



# VSTOXX® Outlook

## Spreading European and U.S. volatility index futures

08 August 2013

In our last article - VSTOXX® Futures: Opportunity for volatility traders with European volatility futures- we introduced the background and several ideas to trade VSTOXX® Futures contracts available at Eurex Exchange. One of the strategies discussed included the VSTOXX®/ VIX spread strategy.

As an investor, market liquidity is always an important factor in determining asset allocation within a portfolio. Since 2009 the volume of VSTOXX® Futures continues to increase as noted in Table 1.

For a trader or investor already trading VIX futures contracts, adding VSTOXX® Futures to a portfolio should be a relatively easy expansion as both products are gauges of fear and negative volatility for their respective underlying equity markets. If you are new to volatility products or to VSTOXX® Futures, the VSTOXX®/ VIX spread may be a simple entry into the world of volatility products.

As noted in Chart 1, the VSTOXX® historically tends to trade at a premium to the VIX. The data develops a baseline of the spread's pricing expectations between the two volatility products and when the spread becomes abnormal due to a widening or narrowing spread. Chart 1 notes that the two volatility products tend to generally move together over the longer-term. Economies have become more interdependent than ever before, thus it is understandable that when there is increased negative volatility in the European equity markets, similar situations may occur in the U.S. equity markets or vice versa. From 1999 to 2013 the daily static correlation of the two products is 0.54. The correlations on a

	Total volume	YoY change	Daily average volume	Open interest
2013	2,801,830	96%	22,415	156,952
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%	1,686	58,700
2009	14,715	12%	58	1,304

Table 1: VSTOXX® Futures yearly volume and open interest as of June 2013

Source: [http://www.eurexchange.com/blob/exchange-en/62304-62410/556608/1/data/monthlystat\\_201306.pdf](http://www.eurexchange.com/blob/exchange-en/62304-62410/556608/1/data/monthlystat_201306.pdf)

\* For 2013, volume figures reflect HY1 2013; the open interest is as of 30 June 2013.

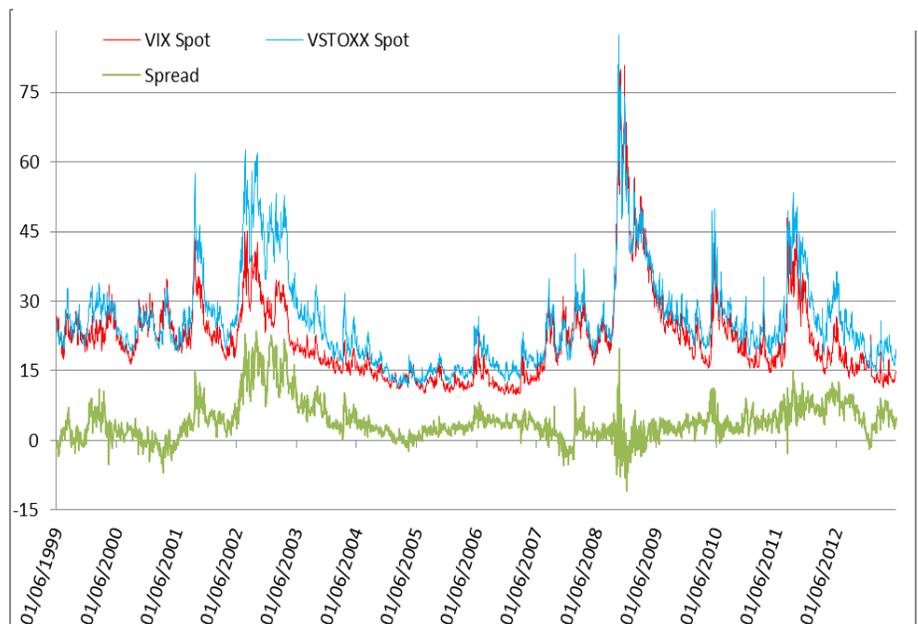


Chart 1: VSTOXX® and VIX daily spot prices and the VSTOXX®/ VIX spread June 1999 to May 2013

rolling or dynamic basis are found in Charts 2 and 3.

The VSTOXX®/ VIX spread tends to widen when the individual volatility markets are in a rallying mode (when negative volatility increases in their respective underlying equity markets) as noted in Chart 1. Since both volatility markets and the VSTOXX®/ VIX spread exhibit mean reverting tendencies, a trading opportunity may arise if the spread becomes overbought and is too wide relative to historical levels and the individual volatility markets are simultaneously overbought and trading near the top of their historical range. In such a situation, an increasing probability may develop for negative volatility to decay in the underlying equity markets. This may cause the volatility markets and the VSTOXX®/ VIX spread to revert to the mean. In a future article, we will discuss trade construction in further detail.

As previously mentioned, the correlation of the VSTOXX® to VIX tends to be dynamic over time. In Chart 2, the 20 day rolling correlation of the VSTOXX® to VIX returns

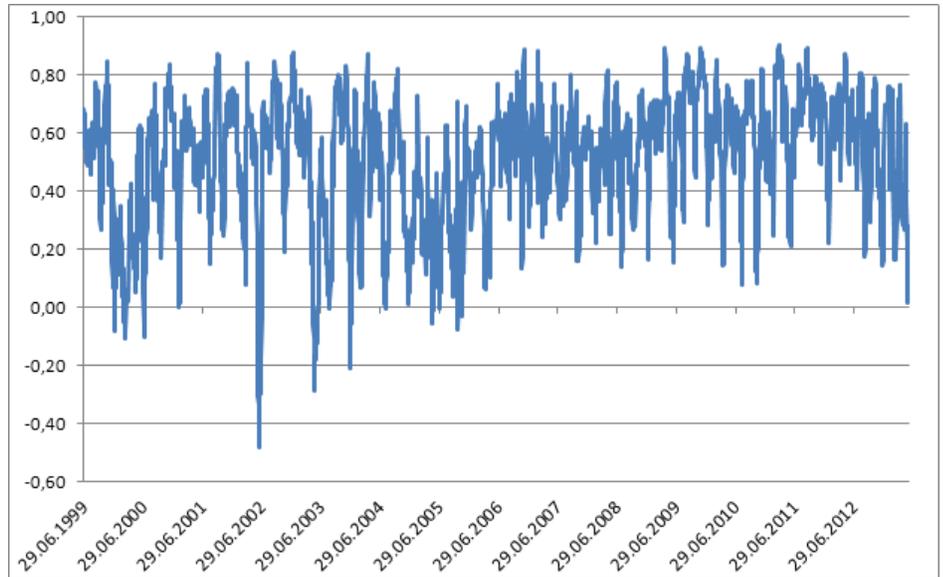


Chart 2: 20 day (1 month) rolling correlation of the VSTOXX®/ VIX spot market 1 June 1999 to 30 May, 2013  
Source: Bloomberg data

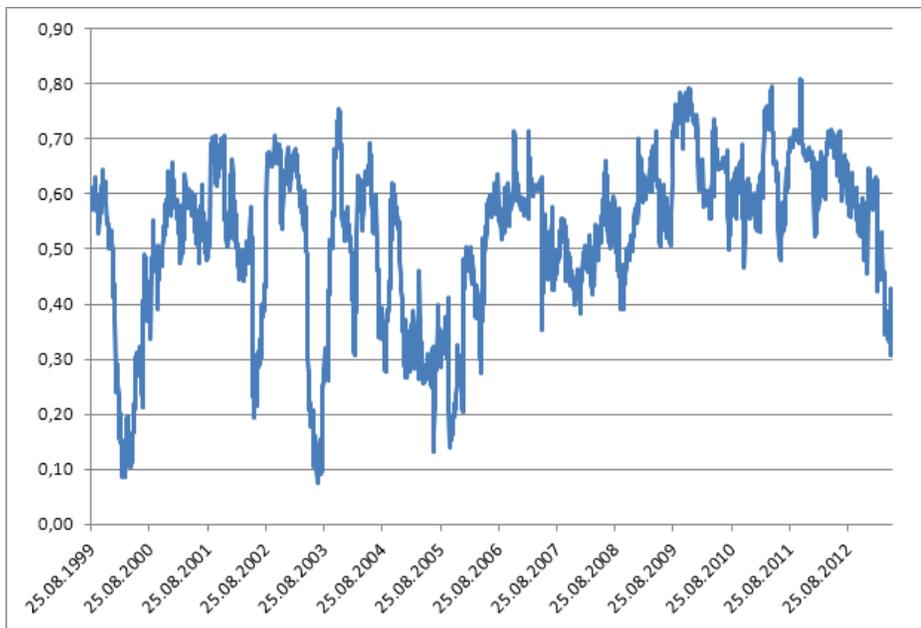


Chart 3: 60 day (3 month) rolling correlation of the VSTOXX®/ VIX spot market 1 June 1999 to 30 May, 2013  
Source: Bloomberg data

has a high correlation of 0.9 and low of -0.48 and a correlation standard deviation of 0.22. The correlation tends to remain in a range of 0.2 to 0.8. About 20% of the time the correlation is above 0.7. About 10% of the time the correlation is below 0.2.

In Chart 3, the data is less noisy over a 3 month period opposed to the 1 month

period in Chart 2. It is interesting to note the correlation had a faster cycle between maximum and minimum points between 1999 and 2005. Beginning in 2007/ 2008 the correlation tended to remain higher for a longer period of time. Could this be related to the financial crisis or are there other factors impacting the correlation? Since November 2011, the correlation has drifted lower. Only recently has the

correlation returned to its lowest levels since May 2006. The VSTOXX®/ VIX spread tends to maintain an average premium of the VSTOXX® over the VIX by 4.14 points (with a standard deviation of 4.23). Two and three standard deviations would price the spread at 12.60 and 16.83 to the upside. On the downside two and three standard deviations would price the spread at -4.32 and -8.54. If you only calculate the positive spread days, the average is 4.87 points with standard deviation of 3.87. About 58% of the time the VSTOXX®/ VIX spread trades between 0 and 5. When the spread reaches the 8 to 10 point range, it may be considered overbought. About 14% of the time, the spread is priced above 8. When the spread reaches the 1 to -3 point range it may be considered oversold. The extremes of overbought and oversold may be indications of when to buy or sell the spread.

The maximum premium is 23.55 points set on 1 October 2002. The period of July 2002 to March 2003 saw the spread maintain a wide premium in the 20s. During this time equity markets around the world were declining. This extensive premium was not experienced again until 16 October 2008 when it reached 19.9. Both the VSTOXX® and VIX rallied to record levels from the end of September 2008 due to the financial crisis heating up and the bankruptcy of Lehman Brothers.

About 11% of the time, the spread is negatively priced. The average negative premium is -1.75 with a standard deviation of 1.63. The largest negative premium was -10.96 on 1 December 2008. A negative spread would imply more investor fear of negative volatility in the U.S. equity markets relative to the European equity markets. When the spread becomes negative one of two outcomes tends to occur: 1) the spread remains negative in batches, such as for multiple moments over a period of weeks or months. 2) The spread remains negative for a single day before returning positive and doesn't become negative again for several months or longer.

Since a negative value of the spread is rare, it may offer extreme oversold periods to purchase the spread (buy the VSTOXX<sup>®</sup> and sell the VIX). When the spread is negative, on average the spread remains negative for an estimated 4 days at a time. Three standard deviations of negative spread days are 23 days. However on three occasions the spread remained negative for 34 days (2 February 2001 to 22 March 2001), 29 days (23 April 2001 to 4 June 2001) and 38 days (4 November 2007 to 14 January 2008).

The VSTOXX<sup>®</sup> / VIX spread pricing distribution in Chart 5 above graphically demonstrates our earlier statements regarding the percentage of where the spread price tends to reside. The pricing of 10 or higher represents 11% of the entire pricing distribution. Therefore, when the spread price is above 10 or below 0 the probability increases for the price of the spread to revert to the mean of about 4.14. In summary, our discussion of the VSTOXX<sup>®</sup> / VIX spread explored several points of the spread's behavioral tendencies and how those tendencies may be applied to trading the spread. This article may offer some ideas for the investor, trader or money manager as a trading method to include VSTOXX<sup>®</sup> Futures into their portfolio. This article is not intended to recommend a specific trading strategy, but to educate the reader on various strategy ideas to investigate.

By Mark Shore, founder of [www.shorecapmgmt.com](http://www.shorecapmgmt.com)

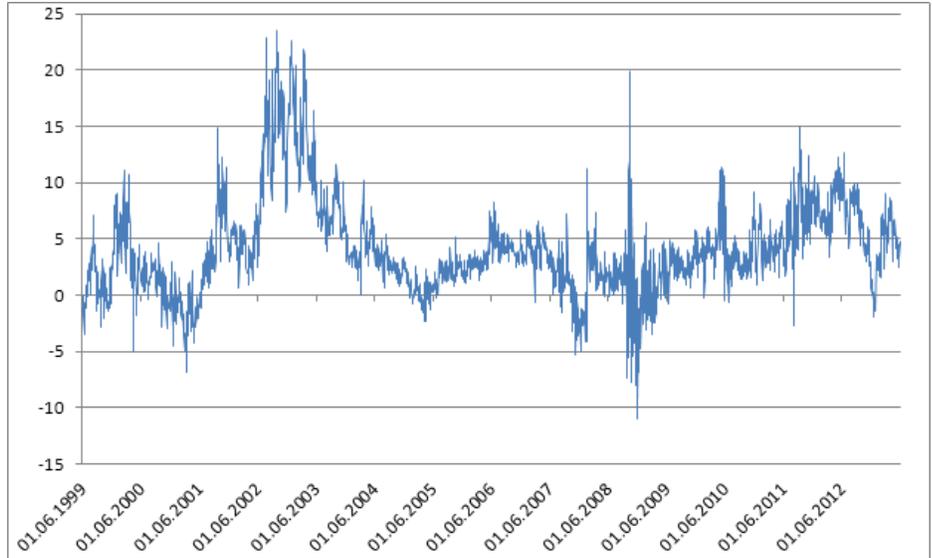


Chart 4: VSTOXX<sup>®</sup> / VIX spread 1 June, 1999 to 30 May 2013  
Source: Bloomberg data

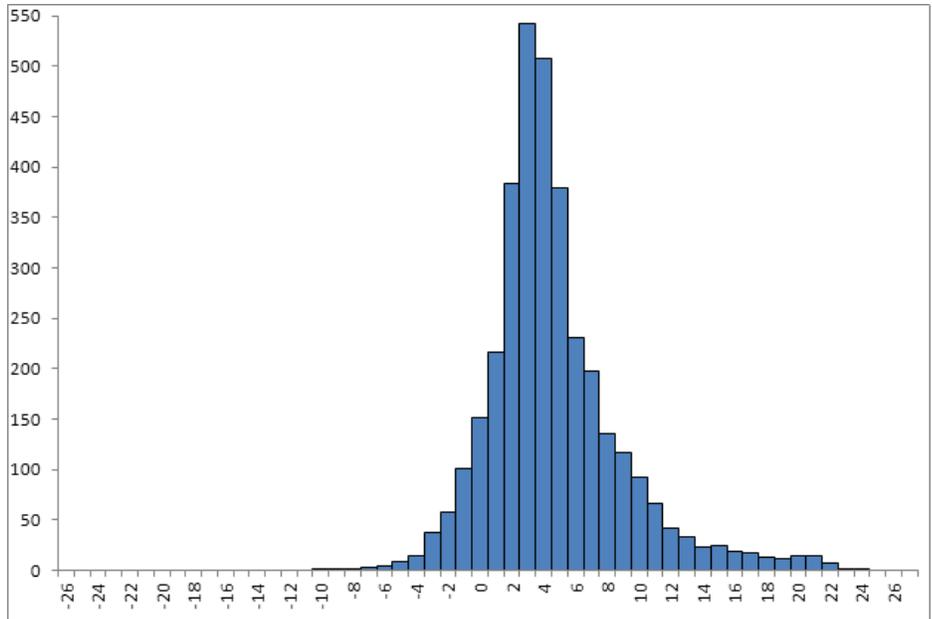
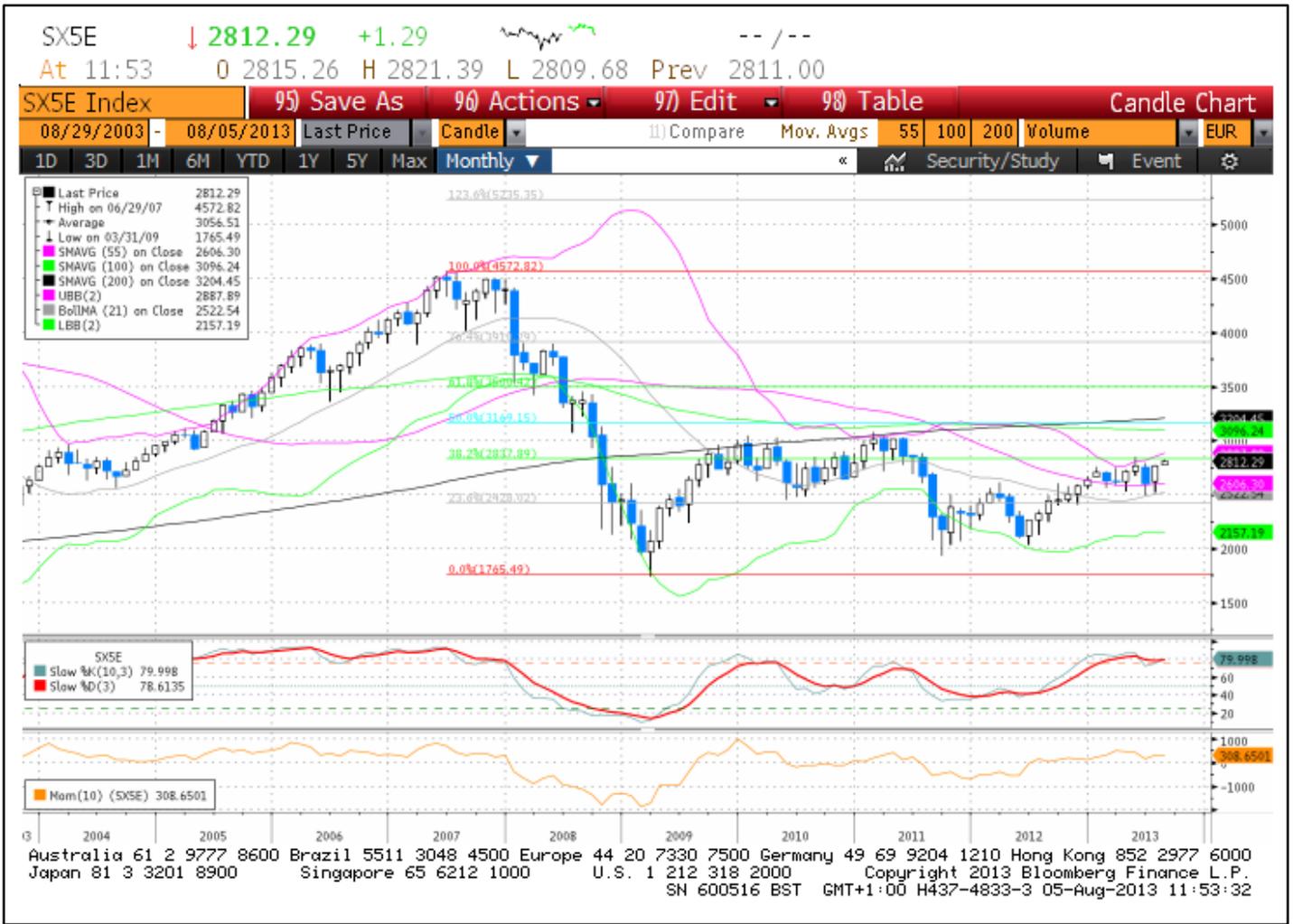


Chart 5: Daily price distribution of the VSTOXX<sup>®</sup> / VIX spot spread June 1999 to May 2013.  
Source: Bloomberg data

# EURO STOXX 50® Index: Fibonacci resistance at 2837.9



Commentary: The EURO STOXX 50® Index is once again rising to just below Fibonacci resistance - seen at 2837.9, the 38.2% of 4572.8 to 1765.5, this key level held

in May despite bulls breaking above. This level may be retested by bulls but we note that monthly tech studies appear a bit overbought and failure at initial res could reverse last month's gains to retest support - the 2500.0 level is a

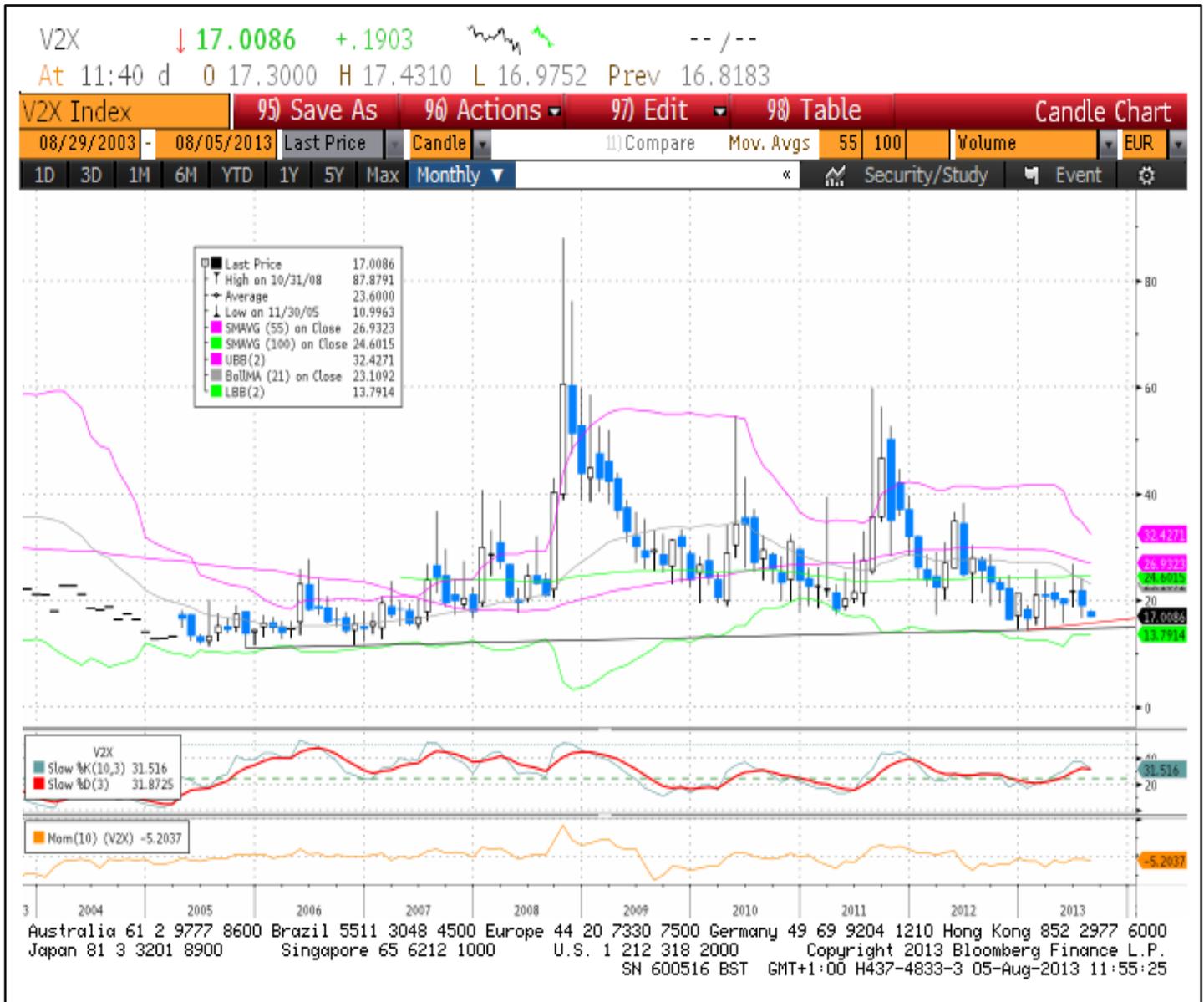
key support area which held in July and August. Ahead of here, initial suppt at 2754.8 - the Feb 2013 high, with further support at 2631.8 then 2606.4 - the 200-wk MA and 55-mth MA, respectively.

RES 4: 3169.2/3204.5 50.0% of 4572.8 to 1765.5, 200-month MA  
 RES 3: 3096.3 100-month moving average  
 RES 2: 3044.4/77.2 Highs of Jan 2010, Feb 2011  
 RES 1: 2837.9/51.5/88.9 38.2% of 4572.8 to 1765.5, May 2013 high

SUP 1: 2754.8 Feb 2013 reversal high  
 SUP 2: 2631.8 200-week MA  
 SUP 3: 2606.4 55-month moving average  
 SUP 4: 2494.5/2522.8/39.2 July 2013 low, 21-month moving avg

PREVIOUS CLOSE: 2817.4

# VSTOXX®: Bears eye crucial support lines



Commentary: VSTOXX® collapsed after testing resistance from the 21 and 100-month moving averages - still resistance but quite far away at 23.1108 and 24.6019, respectively. However, the chart has since declined below the 20.00 level and

has weakened monthly tech studies to the point where they are likely reversing to the downside. Initial support now seen at 15.7617, a short-term support line from Feb 2013, and further support is around 14.5213 to 14.8082, these being

the Jan 2013 low and a longer-term trend line drawn from Nov 2005.

RES 4: 23.1108 21-month moving average  
 RES 3: 20.4102 High May 2013  
 RES 2: 19.6346/8293 21-week MA, 55-week MA  
 RES 1: 18.1376 Current month high

SUP 1: 15.7617 Short-term support line Feb 2013  
 SUP 2: 14.5213/8082 Jan 2013 low, Long-term support line Nov 2005  
 SUP 3: 13.7998 Monthly Bollinger band base  
 SUP 4: 11.9845 November 2006 reversal low

PREVIOUS CLOSE: 17.0719

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#### About Mark Shore

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 [www.shorecapmgmt.com](http://www.shorecapmgmt.com)

Mr. Shore is also an Adjunct Professor at DePaul University's Kellstadt Graduate School of Business where he teaches a graduate level managed futures/ global macro course. He is a frequent speaker at alternative investment events. He is a contributing writer for the Eurex Exchange, Reuters HedgeWorld, the CBOE Futures Exchange (CFE) and Micro-Cap Review.

Prior to founding Shore Capital, Mr. Shore was Head of Risk for Octane Research Inc (\$1.1 billion AUM) in NYC, where he was responsible for quantitative risk management analysis and due diligence of Fund of Funds. He chaired the Risk Management Committee and was a voting member of the Investment Committee.

Prior to joining Octane, he was the Chief Operating Officer of VK Capital Inc, a wholly owned Commodity Trading Advisor unit (\$250 million AUM) of Morgan Stanley. Mr. Shore provided research and risk management expertise on portfolio construction, product development and business strategy.

Mr. Shore graduated from DePaul University with a degree in Finance. He received his MBA from the University of Chicago.

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