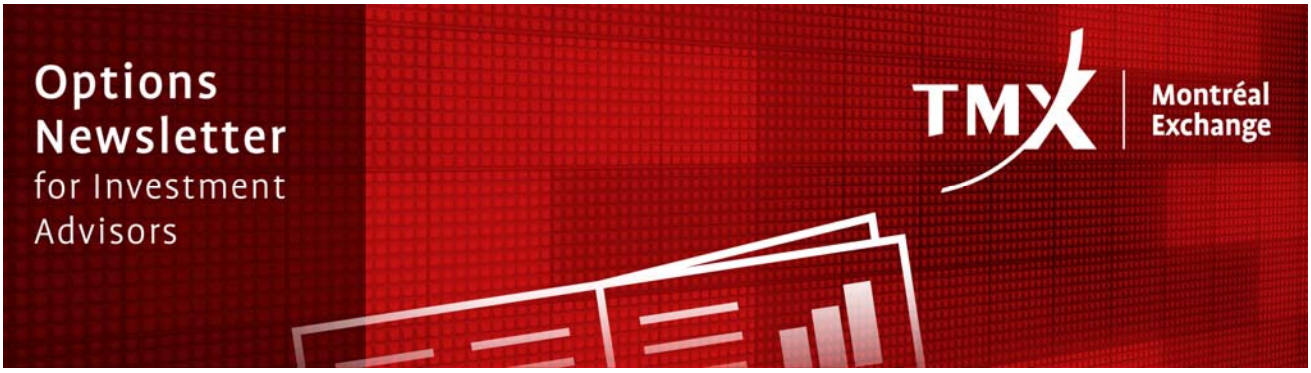


September 2010

What Can We Do in a Volatile Market?

During the last two years we have experienced much volatility, which is a source of concern to many investors. Even the most astute investors have a hard time navigating these turbulent seas. Buy and hold investing, once a sure bet, is now out of favour after a disastrous decade. In such a gloomy environment we must ask the following question, what can we do in a volatile market? Should we reduce exposure to market risk? Or should we rather take advantage of it? Options can be used to take advantage of market volatility and to reduce its impact on a portfolio. The option price is strongly impacted by the volatility of the price of the underlying. So, the astute investor should be able to build the proper strategy accordingly.

First and foremost, let's examine how important volatility is in option pricing.

There are six factors influencing the price of options:

1) the price of the underlying (S)
2) the strike price (K)
3) the time remaining until the option expires (T)
4) the volatility of the price of the underlying (V)
5) the risk-free interest rate (R)
6) the dividend (D)

Among these, some influence more the price of options than others[1]. For instance, the intrinsic value (which represents the relation between the price of the underlying and the strike price) is one of them. The greater the intrinsic value, the higher the price of the option. The time value also impacts the price of the option. The more time remaining until the option expires, the greater the price of the option. The reverse is true when there is less time remaining until the option expires. The risk-free interest rate and the dividend influence the price of the option as well, however, to a lesser degree.

We are left with the volatility, without a doubt the least understood factor by investors. After the intrinsic value, it is the volatility that influences the most the price of the option. Volatility, by definition, is the standard deviation of returns of a security over a specific time horizon. Hence, volatility represents the capacity of the price of a security to fluctuate. The more a security fluctuates, the more volatile and risky it is. And the riskier a security, the greater the need for protection, and the greater the price of the option.

[1] For more information on the factors that influence the price of options, consult the Equity Options Reference Manual of the Montréal Exchange at http://www.m-x.ca/f_publications_en/en.guide.options.pdf.

The Black-Scholes formula (BS) uses the six factors previously mentioned to compute the price of the option. The following is an example to calculate the price of a call option (C):

C = BS(S, K, T, V, R, D)

If, S = $22, K = 20, T = 90 days, V = 30%, R = 4% and D = $0; then

C = BS ($22, $20, 90, 30%, 4%, $0)

C = $2.64

The theoretical price computed for the call option is $2.64; however, the market price may be different. For instance, what would a market price of $3 mean? Which factor would be responsible for the difference? You are right if you answered volatility because among all the factors, it is the only one that must be estimated. Why? Because all the information on the other factors (S, K, T, R and D) is readily and publicly available, while volatility depends on the time period used in the calculation. The volatility computed for a 10-day time period is not necessarily the same as the one calculated for a 6-month period. Furthermore, the results are only a reflection of the past. That's why we call this type of volatility, historical volatility. The second type of volatility is referred to as implied volatility and it represents the volatility required to derive the option's market price from an option pricing model such as the Black-Scholes formula.

Going back to our example.

With a market price of $3 for the call option, we know that we must adjust the volatility in the BS formula. To do this, we must reorganize the information to isolate the unknown factor as follows. We want to find V,

V = BS ($3, $22,$20, 90, 4%, $0)[2]

V = 40%

If we use the resulting 40% implied volatility in the initial formula, we are able to match the market price of $3 for the call option. As can be seen, an increase in the implied volatility of the call option causes an increase in the price of the option. The reverse is also true; a decrease in the implied volatility will cause a lower value for the price of the option.

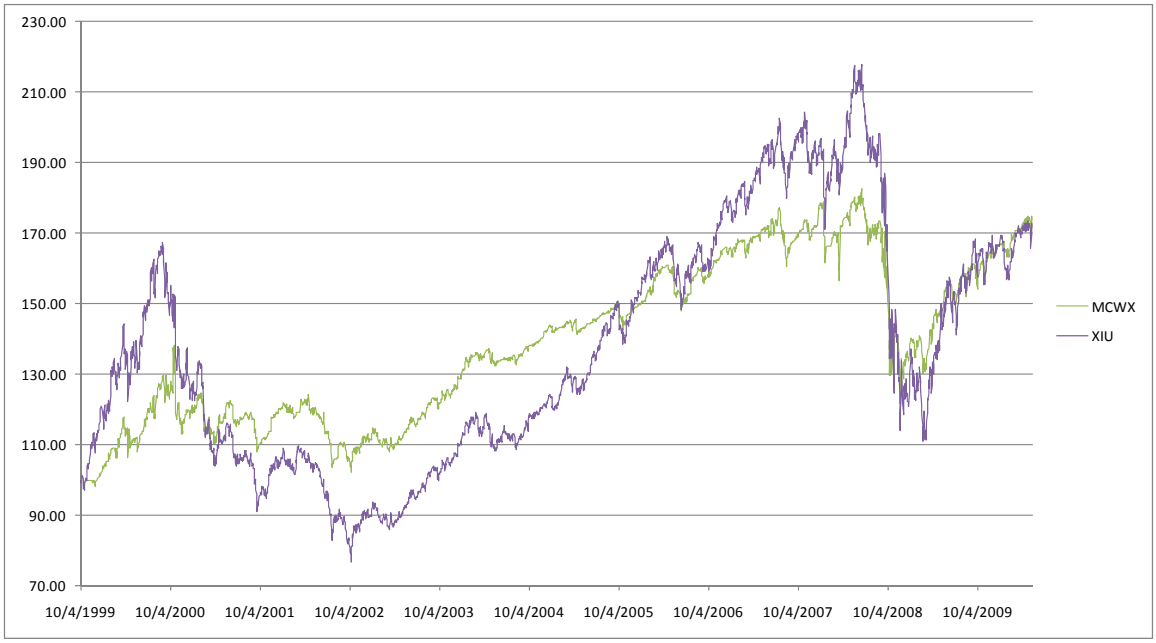
A particular characteristic of the implied volatility is that it tends to decrease when we are in a bull market, and it tends to increase in a bear market. Therefore, options are relatively cheap in market uptrends and expensive in market downtrends. Consequently, it is during bull markets, when the need for insurance is not very obvious, that investors need to plan the purchase of put options in order to protect their stock portfolio while the cost of insurance is the lowest. Then, when the stock price declines, the value of put options increases in tandem with the intrinsic value and the implied volatility. It's a double advantage. The value of your stock is preserved and you now have an opportunity to reassess if you want to keep holding onto your position or not. If you decide to keep the stock, you can sell back your insurance (the put option you originally purchased) at an expensive price while your stock position is now at an acceptable risk level. Conversely, if you don't want to keep the stock, you just have to sell both the stock and the put option, and use the proceeds as you see fit.

Another way to take advantage from an increase in implied volatility after a market decline is to sell puts in order to buy shares. As discussed previously, in a bear market, implied volatility leads to an increase in the price of the put option and the intrinsic value. This creates an opportunity to buy the shares that fit your selection criteria. A drop in the market makes the shares more attractive to buy and the high put option premium provides you with a larger sum of cash to fulfill your obligation to buy the shares that are on your purchase list.

For your clients who favour the approach of portfolio indexing and want to reduce the impact of market volatility on their portfolio while obtaining a return equivalent to the market, establishing a covered call strategy on a regular basis on the iShares S&P/TSX 60 (XIU) exchange-traded fund is an interesting solution. The Montréal

[2] To find the implied volatility (V), we must proceed by iteration with the help of a computer program.

Exchange, in collaboration with Richard Croft (R. N. Croft Financial Group Inc.), has developed the MX Covered Call Writers' Index (MCWX)[3] a passive total return index based on selling near-term close-to-the-money calls against a long position in the iShares S&P/TSX 60 Fund. The following chart compares the return of the XIU to the return of the MCWX index since 1999.



As depicted above, the MCWX index is much less volatile than the XIU. In a bear market, MCWX outperforms the XIU. However, in a bull market, the returns are lower since they are capped at the strike price of the call options sold. Over the long term, the return of establishing a covered call strategy is similar to that of establishing a long position in the XIU.

A volatile market makes the task of managing a portfolio more difficult and it is a symptom of a market looking for direction. However, where there is volatility, there are tremendous opportunities as well. Your clients can use options to take advantage of these opportunities either to increase their market exposure or to reduce the impact of volatility in their stock holdings.

Changes to m-x.ca

The Montréal Exchange has launched a new "**Education**" section in the main navigation bar of the MX site. One of the key features of this section is to have links to our educational offerings (webinars, videos, blog, guides and strategies, workshops) in one location only. What's more, we have added educational content provided by The Options Industry Council under a content licensing agreement with MX. We encourage you to navigate through the new "Education" section to learn more about the use of options.

[3] For more information on the MCWX index, go to http://www.m-x.ca/indicesmx_mcwx_en.php.