Risk Management

The Window Strategy with Options

Mark Welch, Dean McCorkle and Steve Amosson*

The volatility of agricultural commodity prices makes marketing just as important as production. Producers should protect themselves from downside price risk. Having a marketing strategy that also allows you to capitalize on rising prices is beneficial as long as it enables you to meet your price objective and stay within your range of financial risk and cash flow ability. Knowing your production costs (both variable and fixed) and range of acceptable production, price and financial risks is the key to determining your price objective and developing a marketing plan that is right for your operation.

There are several marketing strategies that use futures and options to establish a floor price and allow for upside price potential. The problem with many of these strategies is that the option premium is often higher than many producers can justify. One hedging strategy that sets a price floor and allows for limited upside price potential, while also reducing option premium costs, is referred to as a window (or fence).

How the Window Strategy Works

The window strategy involves simultaneously buying a put option and selling a call option. Because you can choose whichever strike prices you desire (from among the strikes offered), the window strategy can be customized to best fit your situation. For example, you can choose

strike prices that guarantee the premium received from the call option will totally offset the cost of the put option, prices that establish a floor price that at least covers your variable costs, or any other possible objective you may want to achieve with your window strategy. The window, or the range between the floor price and price ceiling, is determined by these two strike prices.

With a window, the floor price is derived (Fig. 1) in a way similar to the purchase of a put option. The difference is that with a window you need to take into account the premium received from selling (writing) the call option. The writing of the call option is what establishes the price ceiling, or maximum net price you receive. The method of deriving the price ceiling (Fig. 2) is the same as for determining the price floor, except that you start off with the call strike price rather than the put strike price. Remember, the call strike price is what determines the price ceiling.

Window price floor =
    Put strike price
– Put premium paid
+ Call premium received
+ Local basis (may be negative)
– Brokerage/transaction costs

Figure 1. Floor price with a window.

*Assistant Professor and Extension Economist–Grain Marketing, Extension Program Specialist–Economic Accountability, and Professor and Extension Economist–Management, The Texas A&M System.

Figure 2. Price ceiling with a window.

Margin Money for Writing Call Options

A word of caution is needed at this point. The writing of a call option requires you to maintain a margin account because the option writer (seller) must maintain equity in his/her position. Call option premiums fluctuate based on market conditions. Margin calls are based on the change in the value of the call option premium. For example, assume wheat futures are trading at $5.50 per bushel and you sell an out-of-the money wheat call option with a $6.00 strike price for $0.23 (the premium). A few weeks later, the futures price rises to $5.90, which increases the option premium to $0.40. In this case, you would be required to make a margin call of $0.17 ($0.40 - $0.23). For more information on margin accounts related to writing call options, see publication E-499, "Introduction to Options."

Call option sellers also should be aware of the possibility of being exercised upon. If the futures price is above the call strike price at any time prior to expiration, the buyer of the call option has incentive to exercise the call option. If the option holder (the buyer) chooses to do so, the option seller (you in this case) could be placed in a short position at the strike price, which would likely result in a loss for the call option seller. When a call option holder exercises a call, the futures exchange (where the trade took place) randomly assigns the short futures position to someone who has sold a call option. Keep in mind that any loss on the call option, which is paid through margin calls, will be roughly offset later by a higher cash price received when the grain is sold. But, a short-term cash flow problem could arise.

A Window Strategy Example

To illustrate the use of the window strategy, assume Jack Farmer is contemplating which strategy to use in marketing a portion of his corn, which will be sold in mid-October (at harvest). It is April now

and Jack is reviewing strike prices and premiums for puts and calls (Fig. 3). The December futures price is $3.40 and Jack anticipates a basis of -$0.10.

December Corn		
Strike price	Put premium	Call premium
$3.00	0.12½	0.26¼
$3.10	0.17½	0.22
$3.20	0.23	0.18
$3.30	0.28	0.14¼
$3.40	0.35½	0.10¼
$3.50	0.43	0.08¾
$3.60	0.52⅛	0.06½
$3.70	0.60⅞	0.05
$3.80	0.69⅞	0.04¼
$3.90	0.77½	0.03½
$4.00	0.86⅞	0.02¾

Figure 3. Put and call information.

After analyzing the strike prices, associated premiums, and anticipated results of different combinations of strike prices, Jack decides to initiate a window strategy by buying a $3.30 put option and selling a $3.70 call option. The expected results of the window strategy can be found in Table 1, which includes the estimated net price received across a range ($3.00 to $4.00) of December futures prices.

Please review Figure 4 for deriving a gain or loss on options. With this window strategy, the floor price is $2.95 and the price ceiling is $3.35. Some key observations from Table 1 are:

- When the futures price is equal to or less than the put strike price, the net price received is the same and is equal to the floor price. This occurs when the futures price is equal to or below $3.30 in Jack's example.
- When the futures price is between the two strike prices, a loss is incurred on the put option that is equal to the put premium. The put option expires having no value. Also, when the futures price is equal to or below the call strike price, you keep the entire amount received from selling the call option. This is the single most important advantage of the window strategy; i.e., downside price protection provided by the put option is less costly because income received from selling the call option reduces the cost of the put option. With Jack's

Gain or Loss when Buying a Put

If the futures price is less than the put option strike price:
Option gain/loss = put strike price – futures price – put option premium

If the futures price is equal to or higher than the put option strike price :
Option loss = put option premium (the most you can lose is the premium paid)

Gain or Loss when Selling a Call

If the futures price is less than the call option strike price:
Option gain = call option premium (the most you can gain is the premium received)

If the futures price is equal to or higher than the call option strike price:
Option gain/loss = call option strike price – futures price + call option premium

Figure 4. Deriving option gains/losses with the window strategy.

window, the net cost of the put option is $0.23 ($0.05 - $0.28) if the futures price remains below the call strike price. When the price is rising, yet remains below the call strike price, Jack benefits to the full extent of the price increase.

- When the futures price moves above the call strike price, Jack will more than likely be exercised upon, thus placing him in a short position at the call strike price. The higher the futures price, the bigger the loss incurred from selling the call option. The cash price is also rising and offsetting the

loss on the call, which develops into the price ceiling.

Producers considering a window strategy need to be aware of the added risks associated with poor crop production. If your crop yield falls short of the amount hedged, and prices rise significantly, there will not be enough production to sell in the cash market (which is rising also) to offset the loss on the call option.

Figure 5 illustrates Jack's window strategy. The range of possible net prices received is represented on the left axis. These are the net prices Jack would receive depending on what the futures price turns
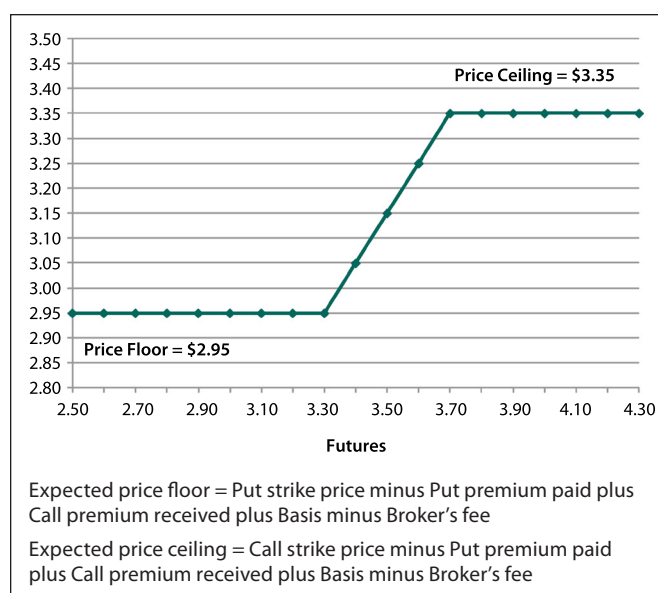

Expected price floor = Put strike price minus Put premium paid plus Call premium received plus Basis minus Broker's fee

Expected price ceiling = Call strike price minus Put premium paid plus Call premium received plus Basis minus Broker's fee

Figure 5. Illustration of Jack's window marketing strategy (buy a $3.30 Put at $0.28 and sell a $3.70 Call at $0.05; basis = $-0.10; broker's fee = $0.02).

Table 1. Estimated results of window strategy (buy $3.30 put at $0.28, sell $3.70 call at $0.05).

If Dec. futures is:	Est. basis	Cash price	Put gain/loss	Call gain/loss	Brokerage fees	Net price
$3.00	-$0.10	$2.90	+$0.02	+$0.05	$0.02	$2.95
$3.10	-$0.10	$3.00	-$0.08	+$0.05	$0.02	$2.95
$3.20	-$0.10	$3.10	-$0.18	+$0.05	$0.02	$2.95
$3.30	-$0.10	$3.20	-$0.28	+$0.05	$0.02	$2.95
$3.40	-$0.10	$3.30	-$0.28	+$0.05	$0.02	$3.05
$3.50	-$0.10	$3.40	-$0.28	+$0.05	$0.02	$3.15
$3.60	-$0.10	$3.50	-$0.28	+$0.05	$0.02	$3.25
$3.70	-$0.10	$3.60	-$0.28	+$0.05	$0.02	$3.35
$3.80	-$0.10	$3.70	-$0.28	-$0.05	$0.02	$3.35
$3.90	-$0.10	$3.80	-$0.28	-$0.15	$0.02	$3.35
$4.00	-$0.10	$3.90	-$0.28	-$0.25	$0.02	$3.35

out to be when he closes the trade and sells the grain. The bottom axis consists of a range of possible futures prices. The line represents the net price Jack would receive across the range of possible futures prices and depicts the floor price at $2.95 and price ceiling at $3.35, as well the area of increasing net prices when the futures price is between the strike prices.

As with any marketing strategy, an estimate of the basis must be made. If and when the actual basis turns out to be different than your estimate, the net price you realize will be higher or lower than you projected.

When to Use the Window Strategy

Now that you are familiar with how the window strategy works, when is a good time to consider using it? This depends on many factors such as your cost of production (including fixed costs), cash flow requirements, price objective, your market outlook, and how much price risk you are willing to accept. Developing a marketing plan will help you gather this information.

In general, the window strategy can be used when you:

- feel prices are high enough to cover break-even costs but you are uncertain as to the future direction of the market;

- believe the put premium is too high;
- need or want downside price protection but want to retain some upside potential;
- are willing to accept the price ceiling if the futures price moves above the call option strike price.

The window strategy allows the producer to offset the put premium, which can be expensive because of market volatility and/or time value. The producer can design the strategy so that it reflects how much he wants to spend (net premium cost) or how optimistic he is about the market, or to cover a certain level of costs.

Before using the window strategy, make sure you feel comfortable with the necessary tools and concepts it involves. These include put options, call options, futures contracts, basis, and margin accounts. If you feel comfortable with the mechanics of the window strategy and are contemplating using it, creating a worksheet similar to Table 1 will help you map out the range of possible outcomes and eliminate the possibility of any big surprises after the window has been initiated. If you are a computer user, a worksheet can be created easily in a computer spreadsheet. Using a spreadsheet makes the calculations much simpler, especially when deriving the gain or loss on the options.