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The document has been prepared to introduce some of the key terms and concepts associated with futures and futures options trading. Investors are reminded that the risk of loss from trading futures or futures options can be substantial and these products may not be for everyone. Investors also need to consider the level of risk they are willing to accept and the suitability of any investment before acquiring a position. The following information is not to be construed as an offer to sell or a solicitation or an offer to buy any futures or futures options. It is simply provided to you as is, for general use and information purposes only by Union Securities Ltd. Please contact your USL broker for further assistance.

Managing Risk with Futures Options Hedging Examples

In previous articles we have introduced the concept of futures options along with some objectives of traders who implement strategies using these instruments. We will now take a look at strategies involving long and/or short futures options that can be used to manage risk. It is important to remember that while strategies presented are hypothetical and focused towards managing agricultural risk, they may also be applicable to other business sectors as well.

Long Put Options:

At seeding time November canola futures are trading at \$400.00/mt. The purchase of an “at the money” put option provides the purchaser with the right, but not the obligation to sell, November futures at \$400.00/mt, any business day between the purchase date and the instruments expiration date.

Strike Price	November Put Options Premium	Termed
\$390.00	\$21.90	In The Money
\$400.00	\$16.40	At The Money
\$410.00	\$11.90	Out Of The Money

Let us assume that a local elevator basis for October delivery is currently at a discount of \$25.00/mt to the November futures contract. This basis is considered to be quite attractive considering current market conditions so it is “locked in” vis-à-vis a Basis Contract. This process of purchasing a Put option and fixing a basis effectively establishes the grower with a floor price against anticipated fall production:

Strike - Premium - Local Basis (locked in) = Floor Price

\$400.00 - \$16.40 - \$25.00 = \$358.60/mt (\$8.13/bushel)

If canola futures prices strengthen by the time delivery is made in October, the product will be sold and priced at a higher level in the cash market and the option position left to expire, probably worthless. If canola prices weaken by the delivery date, the crop may be sold at the lower cash price and any returns from selling or exercising the option position would be applied against the cash sale.

Put Option Example

A grower has seeded 400 acres of canola and anticipates production of 360 mt. It is currently May and the November futures are trading at \$420.00/mt. While this price may be profitable for the grower, he is not comfortable pre-pricing as harvest is some time away and he has a bullish bias towards the market. Quoted basis levels for October delivery are considered to be attractive at a \$25.00/mt discount to the November futures contract and “at the money” put options are trading at \$22.00/mt.

By purchasing an “at the money” option and committing to a basis contract at -\$25.00 the following floor price can be established:

Strike price - Premium - Basis Locked In = Floor Price

\$420.00 - \$22.00 - \$25.00 = \$373.00/mt or \$8.46/bushel

If November futures have declined to \$380.00 by the time the product is delivered in October, the 420 put options would have \$40.00 of intrinsic value. The Put option’s intrinsic value could then be recovered by sale or exercise and the proceeds used to supplement the \$355.00 received in the cash market (\$380.00 -\$25.00 basis = \$355.00).

Therefore our grower’s net return can be calculated as:

Cash Market Sale + Intrinsic Value - Premium Paid

\$355.00 + \$40.00 - \$22.00 = \$373.00/mt or (\$8.46/bu)

Long Call Options:

Long call option strategies provide a purchaser with the right to a long futures position at a specified price and within a specified time. They are often used to manage price risk by end-users and merchandisers who are concerned over strengthening prices.

Moreover, call options are also commonly used to provide a grower with the opportunity to remain in a market position upon making either spot-cash or deferred delivery commitments in the local market. For example, let us assume that Canola is sold during harvest to a grain facility at a net price of \$345/mt. The January futures price is currently \$380/mt and the November futures are at \$375.00.

January Call Options:		
Strike Price	Premium	Termed
\$390.00	\$14.00	Out Of The Money
\$380.00	\$19.00	At The Money
\$370.00	\$26.00	In The Money

A long call option provides the opportunity for the grower to remain in a market position should canola prices strengthen post harvest. At any time between the purchase date and expiry date, the option holder upon exercising, would receive a long futures position at the purchased strike price.

Call Option Example

A canola grower, due to lack of bin space, delivers 200 mt to his local elevator at harvest time.

Because of financial commitments the canola is sold at the time of delivery for a spot price of \$310/mt or \$7.03/bushel. He feels that post harvest prices will be stronger and consequently purchases 10 Canola Call options based on the January futures which are trading at \$350.00/mt. The cost of each option is \$10.00/mt and are “at the money” options.

This position will expire on the third Friday of the month preceding the futures delivery contract month and the total cost of this position can be calculated as:

$$(10 \times 20 \text{ mt contracts}) \times \$10.00/\text{mt} = \$2,000$$

If the January Canola futures contract is trading at \$387.00/mt in December, the intrinsic value of the January 350 call options can be calculated as:

$$\text{Futures Price} - \text{Strike Price} = \text{Intrinsic Value}$$

$$\$387.00 - \$350.00 = \$37.00/\text{mt} \text{ or } \$0.84/\text{bushel}$$

The preceding examples are two basic strategies that demonstrate how a grower can use futures options to manage risk by establishing a floor price on anticipated production or to participate in a rise in the futures market after the sale of the corresponding cash commodity. Alternatively, an end-user or processor may implement similar strategies using call options to hedge a short position in the corresponding cash commodity.

A common complaint from Canadian growers is that option premiums are expensive. While such comments are subjective, it is important to recognize that volatility is a critical element in determining an options premium. Generally, as volatility in an underlying contract increases, so will the corresponding option premium. When volatility is considered to be high it may be advantageous to implement an option spread strategy as opposed to an outright purchase. The following “fence” strategy demonstrates how the net cost of a long put option can be partially offset with the sale of a short call option

position. Naturally, this type of strategy is intended to manage downside risk in the corresponding cash market. However, by including a short call option in the strategy a ceiling is essentially placed on the value of the commodity in the corresponding cash market.

Option Fence - Example

A canola grower establishes a “fence” option strategy to minimize price risk on 200 tonnes of anticipated production. A basis contract is also used to lock-in a fall basis which at \$25.00 under the November futures is considered to be reasonable. The strategy involves the purchase of a 360 put option and the sale of a 400 call option when the November futures are trading at \$360.00/mt. This combination of a long put and a short call option has a lower net debit than a comparable long put option strategy therefore provides the advantage of a higher minimum floor price. However, the addition of a short call has the disadvantage of requiring margin and limits the upside potential by setting a price ceiling on the cash commodity.

November Canola Option Premiums			
Strike	Put Options	Strike	Call Options
370	\$23.50	390	\$12.30
360	\$19.00	400	\$9.00
350	\$16.50	410	\$5.40
340	\$12.70	420	\$2.00

$$\text{Put Option Strike} - \text{Net Dr. (Put Debit} - \text{Call Credit)} - \text{Basis} = \text{Floor Price}$$

$$\$360.00 - \$10.00 - \$25.00 = \$325.00/\text{mt or } \$7.37/\text{ bushel}$$

$$\text{Call Option Strike} - \text{Net Dr. (Put Debit} - \text{Call Credit)} - \text{Basis} = \text{Ceiling Price}$$

$$\$400.00 - \$10.00 - \$25.00 = \$365.00/\text{mt or } \$8.28/\text{ bushel}$$

The above strategy performs best in situations where downside protection is required and the individual’s market sentiment is neutral to mildly bullish. The main advantage of this strategy over the outright purchase of a comparable put option is a smaller net debit which in-turn provides the grower with a higher floor price. Two other option strategies that are commonly used to manage price risk and provide an advantage of predetermined risk levels are vertical price spreads.

The **Bull (Vertical) Call Spread** is a debit spread that involves the purchase of a call option with a lower strike price and the writing (sale) of a call option with a higher strike price in the same contract month. In this strategy the maximum net reward is equal to the difference of strike prices between the short call and that of the long call, less the net debit. It is usually established by individuals who are mildly bullish and are looking for a replacement to cash sales or to hedge a short cash position.

Bull Vertical Spread:

Upon making a sale into the cash market, a soybean grower elects to extend his price ceiling with a vertical call spread strategy. This individual's market bias is mildly bullish and when the March soybean futures are trading at \$7.35/bu a strategy is implemented involving a long March 750 call option at a premium of U.S. \$.14/bu and a short March 775 call option at a premium of U.S. \$.085/bu.

With this strategy the maximum risk is limited to the difference between the debit incurred for the long option and the credit acquired from the sale of the short option:

Maximum Risk = Option Premium Paid (Dr.) – Option Premium Received (Cr.)
Maximum Risk = \$0.14 - \$0.085 = \$0.06

The maximum net reward of the option strategy is limited to the difference of the two strike prices minus the net premium paid for the position:

Maximum Reward = Higher Strike – Lower Strike – Net Premium Paid (Dr.)
Maximum Reward = \$7.75 - \$7.50 - \$0.06 = \$0.19

The breakeven price of this strategy can be determined by adding the net premium (Dr.) to the strike price of the long call (lower strike):

Breakeven Price = Lower Strike + Net Premium Paid (Dr.)
Breakeven Price = \$7.50 + \$0.06 = \$7.56/bu

Conversely the **Bear (Vertical) Put Spread** is a debit spread that involves the purchase of a put option with a higher strike price and the writing (sale) of a put option with a lower strike price in the same contract month. In this strategy the maximum net reward is equal to the difference of strike prices between the long put and that of the short put, less the net debit of establishing the position. It is usually established by individuals who are mildly bearish and are looking to hedge a long cash position.

Bear Vertical Spreads:

A hog producer establishes a vertical put strategy to reduce risk of lower prices from anticipated sales in the cash market. This individual's market bias is neutral to mildly bearish and when the December Lean Hog futures are trading at \$61.00/cwt a strategy is implemented involving the purchase of a December 60.00 Lean Hog put at premium of \$2.50/cwt and the sale of a December 56.00 Lean Hog put at \$1.50/cwt.

This strategy's maximum risk is limited to the difference between the debit incurred for the long option and the credit acquired from the sale of the short option:

Maximum Risk = Option Premium Paid (Dr.) – Option Premium Received (Cr.)
Maximum Risk = \$2.50 - \$1.50 = \$1.00/cwt

The maximum net reward of the option strategy is limited to the difference of the two strike prices minus the net premium paid for the position:

Maximum Reward = Higher Strike – Lower Strike – Net Premium Paid (Dr.)

Maximum Reward = \$60.00 - \$56.00 - \$1.00 = \$3.00/cwt

The breakeven price of this strategy can be determined by subtracting the net premium (Dr.) from the strike price of the long put (higher strike):

Breakeven Price = Higher Strike - Net Premium Paid (Dr.)

Breakeven Price = \$60.00 - \$1.00 = \$59.00/cwt

While option spreads can provide economical advantages there may be some unique risks and potential drawbacks, which hedgers and traders need to be informed about. Prior to establishing spread positions, any or all of the following items should be reviewed and discussed with a qualified futures Account Executive:

- difficulty in execution
- margins, commission and other fees
- PIT risk
- risk of exercise
- currency risk
- cash market correlation

This completes the fourth document of a series in Futures and Futures Options Trading – please see related articles located in our website at

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