

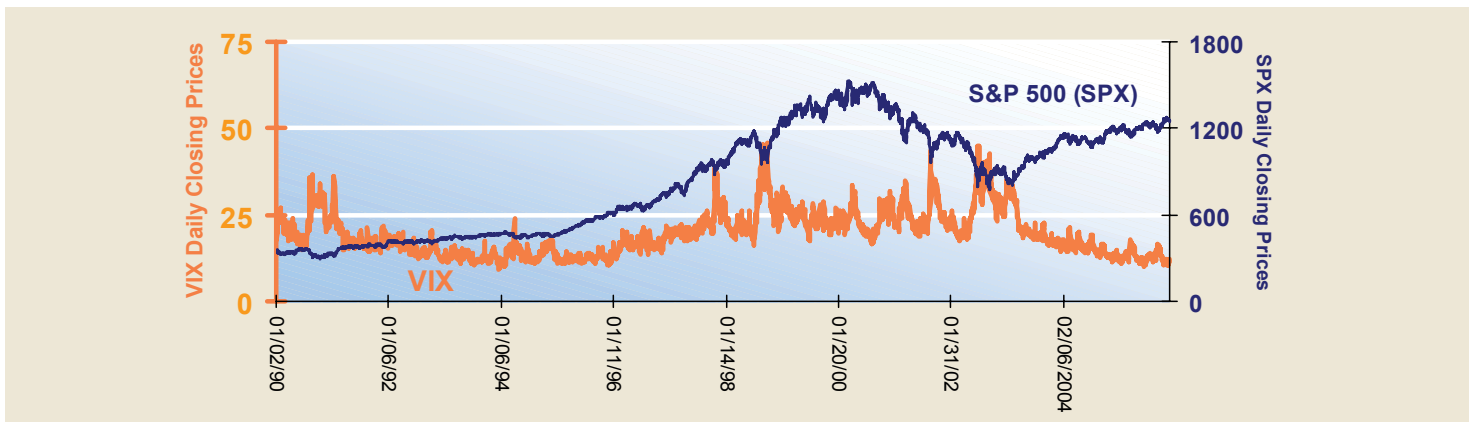
Introducing VIX Options

The Chicago Board Options Exchange recently announced plans to offer options on the CBOE Volatility Index® (VIX®), the first product on market volatility to be listed on an SEC-regulated securities exchange. This new product, which can be traded from an options-approved securities account, follows the introduction of VIX Futures on the CBOE Futures Exchange (CFE). VIX options represent to investors a very powerful and flexible trading risk management tool.

What is VIX?

Since its introduction in 1993, VIX has been considered by many to be the world's premier barometer of investor sentiment and market volatility. The VIX Index is an implied volatility index that measures the market's expectation of 30-day S&P 500® volatility implicit in the prices of near-term S&P 500 options. VIX is quoted in percentage points, just like the standard deviation of a rate of return. The VIX closing price in 2005 was 12.07.

Exhibit 1 - Prices for S&P 500® and VIX
Daily Closing Prices - January 1990 - December 2005



High and Low Daily Closing Prices for Calendar Years

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
VIX HIGH	36.47	36.20	20.51	17.30	23.87	15.74	21.99	38.20	45.74	32.98	33.49	43.74	45.08	34.69	21.58	17.74
VIX LOW	14.72	13.95	11.51	9.31	9.94	10.36	12.00	17.09	16.23	17.42	16.53	18.76	17.40	15.58	11.23	10.23

Sources: CBOE, Bloomberg and S&P

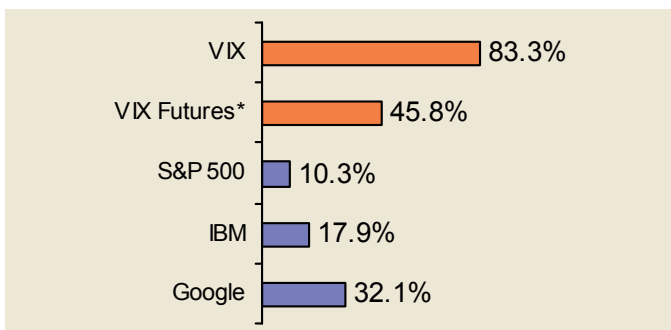
High Volatility of Volatility

The historic volatilities of the VIX Index and the near-term VIX futures prices generally have been quite a bit higher than those of the S&P 500 Index and most stocks in the index.

Unique Pricing and Settlement

The pricing and settlement for VIX options will have some differences from the pricing and settlement for equity and stock index options; please see www.cboe.com/VIX for more details.

Exhibit 2 – Historic Volatilities Based on Daily Returns in 2005



* refers to the price of the near-term VIX futures

Negative Correlation

As is shown in the three Exhibits below, the price of VIX often moves in the opposite direction of the S&P 500 (e.g. when stock prices drop, implied volatility often rises). Investors might explore whether VIX options could be a “catastrophe hedging” tool for stock portfolios.

Exhibit 3 - Correlation of Daily Returns - S&P 500 and VIX

(March 28, 2004 - Dec. 30, 2005)

	S&P 500	VIX	VIX Futures*
S&P 500	1.00		
VIX	-0.78	1.00	
VIX Futures*	-0.49	0.48	1.00

Sources: CBOE and Bloomberg

* Represented by the prices of VIX futures for nearby month

Exhibit 4 - Avg. Price Change on the 26 Days That The S&P 500 Fell by 3% or More (1990 - 2005)

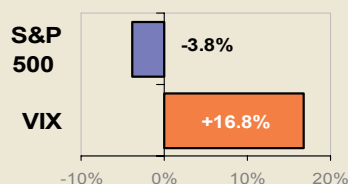
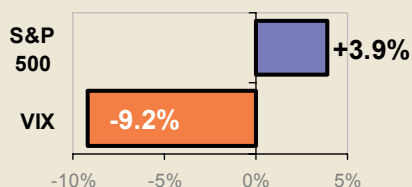


Exhibit 5 - Avg. Price Change on the 33 Days on Which the S&P 500 Rose by 3% or More (1990 - 2005)



Sample Options Strategies

Investors who are –

Bullish on VIX, and Bearish on stocks**

Might consider –

- Long VIX Call Options
- Long VIX Call Spreads
- Short VIX Put Credit Spreads
- Long VIX Futures

Investors who are –

Bearish on VIX, and Bullish on stocks**

Might consider –

- Long VIX Put Options
- Long VIX Put Spreads
- Short VIX Call Credit Spreads
- Short VIX Futures

** **Caution** – sometimes VIX and stock prices move in the same direction. Please visit www.cboe.com/VIX for more information about prices and strategies.

Proposed Contract Specifications

Symbol: VIX

Underlying: The CBOE Volatility Index – more commonly referred to as “VIX” – is an up-to-the-minute market estimate of expected volatility that is calculated by using real-time S&P 500 (SPX) index option bid/ask quotes. VIX uses nearby and second nearby options with at least 8 days left to expiration and then weights them to yield a constant, 30-day measure of the expected volatility of the S&P 500 Index.

Multiplier: \$100.

Strike Price Intervals: Strike prices are listed with minimum intervals of 2 1/2 points.

Strike (Exercise) Prices: In-, at- and out-of-the-money strike prices are initially listed. New strikes can be added as the index moves up or down.

Premium Quotation: Stated in points and fractions, one point equals \$100. Minimum tick for series trading below \$3 is 0.05 (\$5.00); above \$3 is 0.10 (\$10.00).

Expiration Date: The Wednesday that is thirty days prior to the third Friday of the calendar month immediately following the expiring month.

Expiration Months: Generally, two near-term months plus one additional month on the February quarterly cycle.

Exercise Style: *European* – CBOE Volatility Index options generally may be exercised only on the Expiration Date.

Last Trading Day: The Tuesday prior to the Expiration Date of each month.

Settlement of Option Exercise: The exercise-settlement value for VIX options (Ticker: VRO) shall be a Special Opening Quotation (SOQ) of VIX calculated from the sequence of opening prices of the options used to calculate the index on the settlement date. Exercise will result in delivery of cash on the business day following expiration. The exercise-settlement amount is equal to the difference between the exercise-settlement value and the exercise price of the option, multiplied by \$100.

Trading Hours: 8:30 a.m. to 3:15 p.m. Central Time (Chicago time). CBOE Volatility Index options will not open until the SPX opening rotation is completed.



1. What is VIX?

The CBOE Volatility Index® – more commonly referred to as “VIX” – is an up-to-the-minute market estimate of expected volatility that is calculated by using real-time S&P 500® Index (SPX) option bid/ask quotes. VIX uses nearby and second nearby options with at least 8 days left to expiration and then weights them to yield a constant, 30-day measure of the expected volatility of the S&P 500 Index.

2. How is VIX calculated?

VIX is calculated directly from the price quotations of nearby and second nearby S&P 500 Index options spanning a wide range of strike prices. The VIX calculation is independent of any theoretical pricing model, using a formula that averages the weighted prices of at-the-money and out-of-the money puts and calls to derive expected volatility. More information and a sample calculation may be found at <http://www.cboe.com/micro/vix/vixwhite.pdf>.

3. How do VIX options allow me to trade volatility?

The VIX formula isolates expected volatility from other factors affecting option prices, such as changes in underlying price, dividends, interest rates and time to expiration. As such, VIX options offer a way for investors to buy and sell option volatility simply and directly, without having to deal with the other risk factors that would otherwise have an impact on the value of an SPX option position.

4. I'm used to options expiring on the third Friday of each month. Why do VIX options expire on a Wednesday?

VIX was designed to be a consistent, 30-day benchmark of expected market volatility, as measured by SPX option prices. Of course, there is only one day in the life of any option that is exactly 30 days to expiration, so in order to arrive at the 30-day standard, VIX is calculated as a weighted average of options expiring on two different dates.

One day each month, on the Wednesday that is thirty days prior to the third Friday of the following calendar month, the SPX options expiring in exactly 30 days account for all of the weight in the VIX calculation. VIX options settle on these Wednesdays in order to facilitate the special opening procedures that establish opening prices for those SPX options used to calculate the exercise settlement value for VIX options.

The following are the expiration dates for VIX options that may be listed through December 2006: (VIX options with expiration dates in bold are on the Wednesday *after* the 3rd Friday of the month.)

April 19, 2006	July 19, 2006	Oct. 18, 2006
May 17, 2006	Aug. 16, 2006	Nov. 15, 2006
June 21, 2006	Sept. 20, 2006	Dec. 20, 2006

5. Will VIX options always reflect current, real-time, VIX values?

Probably not, at least not until you get close to expiration. The underlying for VIX options is the expected, or forward, value of VIX at expiration, rather than the current, or “spot” VIX value. This forward value is estimated using the price quotations of SPX options that will be used to calculate the exercise settlement value for VIX on the expiration date, and not the options used to calculate spot VIX. For example, VIX options expiring in May 2006 will be based on SPX options expiring 30 days later – i.e.; June 2006 SPX series. In fact, June SPX options do not even enter into the spot VIX calculation until April 17, 2006. VIX option prices should reflect the forward value of VIX, which is typically not as volatile as spot VIX. For instance, if spot VIX experienced a big up move, call option prices might not increase as much as one would expect. Depending on the value of forward VIX, call prices might not rise at all, or could even fall! As time passes, the options used to calculate spot VIX gradually converge with the options used to estimate forward VIX. Finally, at VIX options expiration, the SPX options used to calculate VIX are the same as the SPX options used to calculate the exercise settlement value for VIX options.

6. How is the exercise settlement value for VIX options calculated?

The exercise settlement value for VIX options (Ticker: VRO) is a Special Opening Quotation (SOQ) of VIX calculated from the sequence of opening prices of the SPX options used to calculate VIX at settlement. Most of the SPX option opening prices reflect actual trades. The opening price for any series in which there is no trade is deemed to be the mid-quote price, the average of that option's bid and ask prices. Only series with non-zero bid prices upon completion of the special SPX opening procedures are used in the SOQ calculation.

7. How is the calculation of the VIX SOQ different than the calculation of other VIX values? What can this mean for VIX options settlement?

It is important to note that the VIX SOQ is the only VIX calculation that uses traded prices. Every other reported VIX value uses mid-quote prices of SPX option series. Typically, the theoretical VIX bid/ask spread (i.e., the difference between VIX calculated using bid prices and VIX calculated using ask prices) is 0.8 to 1.2 VIX points. If the VIX SOQ is calculated using predominantly bid prices, or predominantly ask prices, there may be a significant difference between the exercise settlement value for VIX options and the reported VIX values (based on mid-quote prices) on expiration day as well as at the close on the day before expiration.

8. Why do VIX option prices appear different than other index option prices I'm used to seeing?

The price of any index option depends on the forward price of the index and the expected shape of the forward price distribution. In the case of stock indexes like the S&P 500, the theoretical forward price is determined in a fairly straightforward manner that considers the “cost-of-carry” (i.e., interest rates and dividend yields). Forward prices of option volatility exhibit a “term structure”, meaning that the prices of options expiring on different dates may imply different, albeit related, volatility estimates. VIX option prices reflect the market’s expectation of the VIX level at expiration, as measured by the VIX SOQ on that date. For example, prices for VIX options expiring in May 2006 reflect the expected volatility implied in June 2006 SPX options; VIX options expiring in August 2006 reflect the expected volatility implied in September 2006 SPX options, etc. The VIX volatility implied by June SPX options may be significantly greater or lower than VIX volatility implied by September SPX options.

Most readily available option pricing models assume that price changes in an underlying asset – IBM or S&P 500 Index (SPX), for example – have a lognormal distribution. The distribution of VIX prices is not lognormal. In a lognormal world, the price of IBM, for instance, could go to \$0 per share, or rise to very high levels depending on market conditions and company fundamentals. A VIX value of zero, on the other hand, would imply a market expectation of virtually no daily change in the level of the S&P 500 Index! Extreme or persistently high VIX levels are just as unlikely because there would need to be a market expectation of very large daily SPX index changes over an extended period of time. Yet, since 1990 the largest 1-day move in SPX has been -6.9%, and price changes of at least ±5% have occurred only 8 times.

Option practitioners commonly refer to the unique behavior of VIX and other volatility measures as “mean-reverting,” which is a statistical way of saying that at historically low VIX levels, there is a higher probability that the next big move will be up rather than down. Conversely, at historically high VIX levels, the next big move is more likely to be down rather than up.

Because of these differences between VIX and traditional stock indexes, calculating exact theoretical values for VIX options can be very complex. Assuming that VIX option prices reflect the “term structure” and “mean reversion” characteristics of VIX, VIX options could appear somewhat peculiar relative to other index and individual stock options.

9. What is the “volatility of volatility”?

The expected volatility of VIX forward prices is another important factor influencing VIX option prices. But what is the “volatility of volatility”? It turns out that volatility, as measured by spot VIX values, is indeed very volatile. As shown in the following table VIX volatility in 2005 was about 83% compared with 10% for S&P 500 Index (SPX), 14% for Nasdaq-100 Index (NDX) and 16% for Russell 2000 Index (RUT). VIX was even more volatile than several stocks including Google, Apple, General Motors and IBM.

Name	12/30/05 Price	2005 Volatility
VIX	12.07	83.3%
SPX	1,248.29	10.3%
NDX	1,645.20	13.9%
RUT	673.22	16.1%
GOOG	\$414.86	32.1%
AAPL	\$71.89	38.8%
GM	\$19.42	42.6%
IBM	\$82.20	17.9%

Yet, there is another “volatility of volatility” to consider. The underlying for VIX options, as noted earlier, is the group SPX options that will be used to calculate the exercise settlement value at expiration; that is, forward VIX. Historically, forward VIX has tended to be less volatile, on average, than the VIX index itself. In 2005, for example, the volatility of forward VIX (as measured by near-term VIX futures prices traded at the CBOE Futures Exchange) was 45.8%, significantly less than the 83.3% volatility of VIX itself. Moreover, since the launch of VIX futures in March 2004, the volatility of near-term VIX futures prices has been, on average, 62% of VIX Index volatility.

Visit www.cboe.com/vix for more details.

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