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VIX, Volatilities and Exchange Traded Products

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VIX, Volatilities and Exchange Traded Products

Volatility in the stock market was subdued through 2017 as can be seen in Figure 1¹. Many people began to sell volatility to capture this “non-movement.” In trading parlance, it is referred to as a short vol trade. But in February of 2018, the VIX had a massive move up in volatility. From the close on February 2 to the close on February 5, the VIX was up over 100%! A nice return if you got it right but . . . many did not. In fact, one exchange traded product (ETP) ceased to exist and another changed its objectives.

This article defines the VIX, reviews option volatility, and explains a bit more about the two ETPs just mentioned.

Figure 1

VIX:



VIX

According to the CBOE website², “The VIX is a calculation designed to produce a measure of constant, 30-day expected volatility of the U.S. stock market, derived from real-time, mid-quote prices of the S&P 500[®] Index (SPXSM) call and put options.” Let’s explore volatility and what is meant by expected or implied volatility.

Option Valuation

The value of an option is determined by the following variables:

- The cash price of the underlying instrument (e.g., an individual stock or an equity index),
- The strike price,
- Volatility,
- Interest rates,
- Dividends, and
- Time to maturity

Take each of these variables, use them as inputs for a model, such as the Black Scholes or binomial model, and the output will be the price of the option. Of course, whether it is a put or call, or American or European style, will also impact the price of the option. For purposes of this article we will focus on volatility.

Assume the following values for the variables cited above:

Cash Price	100	Cash Price	100	Cash Price	100
Strike Price	100	Strike Price	100	Strike Price	100
Volatility	10%	Volatility	20%	Volatility	5%
Interest Rates	2%	Interest Rates	2%	Interest Rates	2%
Dividends	2%	Dividends	2%	Dividends	2%
Time to Maturity	30 days	Time to Maturity	30 days	Time to Maturity	30 days
The resulting price is...	\$1.14	The resulting price is...	\$2.28	The resulting price is...	\$0.57

Notice the price disparity with the *only* difference between the three examples being that of volatility. As volatility goes up, the price of the option went up. When volatility went down, the price of the option also went down. Therefore, traders follow volatility strategies based on their forecast of volatility. If the forecast is for volatility to go up, then one would buy/go long the option. If the forecast is for volatility to go down, then one would sell/go short the option.

However, if we know the option price, which is quite often the case for exchanged traded equity options, we can rearrange the variables that we input into the model and work backwards to obtain an ‘Implied Volatility’ as shown on the next page.

Input		Input		Input	
Cash Price	100	Cash Price	100	Cash Price	100
Strike Price	100	Strike Price	100	Strike Price	100
Price of the option	\$1.14	Price of the option	\$2.28	Price of the option	\$0.57
Interest Rates	2%	Interest Rates	2%	Interest Rates	2%
Dividends	2%	Dividends	2%	Dividends	2%
Time to Maturity	30 days	Time to Maturity	30 days	Time to Maturity	30 days
Output		Output		Output	
Volatility	10%	Volatility	20%	Volatility	5%

It should not be a surprise that the volatility output is the same as the original volatilities as we have used the same variables and the same model. The conclusion is that trading volatility strategies can potentially result in big returns assuming the forecast of volatility is accurate.

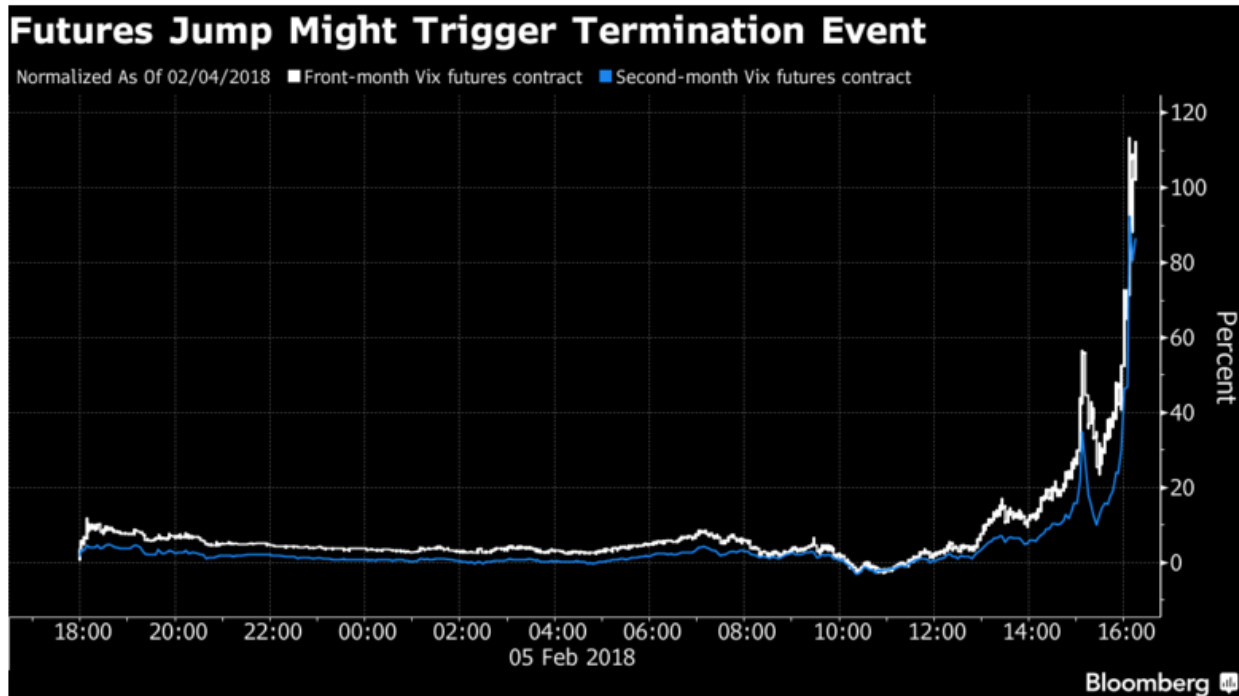
The VIX allows market practitioners to monitor volatility on the S&P 500. If you want to trade the VIX, you can use are futures contracts, options, and ETPs.

Exchange Traded Products/Funds

There are exchange traded products (ETP) that seek returns that are based on the inverse of an index. For example, if the index goes up 10%, the ETP should lose 10% and vice versa (well, at least in theory . . .). Two ETPs following this inverse strategy use(d) the VIX as their index³. They were Velocity Share Daily Inverse Short-Term ETN issued by Credit Suisse whose symbol was XIV (not a typo) and ProShares Short VIX Short-Term Futures ETF whose symbol is SVXY. If the ETP's price moves inversely to the VIX price movement and the VIX moves down in price, then the value of the ETP goes up. If, on the other hand, the VIX goes up in value, the ETPs lose money.

Figure 2 shows the price movement of the VIX futures contract. As the graph indicates, on February 5, 2018 the VIX had a big upward move^{3,4}. Since both ETPs are structured to move in the opposite direction of the VIX price movements, they lost a substantial amount of money: approximately 90% of the funds' value.

Figure 2



Credit Suisse called their note and Proshares ended up changing the structure of their ETF by cutting the leverage in half — from -1 x to -0.5x.

Conclusion

Volatility has always been a tricky variable to trade, whether running an options book or trading a simple covered call strategy on a single financial instrument. The combination of low volatility for a sustained period of time lulled the markets. This has clearly shown the risk involved in forecasting volatility. Losing 90% of your money is never fun!

Footnotes

¹This is the one-year price chart of the VIX at the close of business May 3, 2018. Source: <http://www.cboe.com/products/vix-index-volatility/volatility-indexes/volatility-price-charts>

²For more information on the basics of the VIX go to: <http://www.cboe.com/products/vix-index-volatility/vix-options-and-futures/vix-index/vix-faqs#1> or go to <https://us.spindices.com/vix-intro/>

³The index for both of the ETPs mentioned was the short-term futures on VIX and not the VIX itself!

⁴Source: <https://www.bloomberg.com/news/articles/2018-02-06/volatility-jump-has-traders-asking-about-poison-pill-in-vix-note>

About the Author: Kenneth Kapner

Ken Kapner, CEO and President, started Global Financial Markets Institute, Inc. (GFMI) a NASBA certified financial learning and consulting boutique, in 1998. For over two decades, Ken has designed, developed and delivered custom instructor led training courses for a variety of clients including most Federal Government Regulators, Asset Managers, Banks, and Insurance Companies as well as a variety of support functions for these clients. Ken is well-versed in most aspects of the Capital Markets. His specific areas of expertise include derivative products, risk management, foreign exchange, fixed income, structured finance, and portfolio management.



He has been a Risk Management Advisor to a Mutual Fund's Board of Trustees and has served as an Expert Witness using knowledge of derivatives, trading and risk management.

Prior to starting GFMI in 1998, Ken spent 14 years with the HSBC (Hong Kong and Shanghai Banking Corporation) Group in their Treasury and Capital markets area where he traded a variety of instruments including interest rate derivatives, spot and forward foreign exchange, money markets; managed the balance sheet; sat on the Asset Liability Committee; and was responsible for the overall Treasury activities of the bank. He later headed up HSBC's Global Treasury and Capital Markets Product training for two years in Hong Kong. Specifically, his responsibilities included developing new courses and delivering courses to traders, support staff and relationship managers. In New York, he established a training department for the firm's Securities Division where he was in charge of the MBA Associates Program, continuing education and Section 20 license.

He has co-authored/co-edited seven books on derivatives including *The Swaps Handbook* and *Understanding Swaps*.

Publications

Articles

"Doing Your Homework on Individual Equity Futures"; *Futures Magazine*, March 2002 (with Robert McDonough)

Books

1996 *Como Entender Los Swaps*, (co-author: John Marshall), published by CECSA (a Mexican publishing firm). This is a translated edition of our book *Understanding Swaps*, but with adaptations to fit the Mexican markets. (289 pages)

1993 The Swaps Market: 2nd edition, Kolb Publishing, 288 pages (co-author: John Marshall, copyright 1993). This book is directed to the graduate business student.

1993 Understanding Swaps, John Wiley & Sons, 270 pages (co-author John Marshall, copyright 1993). This book is directed to the practitioner market and is published as part of Wiley's Finance Series.

1993 1993-94 Supplement to the Swaps Handbook, New York Institute of Finance, a Simon & Schuster Company, 494 pages, (co-authors John Marshall and Ellen Lonergan, copyright 1993). This book is directed to a practitioner audience and is a supplement to The Swaps Handbook. My role was largely that of editor.

1991 1991-92 Supplement to The Swaps Handbook, New York Institute of Finance (Simon & Schuster Professional Information Group), 300+ pages (co-author: John Marshall copyright 1992). This book is directed to a professional practitioner audience and is an annual supplement to The Swaps Handbook.

1990 The Swaps Handbook: Swaps and Related Risk Management Instruments, New York: New York Institute of Finance, a Simon & Schuster Company, 543 pages. (co-author: John Marshall). This book is directed to derivative product professionals.

1988 Understanding Swap Finance, Cincinnati: South Western publishing Company, 155 pages. (co-author John Marshall, copyright 1990). This was the first academic text published on the swaps markets.

Affiliations

International Association of Financial Engineers
Board of Advisors - 1994 - 2010

Global Association of Risk Professionals

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