4 demonstrates how the front month futures contracts of the four European indexes traded with similar returns prior to and post the Brexit vote on 23 June 2016. Once again, this offers some more evidence to the positive correlations among the respective European equity indexes discussed earlier.

When the 5-day rolling returns of front month VSTOXX[®] Futures is added to the chart, the negative correlation performance of VSTOXX[®] Futures becomes very pronounced relative to the front month futures contract of the four European equity indexes. Once again, the results may offer the option to employ VSTOXX® Futures with several European equity indexes besides the underlying EURO STOXX 50® Index.



In summary, when examining the correlations either as a static metric or as a rolling metric, the correlations of the European equity indexes tend to maintain a high positive correlation frequently above 0.8 to the EURO STOXX 50° Index. During the various volatile periods the equity indexes tended to peak, decline and bottom around the same time. On the flipside, VSTOXX° volatility index tends to maintain a relatively high negative correlation to these respective equity indexes.

When viewing the most recent macro event (Brexit), on a rolling 5-day return, the returns tended to behave in similar fashion to each other leading up to and post the Brexit vote. Combining all of these results strongly suggests an investor with exposure to one or many of these European equity indexes may find an added value in utilizing VSTOXX[®] Futures to reduce portfolio tail risk and correlation risk.

Part 2: VSTOXX[®]/VIX volatility spread behavior during recent volatility events

In past articles I've discussed the various behaviors of the VSTOXX[®]/VIX spread. This article follows my last article **"Utilizing a European volatility index for Pan-European volatility"** (page 1) examining VSTOXX[®] behavior in recent volatility events relative to various European equity indexes.

The Brexit election and the U.S. election are now behind us. Several European elections are on the horizon in 2017. And there doesn't seem to be a shortage of ideas being discussed for potential future macro volatility events. This article examines the behavior of the VSTOXX[®]/VIX spread during recent volatility events. Could the understanding of the spread's behavior during past volatility events offer some insight for future events?

Liquidity is always important to an investor or trader. Table 1 gives readers an overview of the VSTOXX® Futures liquidity over the last years. Since 2 January 2007, the VSTOXX®/VIX spot spread averages an estimated premium of 4.5 volatility points of VSTOXX® over VIX. The spread has traded below 2 about 19 percent of the time. The spot spread trades at negative prices about 7 percent of the time. Therefore it is a low probability for the spread to remain negative for an extended period of time. When the spread is negatively priced it tends to be more of a spike versus a sustained period of time.

When the VSTOXX[®]/VIX spread rallies it also tends to spike to the upside and it usually doesn't sustain high price levels for extended periods of time. Since 2007, the spot spread price has been above 8, 11 and 14 about 14 percent, 3 percent and 0.7 percent of the time respectively. Just prior and during the financial crisis was the only period since 2007 the spread remained negative for a prolonged period of time as noted in Chart 1 (page 8).

	Total volume	YOY change	Daily average volume	Open interest
2016	7,908,599	28.8%	36,956	290,901
2015	7,226,833	3.8%	28,341	108,132
2014	6,962,188	30.8%	27,519	173,986
2013	5,324,708	36.5%	21,046	184,900
2012	3,901,530	106.5%	15,300	224,061
2011	1,889,492	337.7%	7,352	68,088
2010	431,669	2,834.0%	1,686	58,700
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Table 1: VSTOXX® Futures yearly volume and open interest as of Oct 2016

Source: Eurex Exchange monthly statistics

Trading a spread is just another way of saying trading relative value. An investor is simply going long one product and short another product as they are seeking the spread price or price differential between the two products to either widen or narrow based on the position they are holding.

In the case of the VSTOXX[®]/VIX spread a trader may go long VSTOXX[®] Futures and short VIX futures when the spread price is oversold or sitting at or near the bottom of the range. A trader may sell VSTOXX[®] Futures and buy VIX futures when the spread is near the high end of the range or considered overbought and finding resistance.



Source: Bloomberg data

Often, when the VSTOXX[®]/VIX spread widens, it is due to one of the below items occurring:

- 1) EURO STOXX 50° Index declines, causing VSTOXX° volatility index to rally while the VIX may remain relatively stable thus causing a widening spread price.
- 2) S&P 500 index rallies causing the VIX index to decline while VSTOXX[®] remains relatively stable equating to a widening spread.
- 3) S&P 500 index declines and the EURO STOXX 50[®] Index declines causing both the VSTOXX[®] and VIX indexes to rally. However, VSTOXX[®] will often rally at an accelerated rate versus VIX thus widening the spread.

The VSTOXX[®]/VIX spread may be utilized as a sentiment indicator. If the spread is oversold or overbought it could give an indication of how the individual volatility indexes may behave in the near future to either narrow or widen the spread price. A second derivative analysis of the spread may imply that if the volatility indexes should move, it could be a signal for direction of the respective underlying equity markets. For example if the spread is priced above 11, it would be considered very wide with an increased probability for either VSTOXX[®] Futures or VIX futures to move to narrow the spread and what that may imply about the underlying equity market?

Chart 2 (page 9) shows the spot price of VSTOXX[®] and VIX indexes along with VSTOXX[®]/VIX spot spread. This gives a macro picture of how the VSTOXX[®]/VIX spread has behaved over time. The spread tends to widen when the underlying volatility indexes rally.

Chart 3 (page 9) observes the 2008 rally of the volatility indexes while the spread was frequently negative during that time. This is one of the few times the VSTOXX[®]/VIX spread sustained a negative price for an extended period of time. Chart 3 also shows when the volatility indexes have large moves, the spread tends to remain within a range that is relatively common within its price distribution. As the volatility indexes gradually drifted lower in 2009, the spread was still hovering around the low single digits.





Table 2: Statistics of daily spot and front month futures of VSTOXX°/VIX spread 2 Jun 2009 to 9 Nov 2016

	Avg	Median	Max	Min	<0	<2	>8	>11	>14
Spot	5.5	5.0	20.53	-2.70	0.9%	7.5%	18.9%	3.6%	0.8%
Futures	4.7	4.4	17.78	-1.88	0.7%	10.9%	10.2%	0.8%	0.1%

Chart 4: Daily prices of VSTOXX[®] Futures, VIX futures and VSTOXX[®] Futures / VIX futures spread 2 Jun 2009 to 9 Nov 2016



Table 2 lists the average, median, maximum and minimum VSTOXX[®]/VIX spread price and the frequency of how often the spread price is either above or below a specific spread price. For example, 0.8 percent of the time the spot spread price is above 14. The pricing and the frequency of spot versus futures VSTOXX[®]/VIX spreads are similar. VSTOXX[®] Futures began trading 2 June 2009, which is the starting date of this analysis to compare the spread statistics of the spot price to the futures price.

Chart 4 shows the daily prices of VSTOXX® Futures, VIX futures and VSTOXX® Futures / VIX futures spread since inception of the VSTOXX® Futures contract. It is very similar to the spot prices in Chart 2.

27 April 2010 Standard and Poor's downgraded the Greek debt to junk and downgraded the sovereign debt of Portugal. It was only a few weeks earlier the Greek debt was previously downgraded¹. As this occurred both volatility indexes rallied, but VSTOXX[®] Futures lead the way and maintained a widening premium over VIX futures causing the spread to go from 2.72 on 21 April 2010 to exceed a spread price of 10 by 7 May 2016.

A spread price in the teens is considered a tail event and usually is difficult for that price to be sustained for an extended period of time (as noted in Table 2). In Chart 5 (page 11) the price traded in a range around 10 to a range around 5 a few times before finally narrowing. By 19 May 2010 the volatility indexes peaked and began a slow decline into the summer months. And the spread also declined into early July.

In the spring / early summer of 2015 the spread was gradually widening (Chart 6, page 11) due to rumors of controls on the Greek banks. During this time VIX futures remained stable hovering around 15 while VSTOXX® Futures traded both higher and lower due to the increased European uncertainty. This triggered the VSTOXX®/VIX spread to widen and narrow.



Source: Bloomberg data

Chart 6: Daily prices of VSTOXX[®] Futures, VIX futures and VSTOXX[®] Futures / VIX futures spread 3 Mar 2015 to 31 Dec 2015



Source: Bloomberg data

Monday 24 August 2015 the Dow Jones Industrial Average opened 1,000 points lower. The declining U.S. equity markets triggered a decline in global equity markets and rallying of volatility indexes. The VSTOXX[®] Futures/VIX futures spread came close to going negative at 0.925 on 25 August 2015. The price of the spot spread actually did go negative at -2.3715. This narrowing of the spread may be attributed

to the VIX futures rallying faster than VSTOXX® Futures. As noted in Table 2 the futures spread price is negative 0.7 percent of the time. Only 11 percent of the time is the futures spread priced below 2. The price didn't remain low for long. By 2 September 2015, the spread price rallied above 5 as VIX futures declined faster than VSTOXX® Futures.



Chart 7: Daily prices of VSTOXX® Futures, VIX futures and VSTOXX® Futures / VIX futures spread

Source: Bloomberg data

One of the top trending words in 2016 was "Brexit"². Brexit, a referendum on 23 June 2016 to determine if U.K. citizens wanted to leave the European Union (EU) was forecasted by polls and betting sites to stay in the EU. In April and May 2016, VIX futures remained relatively stable in the range of 15 to 17. However VSTOXX® Futures traded in the range of the low 20s to the high 20s. As time moved closer to the day of election, the VSTOXX[®]/VIX futures spread gradually widened as VSTOXX® Futures moved higher.

VSTOXX® Futures peaked 15 June 2016 at 37.62. The spread also peaked at 17.72. Once the votes were cast, the result was to leave the EU; a surprise to many. The equity markets reacted with fast declines. As both volatility indexes rallied,

the spread remained capped in the 8 to 10 range. The downside volatility diminished after the initial sell off and both volatility indexes gradually moved lower and the spread narrowed.

In discussing the VSTOXX[®]/VIX futures spread, there is a mechanical component that has to be derived to determine how many futures contracts need to be entered for each leg of the spread. There is a difference in the size of the two futures contracts. One volatility point in VSTOXX® Futures = EUR 100^3 . Whereas, one volatility point in VIX futures = USD 1,000⁴. Without adjusting for foreign exchange differentials, a VSTOXX® Futures contract value is 1/10 the size of a VIX futures contract.

² <u>https://www.google.com/trends/explore?q=brexit</u>

³ <u>http://www.eurexchange.com/blob/269082/3860c6d6df82b8b2e42b46ef02043a49/data/factsheet_eurex_vstoxx_derivatives.pdf</u>

⁴ <u>http://cfe.cboe.com/products/spec_vix.aspx</u>

EUR	USD	Ratio	Multiplier	VSTOXX [®] Contracts
EUR 1.00	USD 1.50	0.667	10	6.67
EUR 1.00	USD 1.40	0.714	10	7.14
EUR 1.00	USD 1.30	0.769	10	7.69
EUR 1.00	USD 1.10	0.909	10	9.09
EUR 1.00	USD 1.05	0.952	10	9.52
EUR 1.00	USD 1.00	1.000	10	10.00
EUR 1.00	USD 0.95	1.053	10	10.53
EUR 1.00	USD 0.90	1.111	10	11.11
EUR 1.00	USD 0.85	1.176	10	11.76

Table 3: Conversion ratio of the number of VSTOXX[®] Futures to VIX futures

Source: Shore Capital Research LLC

Table 3 calculates the ratio of how many VSTOXX® Futures contracts are needed for the spread per each VIX futures contract and adjusting for foreign exchange. For example if EUR and USD were at par, the ratio would be 10 VSTOXX® Futures contracts are required for each VIX futures contract in the spread. As the USD appreciates versus the EUR, the ratio increases. As the USD depreciates versus the EUR the ratio of VSTOXX[®] Futures contracts needed per each VIX futures contract decreases.

In summary, VSTOXX[®]/VIX spread tends to maintain similar characteristics from one macro volatility event to the next. A spread price below 2 is considered support and may offer opportunities to buy the spread or unwind a short spread with the exception of the financial crisis. When the spread is priced in the high single digits or higher it is considered resistance and may be an opportunity to sell the spread or unwind a long position. Often the spread will move higher as VSTOXX[®] Futures leads the rally of the two volatility indexes. Analyzing how the VSTOXX[®]/VIX spread behaves during macro volatility events may offer some insight for future macro volatility events.

Part 3: Introduction of CFTC-certified options on VSTOXX[®] Futures

On 1 February 2017, Eurex Exchange will introduce a new CFTC-certified options on VSTOXX[®] Futures contract (OVS2). The VSTOXX[®] Futures volatility index will be the underlying market for the new options contract. OVS2 will have eight consecutive expiring months. The underlying equity market for VSTOXX[®] Futures is the EURO STOXX 50[®] Index.

Since the inception of VSTOXX[®] Futures in 2009, volume and open interest continues to grow as noted in Table 1. In 2016 VSTOXX[®] Futures experienced some days and months of large volume and open interest. The most salient example occurred around the Brexit referendum. Total contracts traded in June 2016 were 1.24 million. A 62.1 percent increase from a year earlier and a 62.4 percent increase from the previous month. The futures volume experienced another increase recently around the U.S. election on 8 November 2016 and again leading up to Italy's constitutional referendum on 4 December 2016 resulting in a 1.12 million contracts traded in November 2016 for a 120.7 percent increase from a year earlier and a 37.1 percent increase from the previous month.

In 2012 Eurex began trading VSTOXX[®] options (OVS) with the VSTOXX[®] index as the underlying market. When OVS2 begins trading in February 2017, initially both option contracts will trade simultaneously. As of 1 February 2017, the listing of new expiration months for VSTOXX[®] options (OVS) will be discontinued¹. As each new OVS2 expiration month is introduced, the OVS options will be gradually phased-out during the eight-month period². By the end of the eight months OVS will be completely replaced by OVS2.

Why replace VSTOXX[®] options with options on VSTOXX[®] Futures?

As appetite for European Volatility continued to grow in 2016, U.S. participants have expressed interest in accessing listed VSTOXX® options. The current version is under the jurisdiction of the SEC and not available to trade in the U.S. However, some U.S. market participants trade VSTOXX® options on the OTC market, making the Eurex listed VSTOXX® options a secondary market. Under the SEC no-action relief VSTOXX® options are only available to a Qualified Institutional Buyer (QIB), not allowing for direct market access. The new CFTC-certified OVS2 will allow for wider market participation.

Highlights of the OVS2 contract specifications include:

- 1) EUR denominated
- 2) Currently the OVS contract has a European-style exercise OVS2 will be American style exercise, allowing the option to be exercised anytime during the life of the contract
- 3) Currently the OVS is cash settled. The new OVS2 contract will be physically delivered to a VSTOXX[®] Futures contract that expires on the same day. VSTOXX[®] Futures are cash settled

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2015	7,226,833	3.8%	28,341	108,132
2014	6,962,188	30.8%	27,519	173,986
2013	5,324,708	36.5%	21,046	184,900
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2010	431,669	2,834.0%	1,686	58,700
2009	14,715	12.0%	58	1,304

Table 1: VSTOXX[®] Futures yearly volume and open interest as of Nov 2016

Source: Eurex Exchange monthly statistics

¹ <u>https://www.eurexchange.com/blob/2766088/12a844b3191c02d89d15bf094e920018/data/er16098e.pdf</u>

² <u>http://www.eurexgroup.com/group-en/newsroom/vstoxx-outlook/New-U.S.-Approved-VSTOXX-Options-To-Launch-February/2774230</u>

Table 2: Comparing contract specifications between VSTOXX® options (OVS) and options on VSTOXX® Futures (OVS2)

Symbol	OVS	OV52		
Product name	VSTOXX [®] Options	Option on VSTOXX® Futures		
Underlying	The VSTOXX [®] Index	VSTOXX® Futures		
Contract value	EUR 100 per VSTOXX [®] Index point			
Price quotation and minimum price change	In points with two decimal places. The minimum price ch (equivalent to a value of EUR 5).	hange is 0.05 points		
Contract months	The next eight successive calendar months			
Exercise	European-style; an option can only be exercised on the final settlement day of the respective option series until 21:00 CET.	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.		
Margin	Premium-style	Futures-style		
Settlement	Cash settlement, payable on the first exchange day following the final settlement day.	Futures settlement, options settle into futures and immediately settle into cash, payable on the first exchange day following the final settlement day.		
Daily settlement price	Established by Eurex, determined through a binomial price	cing model.		
Last trading day and final settlement day	On the expiration day of the underlying futures contract, which is 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, unless this is not an exchange trading day. In this case it is the day before.			
Trading hours	8:50-17:30 CET			
Flex functionality	Available for European-style exercise and cash settlement (OV6S)			
Fees	0.30 EUR (on book) 0.30 EUR (off book)			
Block trade size	500 contracts			

Source: Eurex

Key Benefits

- 1. Investors with EUR denominated equity exposure do not have currency risk and exposure
- 2. As a CFTC-certified product it is directly accessible to all U.S. traders and investors. Currently the OVS contracts are only available to QIBs
- 3. It offers investors a targeted and leveraged channel to reflect their views on EURO STOXX 50° Index volatility
- 4. As the research showed in my paper "Utilizing a European volatility index for Pan-European volatility" (page 1), VSTOXX[®] Futures may be employed for volatility of several European equity indexes and therefore options on VSTOXX[®] Futures could also be applied for the same goal
- In several articles, I've discussed the VSTOXX[®]/VIX spread. Now you can trade options on the VSTOXX[®] leg of the futures spread instead of only utilizing a futures contracts.
- 6. OVS2 offers opportunities to deploy strategies that utilize both futures and options.
- 7. Options on VSTOXX[®] Futures features the same benefits of any exchange traded contract:
 - Market-to-Market transparency.
 - Offering liquidity for hedgers and investors.
 - Regulated exchange and market.
 - Central clearing of transactions: reducing counterparty default risk.
 - Price discovery of the market.
 - Standardized trading hours and contract specifications.

Table 2 notes a greater detail of comparison between the current OVS and the new OVS2 options. Per the BNP Paribas SA Eurozone Political Risk Index, political risk is increasing in Europe while the VSTOXX[®] index declined in the past several weeks³. This plays into potential future macro events related to the upcoming European elections.

In a 24 November 2016 ECB press release of their semiannual Financial Stability Review discussing "systemic risks to financial stability over the next two years", one of the four risks included financial contagion induced by increased "political uncertainty in advanced economies and continued fragilities in emerging markets"⁴.

The November Centre-right primaries in France could be considered the beginning of the election season across the EU for the next year. Followed quickly by the Italian constitutional referendum and the Austrian Presidential election both held 4 December 2016. Over the course of the next year general elections will be held in the Netherlands, France and Germany. September 2017 a referendum is planned for Catalonia's independence from Spain⁵.

2017 could see changes in European heads of state and controlling parties of various governments. Could this sustained uncertainty induce more volatility and nervousness into the European capital markets and potentially develop macro events? If so, how could these events or increased uncertainty impact VSTOXX® Futures and options on VSTOXX® Futures?

Potential ideas to think about regarding trading OVS2

The term structure of VSTOXX[®] Futures is frequently in contango (spot price is less than futures prices). As discussed in my article "Forward curves of European and U.S. volatility index futures" the first three months of VSTOXX[®] Futures are in backwardation about 15 percent of the time⁶.

When volatility begins to show up in the VSTOXX[®] index, it tends to experience greater moves in the spot, front and nearby futures months than what is often experienced in the back months as the curve moves from contango to backwardation (spot is priced higher than back months)⁷.

- An investor could buy calls in the front month and buy puts in the back months with the expectation of a larger move in the front month versus the back month if the market is in contango.
- 2) An investor could buy calls in the front month and sell puts in the back months. Similar to strategy No. 1, but realizing the entire curve could move higher if the market goes from contango to backwardation allowing the investor to receive some premium for selling the put.
- 3) The investor could sell puts in the front month to receive some premium and the expectation the front month may move higher.
- 4) An investor could buy puts in the back months as the price of the back months may decline as they move closer to expiration assuming a contango term structure.
- 5) If the futures term structure is in backwardation for an extended period of time, an investor may determine if they should either buy puts or sell calls in the front month or nearby month with the perspective of the VSTOXX[®] Futures potentially moving lower.

³ <u>https://www.bloomberg.com/news/articles/2016-11-23/europe-stock-volatility-underprices-rising-political-risk-chart</u>

⁴ http://www.ecb.europa.eu/press/pr/date/2016/html/pr161124.en.html

⁵ <u>http://www.marketwatch.com/story/all-the-potential-political-risks-looming-in-europe-in-one-chart-2016-11-14</u>

⁶ <u>http://www.eurexgroup.com/group-en/newsroom/vstoxx-outlook/689758/forward-curves-of-european-and-us-volatility-index-futures/?wt_mc=group.newsletter.editorial_vstoxx_outlook_2013_11_2013-11-05-21:43_690736</u>

^{7 &}lt;u>http://www.eurexgroup.com/group-en/newsroom/vstoxx-outlook/vstoxx-volatility-behavior-when-european-equities-rally/1176180/?wt_mc=ussm.LinkedIn.vstoxxnl.en.ms.vstoxxnl12172014</u>



Source: Shore Capital Research LLC

Chart 1 illustrates a general guideline how the VSTOXX[®] Futures term structure may shift from contango to backwardation. Even though the entire curve moved higher as market sentiment shifted towards more uncertainty, the implied volatility may move quickly in VSTOXX[®] spot and the front months of VSTOXX[®] Futures as discussed in my article "An analysis of why volatility indexes are relevant".

VSTOXX[®] spot is the first moment in Chart 1. The front month of VSTOXX[®] Futures is the second moment. The remainder of the term structure are three through nine. During the summer of 2014, EURO STOXX 50° Index moved from a rallying market to choppy market and then selling off into the fall of 2014. The VSTOXX° Futures structure followed the views of the equity market. In June 2014, the VSTOXX° term structure was in contango. By October 2014, VSTOXX° Futures term structure shifted to backwardation.

In summary, options on VSTOXX[®] Futures will allow for greater market participation and greater choices of strategies for hedgers and investors for directional trading, spreading or as a hedge to their portfolio and trading volatility.

By Mark Shore, Founder

Mark Shore has more than 25 years of experience in the futures markets and managed futures, publishes research, consults on alternative investments and conducts educational workshops. His research is found at Shore Capital Research LLC <u>www.shorecapmgmt.com</u>.

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