Using volatility in options trading

Those with a little experience in options trading would have come across the concept of volatility. One could go so far as saying understanding volatility is one of the most important aspects of trading in options markets.

This article will describe a couple of different types of volatility and the next article will follow with some ideas on how to use these measures in the real world of options trading.

While these articles are only an introduction the concept of volatility, it should be noted that these principles are still very applicable in trading options and each and every option trader pays careful attention to volatility information. There are many texts available for those readers wanting to learn more about volatility and there is more information on my website: www.gtcommodities.com.

Terms:

Statistical Volatility: *(or historical volatility)* A measure of the degree of price movement in the underlying asset. It is measured using the standard deviation.

Implied volatility: The level of volatility needed so that a pricing model will return a fair value of the option equal to that of *the current market price*.

Pricing model: A mathematical formula used to derive a fair or theoretical value for any option.

Black-Scholes Model: A popular pricing model available in most options software packages. Other popular models are the Cox, Ross & Rubenstien model and the Yates model.

There are a few different measures of volatility. The ones you will hear the most of are statistical volatility and implied volatility.

Statistical Volatility

'Statistical' or 'Historical' volatility is a measure of the movement in the underlying asset over a period of time. The measure is sometimes called historical volatility since it takes into account movement in *past* prices.

Statistical volatility is calculated using the standard deviation of past prices. The measure is always expressed as a percentage. Statistical volatility can be measured over any time frame, as long as you have the data, but generally speaking, a 20-day or 30-day standard deviation is the norm.

Implied Volatility

Defining implied volatility is a little trickier. Implied volatility is a measure that applies to each and every listed option and requires the use of a pricing model.

A pricing model is a mathematical formula used to derive a fair or theoretical value for an option based on certain inputs. Some inputs are:

- The strike price;
- The underlying price;

- The remaining life of the option;
- Whether it is a put or call
- Upcoming dividend payments for stocks (or coupons for bonds)
- Current interest rates (i.e. a measure of cost of carry)

Further to this, a measure of the degree of price movement, or volatility, is used in most models. Think about it… The more a share price varies, the more their options would be worth. The quieter the share price, the less the options would be worth.

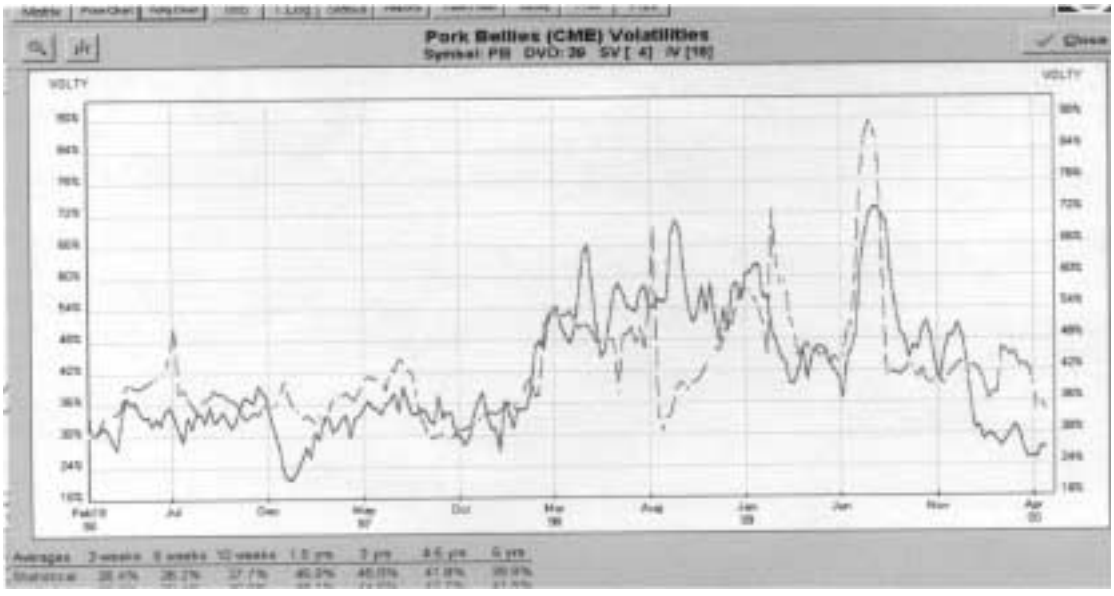
Pricing models such as the Black-Scholes model (hereafter B-S model) require the input or all the factors listed above as well as an estimate of volatility for the remaining life of the option. Estimating that volatility is where it can get difficult.

That's where the concept of implied volatility comes into play.

In a nutshell, implied volatility is the level of volatility needed so that the B-S Model will return a fair value of the option equal to that of *the current market price*. You could say that implied volatility is the estimate of future volatility that is made by the market as a whole.

This is an important point: each option strike has its own level of implied volatility. Think about that... If each option strike has its own premium value, then each option strike must have its own implied volatility.

Quite often, as in the chart below, at-the-money implied volatility will be charted to give you an idea of how implied volatility has changed over time.



This is a chart showing past statistical volatility (solid line) and past implied volatility (dashed line) for Pork Belly Futures.

Each data point on the chart is the measure of Statistical Volatility over the previous 20 trading days or the average at-the-money implied volatility at that point in tine.

There are many things in this type of chart that you can use in designing an option strategy. Here are some suggestions:

a. The high and the low of volatility
b. Where volatility is currently
c. Where volatility tends to consolidate
d. How quickly volatility can change

In the next article, we will look at these in detail and come up with some ideas for trading.

Guy Bower offers a managed option trading service. (02) 9386 4561