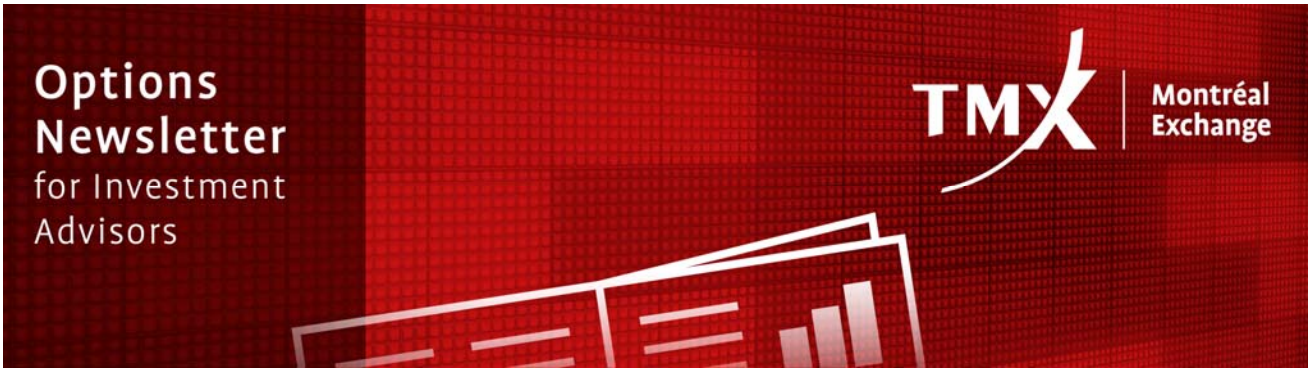


March 2011

Managing a Portfolio of ETFs with Options

The objective of modern portfolio theory is to maximize investment return for a given amount of risk. The premise of the theory is analogous to the old saying “Don’t put all your eggs in the same basket”. The theory, developed by Harry Markowitz, states that the overall risk of a portfolio comprising different securities is less than the sum of the risk for each security in the portfolio. However, constructing such a portfolio does not eliminate all the risk. It must be noted that when an investor designs a portfolio there are two types of risk. The first risk, called *specific risk*, is related to the risk associated to each individual security; whereas the second risk, called *systematic risk*, is related to market risk. The more a portfolio comprises many different securities, the more it is diversified, and the more the specific risk is reduced. On the other hand, market risk cannot be reduced by diversification alone. Consequently, the more a portfolio is composed of many different securities, the more the specific risk converges to zero, and the more the portfolio tends to be exposed to market risk only.

Trading of exchange-traded funds (ETF) has exhibited strong growth for several years. According to the Toronto Stock Exchange, there were 121 ETFs listed in 2009 and 172 in 2010. The number of transactions reached a peak level of 15.2 million in 2009 for a total volume of 16.8 billion shares. The growing popularity of ETFs among investors is explained by the fact that ETFs provide a wider choice of investment options, including investing in different sectors, asset classes, geographical locations and investment strategies. Hence, investors may easily design diversified portfolios reflecting their choices and needs. Compared to designing a balanced portfolio of individual securities, ETFs are cost-effective, less risky and more practical. Furthermore, the management fee charged by ETFs is generally lower compared to the management fee charged by mutual funds, making ETFs more cost-effective in the long term.

ETFs may be used by investors to tailor their investment objectives by adopting an investment style that is conservative, or growth oriented. Or for that matter, investors may adopt a more aggressive investment style that targets a particular sector or asset class. It is possible as well to adopt an even more speculative investment style by selecting more sophisticated ETFs that are designed to provide investors leveraged returns by using derivatives to magnify the daily returns of a benchmark index. In fact, today, there are ETFs seeking to deliver investment returns as a result of a decline in the benchmark index (inverse ETFs), and there are ETFs as well that seek to deliver investment returns that are multiples of the benchmark’s daily return, or of the benchmark’s inverse daily return (leveraged ETFs).

Constructing a portfolio of ETFs allows an investor to reduce appreciably the specific risk of each individual security in the portfolio. Hence, the investor needs only to be preoccupied with the market risk of the portfolio. The market risk of the portfolio may be managed actively by the investor by modifying the composition of ETFs in the portfolio or by using options as well. Options are an ideal risk management tool to implement protective and income generating strategies. More and more investors are using options as the following statistics demonstrate. Amongst the 172 ETFs listed on the Toronto Stock Exchange, 30 ETFs have options listed on its affiliate the Montréal Exchange (MX). In 2010, 3.3 million ETF options contracts were traded on MX, an increase of 19% compared to 2009. Options on ETFs represented 17% of the total options volume traded on MX’s options market.

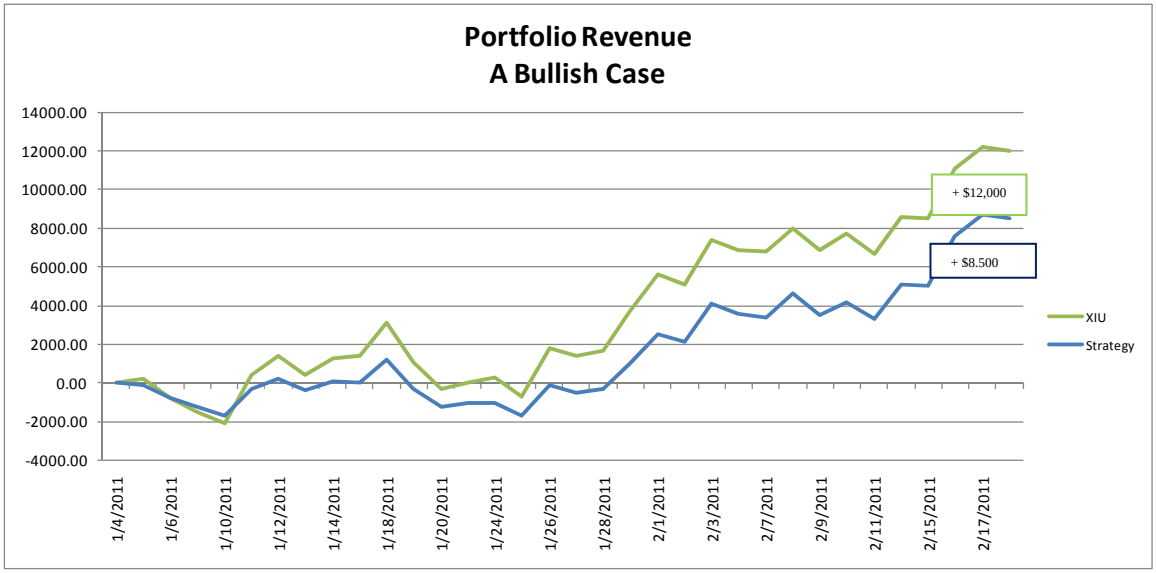
1. Using protective puts for hedging

Markets have risen sharply since July 2010 without a significant correction. After such a robust and sustained performance, it is normal for investors to look to protect part of the accumulated profits on paper. Buying put options with a short-term time horizon allows an investor to fix a selling floor price while allowing the investor to benefit from any rise that may occur if the market continues its upward march.

The following is an example that illustrates how put options may be used to hedge a portfolio composed of the iShares S&P/TSX 60 Index Fund (XIU) ETF as at January 4, 2011. On that day the XIU shares closed at $19.21 after hitting a high of $19.45 during the session. Some investors may have interpreted the price reversal during the day as the start of a correction.

An investor owns 10,000 XIU shares at a market price of $19.21 for a total value of $192,100. The investor seeks to protect the profits accumulated since last July when the XIU shares were purchased. Consequently, the investor decides to buy put options expiring in a few weeks to hedge the XIU shares. Put options expiring in February with a strike price of $19 are available for $0.35 per share. Since each option contract is for 100 shares, the investor will need to buy 100 contracts (10,000 shares divided by 100 shares per contract). The put options guarantee the investor that he will be able to sell his XIU shares at $19 up until the put options expire in February. If the investor exercises the put options, the investor's net selling price would be $18.65 since the premium of $0.35 must be subtracted from the strike price of $19.

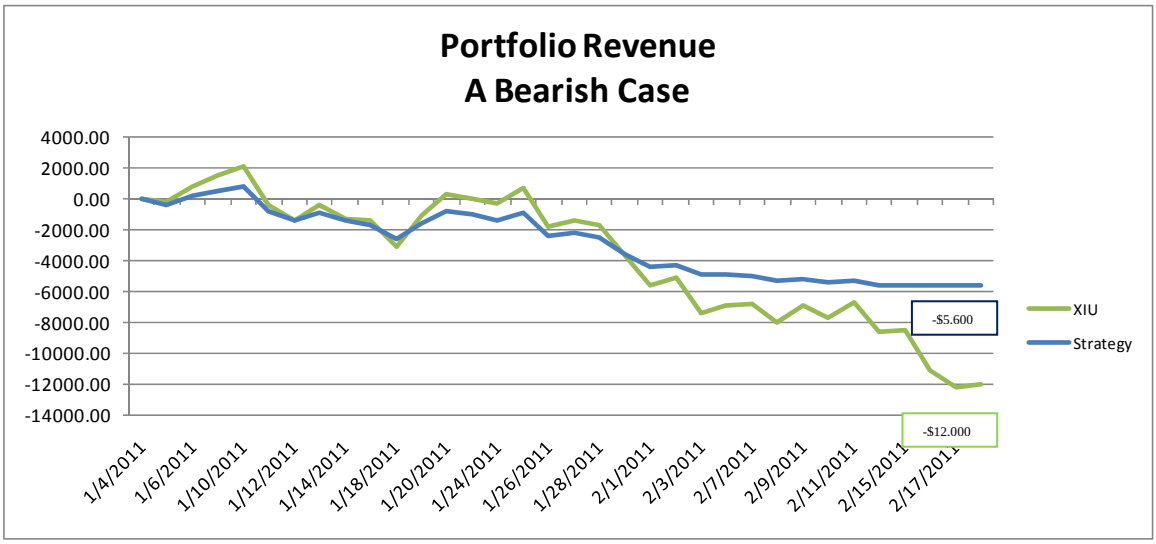
A bullish case



The chart above illustrates the profitability of the strategy (XIU shares + XIU FEB $19 put options) compared with holding only XIU shares—using real data[1] for the period from January 4, 2011 to February 18, 2011. We observe that the strategy is less profitable (+$8,500) than owning only XIU shares (+$12,000). However, the strategy has fulfilled its objective since the investor was able to take advantage of the rise in the market that followed the purchase of the put options. The difference in revenue (the opportunity cost) comes from the cost of the insurance which amounts to $3,500 (100 contracts x 100 shares per contract x $0.35 per share).

[1] The price data for the XIU shares are the values taken at the close of the market on a daily basis, while the data for the XIU options have been computed using an option model.

A bearish case



The chart above illustrates the profitability of a portfolio holding only XIU shares compared with the strategy of holding put options as well in a scenario where the price of the XIU shares is falling instead of rising[2] during the period of January 4, 2011 to February 18, 2011. We observe that the strategy offers a relatively better performance (-$5,600) compared to holding only XIU shares (-$12,000). The loss of $5,600 represents the maximum loss of the strategy, whereas holding only XIU shares results in a substantially higher loss.

Note that put options can be used similarly with sector ETFs and any other types of ETFs. Put options represent an ideal risk management tool to protect the value of assets contained in a portfolio.

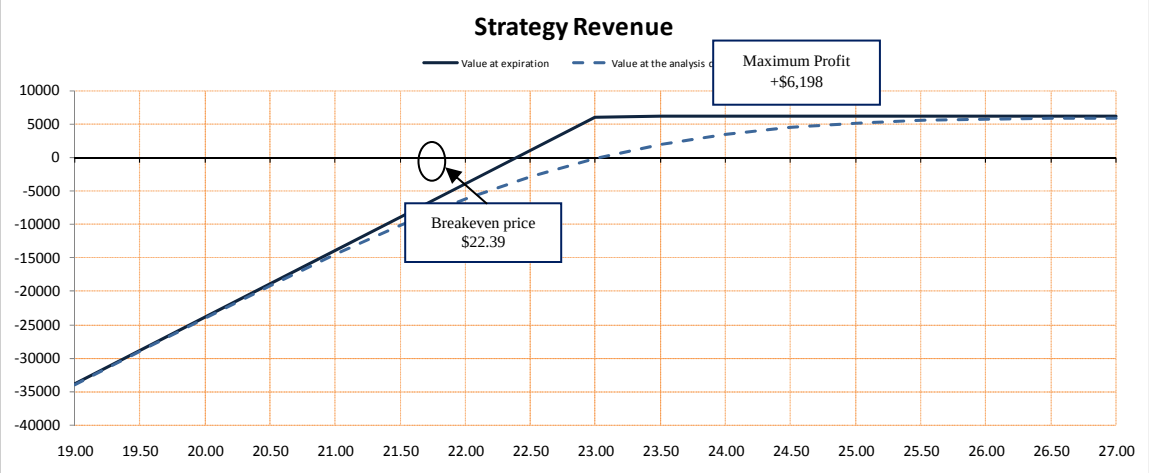
2. Covered call writing to generate additional income

ETFs are an ideal financial instrument to design the covered call options strategy since ETFs have a lower exposure to specific risk compared to individual securities. Hence, since there is less specific risk in ETFs, they are less subject to large price fluctuations following the publication of important news compared to an individual stock. Consequently, investors may hold ETFs as a long-term investment without the preoccupation that the investment will collapse, as it would be the case for example if one individual stock in a portfolio becomes worthless as a result of the company declaring bankruptcy.

The following example illustrates how an investor can design a covered call options strategy with the iShares S&P/TSX Capped Financials Index Fund (XFN) ETFs for the period of December 1, 2010 to February 18, 2011. XFN shares are trading at a price of $23.01 as at December 1st. The investor desires to earn additional income on the 10,000 shares of XFN it owns, and the investor is willing to sell the XFN shares if the call options are exercised at expiry. The investor's objective is to maximize the time value for the call options sold. Therefore, the investor sells 100 at-the-money call options contracts expiring in February with a strike price of $23 per share for a premium of $0.50 per share for a total income of $5,000. Recall, that among all the call options with the same expiry month, it is the at-the-money call options that have the greatest time value. It must be noted as well that the XFN shares will distribute two dividends during the life of the call options. The first dividend of $0.0294 will be paid on December 24th, and the second dividend of $0.0904 will be paid on January 26th. Both dividends represent an additional income of $1,198, for a total income of $6,198. The total income of $6,198

[2] Starting on January 4, 2011, we compute a closing price for XIU shares equal to its inverse variation from the day before. For example, from January 4 to January 5, the XIU shares rose from $19.21 to $19.23, a variation of $0.02. In the bearish case, we subtract $0.02 from $19.21 for a closing price of $19.19 instead of $19.23. We repeat the same procedure on a daily basis. The price data for the XIU options are computed using an option model.

represents the premium collected from the sale of the call options ($5,000), and the dividends collected from the XIU shares owned ($1,198). The maximum return of 2.71% is reached if the call options are exercised at expiration. This represents a return of 12.12% on an annual basis. The investor may also obtain this return even if the price of the XFN shares hover near the strike price of the call options during the life of the call options. This is referred to as static return.



On the day prior to the expiration date of the call options, February 18th, the price of the XFN shares was $24.68. Consequently, the call options were exercised by the holder of the call options (the investor who bought the call options), and the investor who held the XIU shares had the obligation to sell 10,000 XIU shares at the $23 strike price that the call options were sold at. As a result of the covered call strategy, the investor realizes the maximum return of 2.71%. On the flip side, if the price of the XFN shares closed at $21.34 instead of $24.68, the investor would have started to lose money only below the breakeven price of $22.39 (XFN share price of $23.01 – the premium of $0.50 collected from the sale of the call options – the dividends of $0.1198 collected from the XIU shares owned).

CONCLUSION

The use of ETFs allows investors to design portfolios to meet their specific investment objectives. A portfolio of ETFs is more cost efficient to design compared to a portfolio of individual securities or mutual funds. The use of options allows an investor to define the desired level of exposure to market risk it is willing to tolerate. To accomplish this, investors have at their disposal many options strategies that they can choose. Of which the most popular are the use of put options as insurance (that is, using a protective put options strategy to hedge a portfolio) and the covered call strategy.

For further information on ETFs, consult the “Education” section of the MX’s website at the following address: www.m-x.ca.

You will find the list of options listed on ETFs at MX in Appendix 1 attached. The list is also available at http://m-x.ca/nego_liste_en.php.

APPENDIX 1
LIST OF OPTIONS ON ETFs AT MX AS OF MARCH 8, 2011

Name of Underlying Instrument	Option Symbol	Underlying Symbol
Claymore Global Agriculture ETF	COW	COW
Claymore Gold Bullion ETF	CGL	CGL
Claymore Natural Gas Commodity ETF	GAS	GAS
BMO Dow Jones Canada Titans 60	ZCN	ZCN
Horizons BetaPro NYMEX Natural Gas Bear Plus ETF	HND	HND
Horizons BetaPro NYMEX Natural Gas Bull Plus ETF	HNU – HNU1	HNU – HNU1
Horizons BetaPro NYMEX Crude Oil Bear Plus ETF	HOD	HOD
Horizons BetaPro NYMEX Crude Oil Bull Plus ETF	HOU	HOU
Horizons BetaPro S&P/TSX 60 Bear Plus ETF	HXD	HXD
Horizons BetaPro S&P/TSX 60 Bull Plus ETF	HXU	HXU
Horizons BetaPro S&P/TSX Capped Energy Bear Plus ETF	HED	HED
Horizons BetaPro S&P/TSX Capped Energy Bull Plus ETF	HEU	HEU
Horizons BetaPro S&P/TSX Capped Financials Bear Plus ETF	HFD	HFD
Horizons BetaPro S&P/TSX Capped Financials Bull Plus ETF	HFU	HFU
Horizons BetaPro S&P/TSX Global Gold Bear Plus ETF	HGD	HGD
Horizons BetaPro S&P/TSX Global Gold Bull Plus ETF	HGU	HGU
Horizons BetaPro S&P/TSX 60 Index ETF	HXT	HXT
Horizons BetaPro S&P/TSX 60 Inverse ETF	HIX	HIX
iShares DEX All Corporate Bond Index Fund	XCB	XCB
iShares DEX Short Term Bond Index Fund	XSB	XSB
iShares Dow Jones Canada Select Dividend Index Fund	XDV	XDV
iShares MSCI EAFE Index Fund (CAD-Hedged)	XIN	XIN
iShares S&P 500 Index Fund (CAD-Hedged)	XSP	XSP
iShares S&P/TSX 60 Index Fund	XIU	XIU
iShares S&P/TSX Capped Composite Index Fund	XIC	XIC
iShares S&P/TSX Capped Energy Index Fund	XEG	XEG
iShares S&P/TSX Capped Financials Index Fund	XFN	XFN
iShares S&P/TSX Capped Information Technology Index Fund	XIT	XIT
iShares S&P/TSX Capped Materials Index Fund	XMA	XMA
iShares S&P/TSX Capped REIT Index Fund	XRE	XRE
iShares S&P/TSX Global Gold Index Fund	XGD	XGD