

**May 2012**

This last article in a series of three on options spreads addresses diagonal calendar spread options.

Diagonal spreads are composed of two options of the same type (either call or put options) with different strike prices, different expiration months and opposing positions. Specifically, diagonal spreads are constructed with the purchase of an option with a longer-term expiration date (longer-term option) and the sale of an option of the same type with a near-term expiration date (near-term option). In this issue, we will cover cases where the strike price of the near-term option is relatively more out-of-the-money (OTM) than the longer-term option.

Contrary to horizontal spreads that take advantage of the relative stability of the underlying stock, the diagonal spread incorporates a directional bias since the near-term option sold is relatively more OTM than the longer-term option purchased. Investors use diagonal spreads expecting the price of the underlying to remain relatively stable level for the foreseeable future at which point the near-term option will expire worthless. The investor will have the opportunity to keep the longer-term option at a lower cost and to take advantage of the unlimited profit potential the option may provide.

#### **Diagonal spreads using call options**

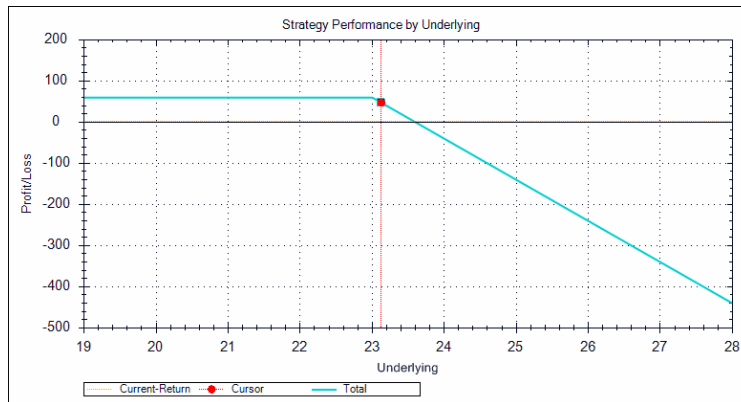
Diagonal call spreads are constructed with the sale of a near-term call and the purchase of a longer-term call at a different strike price. Although, the strike price of the near-term option may be lower than the strike price of the longer-term option, the strategy works best when higher strike prices are chosen. The objective of the diagonal call spread is to take advantage of time decay, which is greater for near-term options than for longer-term options—while allowing to profit from an underlying price increase. The maximum profit is realized at the expiration of the near-term call when the price of the underlying is equal to the strike price of the near-term call.

This strategy is very similar to the covered call writing strategy except that instead of buying shares, longer-term call options are bought and near-term call options are sold right after. As such, the diagonal spread is less risky than the covered call strategy.

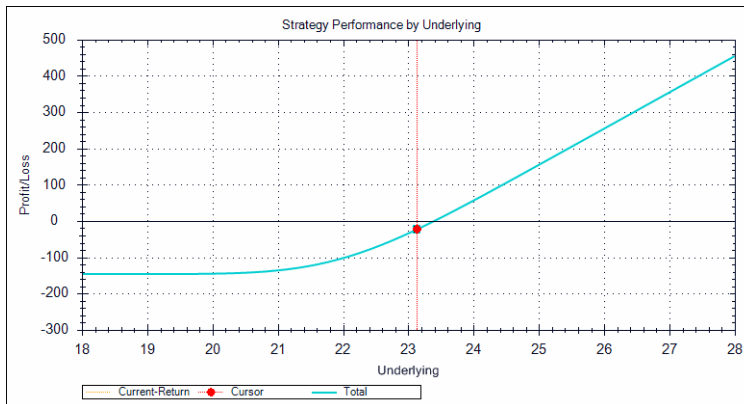
Let's look at an example using the iShares S&P/TSX Capped Financials Index ETF (XFN), which was trading at \$23.12 on April 24, 2012. We will look at two cases. The first case illustrates an investor anticipating the price of XFN to remain relatively stable with a strong probability that the price of XFN will rise by the expiration of the call in June. In the second case, the investor anticipates an immediate rise in the price of XFN, before taking advantage of the relative price stability of XFN.

In the first case, the investor buys a call option at a strike price of \$22 expiring in July for \$1.45 per share, and simultaneously sells a call option expiring in June at a strike price of \$23 for \$0.60. The position debit is \$0.85 per share (or \$85 per option contract).

**Figure 1\* – Profit and loss profile from the sale of the near-term XFN JUN 23 call at expiration**



**Figure 2 – Profit and loss profile from the purchase of the longer-term XFN JUL 22 call at expiration of the near-term call**



**Figure 3 – Payoff of the diagonal call spread at expiration of the near-term XFN JUN 23 call**

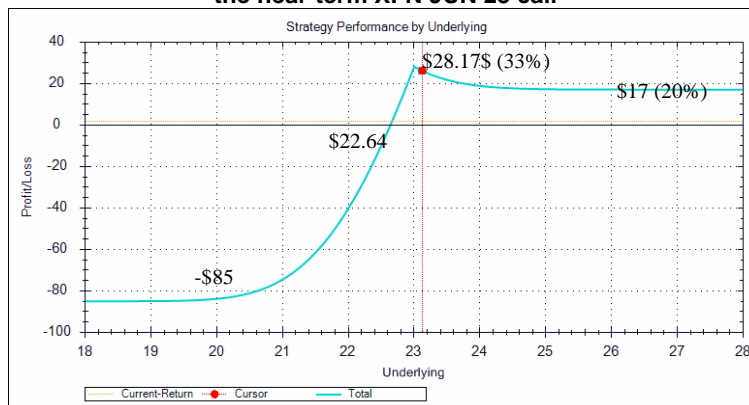


Figure 3 illustrates that the maximum profit of \$28.17 (33%) of the diagonal spread is realized if the price of XFN stays relatively stable and closes exactly at the strike price of \$23 at expiration of the near-term call. Even though it is possible to take advantage of the relative price stability of XFN, it is a bullish strategy since it is possible to realize a profit of almost \$17 (20%) if the price of XFN continues to rise above \$23. The strategy will generate a profit if the price of XFN is higher than the breakeven price of \$22.64 at the expiration of the call in June. The maximum loss of \$85 (the position debit) occurs if the price of XFN declines below \$21. In this case,

\* All graphs are created using OptionsOracle.

the investor would rather see the price of XFN close slightly below the strike price of \$23 at expiration of the call in June in order for the near-term option to expire worthless. The investor will then decide whether or not to keep the longer-term call based on their expectations for the price of XFN. If the price of XFN is greater than the strike price of \$23 at expiration of the call in June, the investor could buy-back the near-term call previously sold in order to avoid selling the underlying XFN.

In the second case, the investor decides to buy a call expiring in July at a strike price of \$22 for a price of \$1.45 per share. The investor simultaneously sells a call expiring in June with a strike price of \$24 for a price of \$0.15 per share. The position debit is \$1.30 per share (\$130 per option contract).

**Figure 4 – Payoff of the diagonal call spread at expiration of the near-term XFN JUN 24 call**

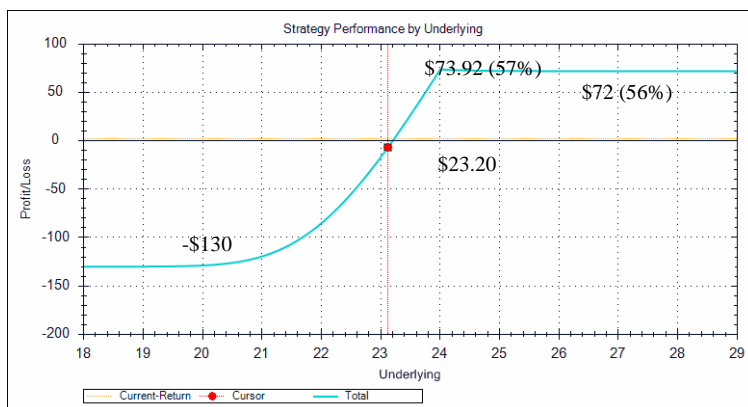


Figure 4 illustrates that the maximum profit of \$73.92 (57%) of the diagonal spread is realized if the price of XFN rises and closes exactly at the strike price of \$24 at expiration of the near-term call option. Furthermore, we observe that an increase in the price of XFN above the strike price of \$24 will generate a profit almost equal to the maximum profit. In this case, the risk is greater since the position generates a loss as soon as the price of XFN begins to decline. The maximum loss of \$130 is realized when the price of XFN declines under \$20. As in the previous case, the investor would rather see the price of XFN close slightly below the strike price of \$24 at expiration of the call option in June in order for the near-term call option to expire worthless. The investor will have the opportunity to keep the longer-term call option based on their views for the price of XFN. If the price of XFN is higher than the strike price of \$24 at expiration of the call in June, the investor may buy-back the near-term call previously sold in order to avoid selling the underlying XFN.

**Figure 5 – Payoff of the covered call strategy at expiration of the near-term XFN JUN 24 call**

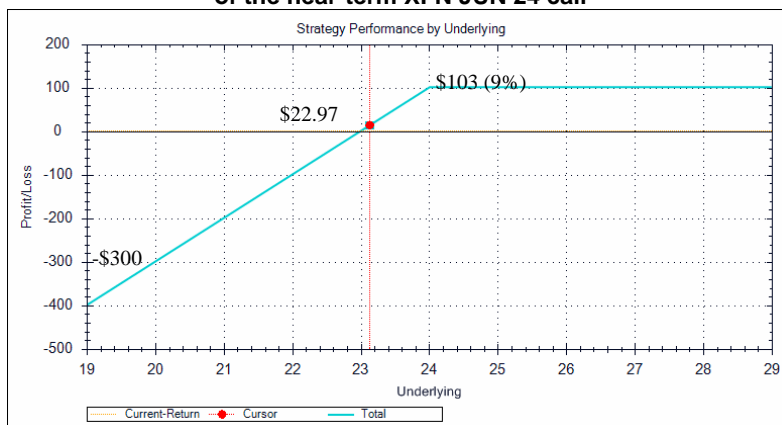


Figure 5 illustrates the covered call strategy constructed by selling one call with a strike price of \$24 expiring in June at \$0.15 per share. We observe that the maximum profit is also realized when the price of XFN is higher than the strike price of \$24 at expiration of the call in June. The maximum profit of \$103 is greater than the maximum profit of \$73.92 as illustrated in the previous case while the return of 9% is much lower than the 57%

return of the previous case since much more capital is required to establish the covered call strategy. When the price of XFN reaches \$20, we observe a loss of \$300 for the covered call strategy and a loss of \$130 for the diagonal spread strategy. The maximum loss increases linearly when the price of XFN decreases whereas the loss on the diagonal spread is limited to \$130. The covered call strategy thus seems to be much riskier than the diagonal spread strategy.

### Diagonal spreads using put options

Diagonal put spreads are constructed with the sale of a near-term put and the purchase of a longer-term put at a different strike price. Although, the strike price of the near-term option could be higher than the strike price of the longer-term option, the strategy works best when lower strike prices are chosen. The objective of the diagonal put spread is to take advantage of time decay, which is greater for nearer-term options than for longer-term options, while allowing to profit from an underlying price decrease. The maximum profit is realized at the expiration of the near-term put when the price of the underlying is equal to the strike price of the short-term put.

In the following example, an investor anticipates an immediate drop in the price of XFN before taking advantage of relative share price stability later on. The investor decides to buy a put at a strike price of \$24 expiring in July for \$1.15 per share and simultaneously sells a put at a strike price of \$22 expiring in June for \$0.35 per share. The position debit is \$0.80 per share (or \$80 per option contract).

**Figure 6 – Payoff of the diagonal put spread at expiration of the near-term XFN JUN 22 put**

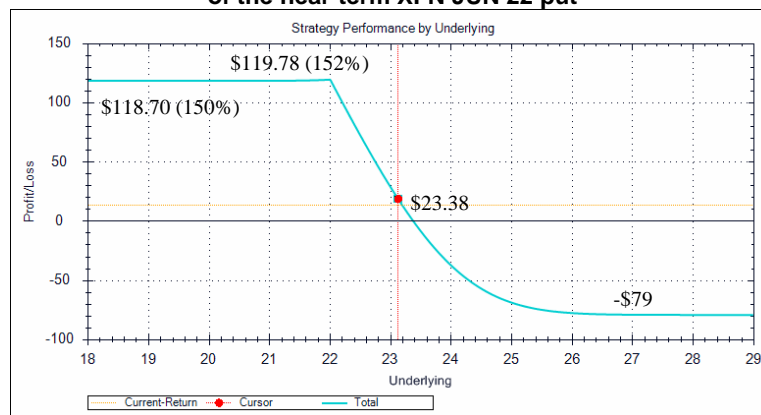


Figure 6 illustrates that the maximum profit of \$119.78 (152%) of the diagonal spread is realized if the price of XFN decreases and closes exactly at the strike price of \$22 at expiry of the near-term put. Furthermore, we observe that a decline in the price of XFN below the strike price of \$22 at expiration of the put in June will generate a profit more or less equal to the maximum profit. The maximum loss of \$79 is realized when the price of XFN rises above \$26. The investor would rather see the price of XFN close slightly below the strike price of \$22 at expiration of the put in June in order for the near-term put to expire worthless. The investor will have the opportunity to keep the longer-term put based on their views on the price of XFN. If the price of XFN is lower than the strike price of \$22 at expiration of the put in June, the investor could buy-back the near-term put sold previously in order to avoid buying the underlying XFN.

### Conclusion

Diagonal calendar spreads can be constructed using either call or put options. They allow an investor to take advantage of the time decay of options and the price fluctuations of the underlying. The risk of this strategy is limited to the net premium paid and a maximum profit realized when the price of the underlying is equal to the strike price of the near-term option. An investor expecting a stock price increase will favor the use of call options in the construction of the diagonal spread strategy. Specifically, near-term calls will be sold at a strike price higher than the strike price of the longer-term calls bought. Whereas an investor expecting a stock price decline will favor the use of puts in the construction of the diagonal spread strategy. In this case, near-term puts will be sold at a lower strike price than that of the longer-term puts bought. Choosing the expiration date of the longer-term option will depend on the time horizon the investor believes necessary for the stock price to rise or fall according to their views following the expiration of the near-term option.