

options central



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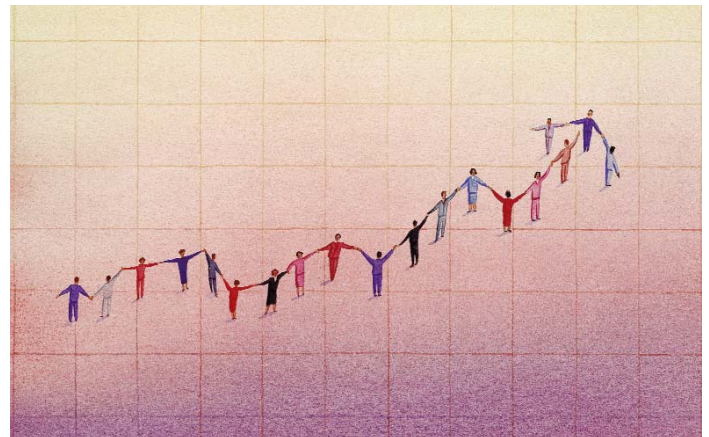
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Trading on Options Volatility

By: Amy Farnstrom

When considering options pricing, there are two types of volatility that must be taken into account, historical volatility and implied volatility.

Historical, or statistical, volatility is the measure of how much an underlying (e.g., stock) changes in price. This change is in terms of rate and magnitude and is usually measured by taking the daily (close-to-close) percentage price changes and calculating the average over a given time period. If historical volatility is high, you can expect the premium of an option to be relatively high as well, i.e. if the stock moves around a lot, those moves will be reflected in a higher



price for an option on that stock compared to an option on a stock that makes relatively small moves.

Once you have established the historical volatility for any underlying, you can plug that value into a standard options pricing model and calculate the fair market value of an option, i.e. at what price one should expect the option to be trad-

ing. Sometimes the fair market value is higher or lower than where the option is actually trading. This is the result of the market pricing expected, or implied, volatility into an option.

The implied volatility of an option represents the current expectations of future volatility of the underlying stock, as estimated or implied by

continued inside



Amy Farnstrom is the Director of Options Business and Product Development for NYSE Arca where she has used her options trading experience and industry knowledge to help design the new NYSE Arca trading system. She previously was the Director of Client Services for the Pacific Exchange, Inc. (PCX).

Farnstrom has over 15 years experience in the options industry. She traded options on PCX as a Market Maker for eight years, including four years as a Lead Market Maker for various brokerage firms. She attended Hastings College in Hastings, Nebraska, as a National Merit Scholar and graduated with a degree in English, Theater Arts, Philosophy and Art History.

In addition to her responsibilities at NYSE Arca, Farnstrom recently joined the instructor staff of The Options Industry Council.

 NYSE Arca Options

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its option price, based on an options pricing model (e.g., Black-Scholes) — a measure of how much the "market place" expects the underlying asset price to move. In other words, it is the volatility that yields a theoretical value for the option equal to the current market price. If you plug in the factors you know, such as market price, interest rate, expiration date and strike price, you can derive the implied volatility.

How can implied volatility be used to trade options? Unlike

directional trading, volatility trading doesn't require you to "predict" the direction of the market. And unlike "time value" trading, it doesn't subscribe to the myth that most options expire worthless therefore only selling is profitable.

What are the two most important ingredients contributing to volatility? You might guess that some heavy duty math is involved here — which is not the case; the computation of historical volatility is a difficult problem for mathematical applica-

tion. In the Black-Scholes model, volatility is defined as the annual standard deviation of the stock price. However, there is a way in which a trader can let the market compute the volatility for him, by using implied volatility — i.e., the volatility that the market itself is implying. This is similar to an "efficient market hypothesis". If there is enough trading interest in an option that is close to the money, that option will generally be fairly priced.

Fear and greed are probably the two primary factors driving stock prices. Volatility shifts come as a result of changing investor emotions and the psychology of the marketplace. Increased volatility is usually associated with falling

“Volatility shifts come as a result of changing investor emotions and the psychology of the marketplace.”

Welcome to the Fall 2007 issue of *Options Central* – The Options Industry Council's educational newsletter!

In this issue, one of our OIC exchange instructors discusses some frequent factors that come into play with options' trading volatility. Then in the Bid and Ask section, OIC's Help Desk provides some insight on the new rules regarding adjustments for stock splits, and also tackles a common FAQ concerning corporate actions. Also, don't forget to review our Readers' Quotes section where fellow investors share their thoughts on strategies that have worked for them, as well as some comments about the benefits and frustrations they, or even you, have run into with options.

We hope you enjoy reading this issue of *Options Central* and as always, we welcome your feedback!

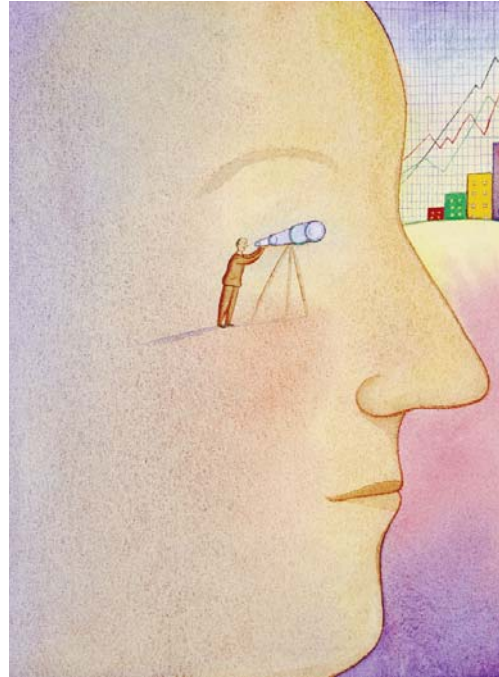


stock prices, however, a fast rising market can also have a high level of volatility. Rather than looking at upward or downward moves, one can observe that periods of low volume trading equate with lower volatility; more active trading generally means that volatility is higher.

Take for example the past few months of 2007. Although industry options have been rising significantly over the past few years as a result of a vastly wider array of participants, if you look at the time period from mid-July to mid-August, you will see that the VIX jumped from around 16 to over 30. During that same time, option volumes jumped significantly over year-to-date average daily volumes. August daily averages (to date) for index options are 1.647 million, compared to a year-to-date average daily volume of 1.08 million. For equity options, August average daily volumes are 12.78 million compared to year-to-date average volumes of 9.85 million contracts. On August 16, the VIX hit 30.83, and options total daily volume that day was 23,791,702. Similarly,

the late February/early March spike in volatility, which saw an abrupt move from around 10 to nearly 20 correlated with spikes in options contract volume. Does this mean that higher levels of trading activity somehow cause higher volatility? No. Quite the opposite is true. When levels of uncertainty rise, and thus volatility rises, the desire to decrease risk (fear) or take advantage of profit opportunities (greed) come into play and more participants make more trades based on their existing portfolios or desire to open new positions.

Short-term investors tend to be more active traders (entering and exiting trades intraday) and therefore typically use shorter time periods for measuring historical volatility: five-day, ten-day, twenty-day and thirty-day. Intermediate-term and long-term investors tend to use longer time periods, most commonly two months, six months, and one year intervals. Someone buying an option with low implied volatility expects the following profit/loss profile: many small losses (time decay), with occasional



large windfalls, and a rise in volatility sometime before the option expires. The goal of someone selling an option with high implied volatility is to bring in ongoing small profits (time decay) with the understood risk that large losses are possible on a significant move in the underlying or a further increase in implied volatility. The volatility seller expects that volatility is high and will revert to the mean, i.e. fall, prior to the option's expiration.

One way that active, intra-day traders benefit from volatility moves is through delta-neutral trading. In the simplest terms, this means that for every option bought or sold, the appropriate

amount of stock is bought or sold based on the option's delta. By hedging with the underlying, "delta-neutral" traders eliminate their exposure to direction-based risk from small moves in the stock. The goal is to consistently buy options at an implied volatility that is lower than the historical or mean implied volatility of the option and sell options at an implied volatility that is higher than the historical mean implied volatility of the option. This isn't a "one and done" trade, however. The theory is that you will pay less for an option than what you can make by buying and selling the underlying as it moves up and down — buying low

and selling high in the underlying and therefore paying for the option's decay, plus some amount of profit. Likewise, if you sell an option, the idea is that you will earn more premium from the sale and the option's decay over time than it will cost to hedge the short position by selling stock low and buying it high. The reason this strategy is employed by active, professional traders is because the hedge must be constantly adjusted as the underlying moves. This type of risk management is very high maintenance, requiring constant monitoring and many transactions in order to be effective.

Alternatives to hedging with the underlying that might be more attractive to the less active or non-professional trader that can still effectively capture volatility moves include straddles, strangles and spreads.

If you buy a straddle, on the face of it you are getting a win-win in terms of profitability on up or down moves in the underlying. However, the rights to both buy and sell the underlying at a price do not come without a hefty price tag.

The goal is to take advantage of a possible increase in implied volatility, as this will increase the value of both your call and put options, and rising volatility acts as an indicator that the market expects the underlying might make a large move. The tricky part is that because you have double the exposure to time decay as both a call and put owner, time is your enemy. You must know several things for this to be an effective volatility trade: what the historical volatility of the underlying is relative to the options' implied volatilities; what if any events are on the horizon (e.g., earnings, litigation), and what the options' current implied volatilities are compared to their historical implied volatilities.

Likewise, if you want to sell a straddle to collect the premium of the call and put as they decay, moving toward expiration, you need to be reasonably confident that you are selling an implied volatility that is higher than the option's historical implied volatility. If a straddle's implied volatility is in line or low compared to historical implied volatilities, this may not

the time to be selling, depending on your analysis of other market indicators or events. Once you establish a short straddle, time is your friend, but increasing implied volatility is deadly, as you have double the exposure to an upward move in volatility being short both the call and the put. And again, you must know if there are any events coming up that could cause the volatility to spike, increasing the premium of the options as well as signaling a potential move in the underlying that might wipe out the profit you have made by selling the options.

Similarly, buying and selling strangles present the opportunity to

make a volatility prediction.

Again, you are doubling your risks at the same time you are increasing your profit potential. The difference between a straddle and a strangle is that for a strangle, you are not buying a call and put on the same strike. This reduces the net cost if you are buying the strangle but necessitates a larger move in the underlying to become profitable.

Once the long strangle is established, rising implied volatility is your friend as it will increase the value of your options and indicates an increased possibility of a price swing in the underlying. For



“Other ways to protect yourself are to be sensible about how many eggs you put into one volatility basket.”

short strangles, just the opposite is true. You want falling volatility — if you miscalculate and sell volatility when it is low or on a rising trend, it works doubly against you as it rises, increasing the cost of closing the position, as well as signaling an increased possibility that the underlying will make a significant move.

Another way to take advantage of event driven changes in volatility is the use of a calendar spread. If you buy a “one-month” (an example would be a May-June calendar spread) or time spread (remember, by buying the farther term option you are “buying time” or buying the spread) you don’t want any huge moves in the underlying, since you are short the front month option, which being at the money, will be very sensitive to moves in the underlying price.. What you do want to look for is a

front month option that has a higher implied volatility than the 2nd month option, thereby giving you the chance to collect a lot of time decay as the volatility collapses as expiration approaches. How is it possible to find a situation where the near-term options have a higher implied volatility than the 2nd month options? A good opportunity can arise when a stock makes a large move, especially a large downward move, because this causes near-term option volatility to explode as traders scramble to cover risk or as they seek profit opportunity through speculation (fear and greed again). Here is the opportunity for you to buy a calendar spread. Because the longer-term option that you are buying falls outside this window of immediacy, it generally will not be as affected by the turmoil nor will the implied volatility spike so severely as in the front month option

you are selling, and, therefore, the calendar spread can be an attractive strategy. This requires some research and a good sense of timing. If you put on the calendar spread far in advance of the front month expiration, you run the risk that the underlying will make a significant move and render the spread profitless. If you wait until very near expiration, you will forego some profit potential from time decay, meaning you will have to pay more for the spread and then if the underlying does make a big move, you are risking more money.

Just before the front-month expiration, buy back the shorter-term call and sell the back month call in order to close out your position. Ideally, you will have captured the benefits of both time decay and volatility.

Worst-case scenarios for volatility trading: if you are holding short volatility positions and the underlying stock moves considerably or implied volatility goes up. Or, if you are holding long volatility positions and the underlying stock moves moderately and volatility collapses.

How do you protect yourself? First, you must do the research prior to putting on a volatility trade. You must know what events are on the horizon for your underlying. You should have a good grasp of what the underlying’s historical volatility has been; you should also have in mind what the historical mean implied volatility for the option is, and where the current implied volatility is in relation to both. You must understand that if you buy an out-of-the-money call in a stock and very positive earnings come out, that the volatility “crush” resulting from this news might negate a lot of profit potential from the move if you bought “expensive” volatility prior to the announcement. And this can happen if the stock makes no significant move or even moves up in price.

Other ways to protect yourself are to be sensible about how many eggs you put into one volatility basket. Limit your exposure in any one underlying. Limit your exposure by sector. If your market research isn’t giving you any strong direction with regard to volatility, then

use vertical spreads or other strategies that can protect you from unexpected volatility moves rather than expose you to losses.

Finally, remember that volatility cannot be predicted over long periods of time. Option markets generally use “market forecasts” from one month to a year. Statistical models are useful in forecasting volatility over very short periods of time.

Never forget the importance of taking into

account news and events, even large scale/non-specific to underlying stock events or news — macro world events can put the markets into turmoil and send volatility through the roof just as easily as an earnings event or court case outcome can affect one issue or sector.

And always remember, if the volatility assumption driving a particular option changes, the option price can change without any dramatic move in the underlying.

Common Options Terms

Black-Scholes formula

The first widely-used model for option pricing. This formula can be used to calculate a theoretical value for an option using current stock prices, expected dividends, the option's strike price, expected interest rates, time to expiration and expected stock volatility.

Implied volatility

The volatility percentage that produces the 'best fit' for all underlying option prices on that underlying stock.

Historical volatility

A measure of actual stock price changes over a specific period of time.

Spread

A position consisting of two parts, each of which alone would profit from opposite directional price moves. As orders, these opposite parts are entered and executed simultaneously in the hope of (1) limiting risk, or (2) benefiting from a change of price relationship between the two parts.

Straddle

A trading position involving puts and calls on a one-to-one basis in which the puts and calls have the same strike price, expiration and underlying stock. When both options are owned it is a long straddle, and a short straddle is when both options are written.

Strangle

Selling both a call and a put that are currently out-of-the-money, or with two different strike prices, which can help to reduce the risk of a written straddle.

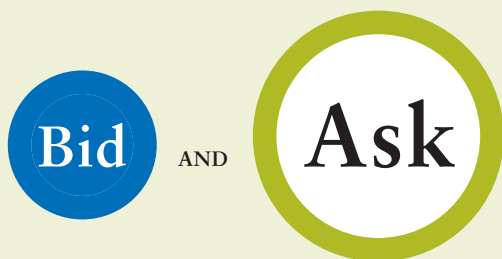
Time value

The part of an option's total price that exceeds its intrinsic value. The price of an out-of-the-money option consists entirely of time value.

Volatility

A measure of stock price fluctuation. Mathematically, volatility is the annualized standard deviation of a stock's daily price changes.

To simplify the computations, the examples in this article do not include commissions or transaction costs. Commissions and transaction costs will affect the outcome of all stock and options transactions and must be considered prior to entering into any transaction. Investors considering options should consult their tax advisors as to how taxes may affect the outcome of contemplated options transactions.



Q: What are the new rules regarding option contract adjustments for stock splits that pertain to rounding?

A: Effective for ex-distribution dates September 4, 2007 and later (the first trading day after the Labor Day weekend), option adjustment methodology will change for stock splits that under old rules required rounding of the strike prices. Under the new method, for "odd" splits (4:3; 3:1; 3:2; etc.), the strike prices will no longer be adjusted downward to reflect the splits. Only the deliverable will change to reflect the terms of these splits. A strike price of 75 still calls for the exchange of \$7,500 upon exercise or assignment. For example, on the ex-date for a 3:2 split, a 75 strike price would now call for 150 shares of the underlying in exchange for \$7,500. This new method eliminates the need to round some strikes to the nearest 1/8 of a point. Please refer to www.optionsclearing.com for further details.

Figure 1: EXAMPLE OF NEW METHOD - NO CHANGE IN STRKE PRICES

3 for 2 Split		Old Method	New Method
	Before Ex Date	Ex Date	Ex Date
Option Symbol	ABC	XXX	XXX
Stock Price	42	28	28
Strike	40	26 5/8	40
Premium/Strike Multiplier	100	150	100
Deliverable	100 ABC	150 ABC	150 ABC
Price Formula for Underlying	1.0 (42)	1.0 (28) =28	1.5 (28) =42
# Contracts			

Note: Strikes do not change; The premium/strike multiplier does not change; The price formula to calculate the value of the underlying changes; and with the stock at \$28, under the new method the adjuste 40 strike call is in-the-money ($\$28.00 \text{ stock price} \times 1.5 = \42.00)

Q: I'm trying to trade an option that was adjusted for a corporate action in the underlying a few months ago. This was once a LEAPS® option and traded quite a bit, but it appears as though the volume has fallen off and the bid-ask size isn't what it once was. Why is that?

A: Those adjusted options will continue to exist, but it is not likely that any investors will want to open new positions in them. The majority of the volume for the adjusted options is typically a result of closing trades. Investors wishing to trade the new standard contracts will typically trade the ones that the exchanges list the day after the corporate action.

Readers' Quotes

"My strategy is very simple. After having tried many different angles for trading options, the method I consistently use is selling covered calls. Employing other strategies, there are always factors that enter into the equation that can't be controlled. I can make a lot of money but also lose a lot of money. For me, covered calls are a way of making a steady, appreciable income year over year. Slow and steady wins the race..."

Jim Baughman - West Hollywood, CA

"The OIC site is a great place to get the basics and advanced help on options. Everyone can benefit from the learning opportunities. Log in and stay tuned is my advice. Thanks for the good programming and information."

Don Reinhardt - Atlanta, GA

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FOR MORE INFORMATION

If you have additional questions about options, contact your financial advisor or one of the exchanges listed here.

The American Stock Exchange
1-800-THE-AMEX; www.amex.com

Boston Options Exchange
1-617-235-2000; www.bostonoptions.com

Chicago Board Options Exchange
1-877-THE-CBOE; www.cboe.com

International Securities Exchange
1-212-943-2400; www.ise.com

NYSE ArcaSM
1-212-430-6900; www.nysearca.com/traders/options.asp

Philadelphia Stock Exchange
1-800-THE-PHLX; www.phlx.com

The Options Clearing Corporation
1-800-621-6072; www.optionsclearing.com



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