

Rolling Up a Put Option as Prices Increase

Overview

- Agricultural producers commonly use put options to protect themselves against price declines that can occur during the production year.
- A put option of a futures contract gives the buyer the right to sell the underlying commodity at a specified price (its strike price) for a fixed period of time (until its expiration). Whereas, a short hedge (selling a futures contract) locks in a fixed selling price, a put option allows a producer to establish only the minimum expected selling price while retaining the potential to benefit from price increases.
- The use of put options by “rolling up” put options helps to improve a producer’s minimum expected selling price when the price of the underlying commodity increases, while retaining the potential to benefit from further price increases.
- Rolling can be defined as a trading action in which the trader simultaneously closes an open option position and creates a new option position at a different strike price, a different expiration, or both.
- Rolling up a put option, as prices increase, simply entails buying a put option with a higher strike price, while simultaneously selling a put option with a lower strike price. In this manner, a producer can raise the price floor (or minimum expected selling price) of a put option.

Rolling Up a Put Option

- The advantages include limited financial risk (limited to the put option premium), no margin calls, and more pricing opportunities throughout the marketing period.
- The disadvantages of put options are generally related to the put option premium values, which must be paid by the purchaser up front and may not equal futures contract price changes. Another disadvantage is that the time value component generally decreases with the passage of time. This decrease accelerates as the option contract approaches expiration. Market observers will notice that time decay for put options occurs at a slightly slower rate than for call options.
- The strategy of rolling up put options as prices increase also incurs additional commission costs because there is more trading activity.
- A producer's liability when purchasing a put option is limited to the premium paid for the put option.

Rolling Up a Put Option *cont.*

- A producer using put options on agricultural futures contracts retains all benefits of commodity ownership during the lifetime of the put option and has “insured” the value of production against a decrease in value during the lifetime of the put.
- If the producer loses concern over a possible price decline, and the put options has market value remaining, the option may be sold.
- If the put option expires with no value, no action need be taken, the producer will simply market the commodity at a price at or above the minimum expected selling price.
- If the option expires in-the-money the producer can exercise the right to sell the underlying commodity at the put’s strike price. Alternatively, the producer may sell the put option, if it has market value, before the market closes on the option’s last trading day. The premium received for the put option’s sale will offset any financial loss from a decline in the value of the underlying commodity.

The Minimum Expected Selling Price

- The minimum expected selling price (MESP) established with the purchase of a put option can be calculated as:
 - $\text{MESP \#1} = \text{Strike Price} - \text{Put Option Premium} - \text{Commissions and Interest} + \text{Expected Basis}$
- Example of rolling up a put option for downside price risk management
 - The first action is buying a put option. Assume an expected basis of \$1.00 per bushel under the futures price, and commission and interest charges of \$0.02 per bushel for each trade. Assume that in September, the July wheat futures contract is trading at \$8.00 per bushel. Further, a July wheat put option with an \$8.00 strike price is trading for a premium of \$0.75 per bushel. This put option premium has no intrinsic value, the time value amounts to \$0.75 per bushel.
 - Action: Buy an \$8.00 (strike price) put option, which establishes a minimum expected selling price of \$6.23 per bushel.
 - $\text{MESP \#1} = \$8.00 - \$0.75 - \$0.02 - \$1.00 = \$6.23$

Scenario 1 – Wheat Prices Decrease

If wheat prices decrease from the initial level, the put option will gain intrinsic value as the \$8.00 per bushel strike price implies an in-the-money position. The remaining time value of the put option will be determined by the amount of the time remaining until the put option expires. If the July wheat futures contract were trading at \$7.00 per bushel at expiration, the producer would receive approximately \$1.00 per bushel from the put option (\$8.00 strike price minus \$7.00 futures).

Selling price of wheat at local delivery location:

\$6.00 per bushel
($\$7.00$ per bushel
- $\$1.00$ basis)

+ Realized gain from put options: +\$1.00 per bushel

-Put option premium: - \$0.75 per bushel

-Commission and interest: - \$0.02 per bushel

Result: The effective selling price of \$6.23 per bushel (subject to basis risk) is equal to the minimum expected selling price established with the put option. Thus, the put option gave protection from declining prices.

Scenario 2 – Wheat Prices Increase

Suppose that in February, the July wheat futures contract has increased to \$9.00 per bushel. A July wheat put option with an \$8.00 strike price is trading for a premium of \$0.08 per bushel and the July wheat put option with a \$9.00 strike price is trading for a premium of \$0.65 per bushel.

Action: Sell the \$8.00 put option for \$0.08 per bushel and buy the \$9.00 put option to increase the minimum expected selling price to \$6.64 per bushel

MESP #2 = strike price – net premium paid – commissions and interest \pm basis

MESP #2 = \$9.00 - \$1.32 - \$0.04 - \$1.00 = \$6.64

Result: Rolling up the put option allows the producer to raise the price floor, or minimum expected selling price, to \$6.64 per bushel, an increase of \$0.41 per bushel above the \$6.23 per bushel (MESP #1) established with the purchase of the initial \$8.00 strike price put option. If prices decline from this point, the producer can expect to receive less than \$6.64 per bushel subject to basis risk.

Scenario 3 – Wheat Prices Increase Again

Suppose that in April, the July wheat futures contract has increased again to \$9.70 per bushel. A July wheat put option with a \$9.00 strike price is trading for a premium of \$0.15 per bushel and the July wheat put option with a \$9.70 strike price is trading for a premium of \$0.45 per bushel. Notice that the at-the-money put option now trades for a smaller premium because the time value of the put option has decayed as the contract approaches expiration.

Action: Sell the \$9.00 put option previously purchased for \$0.15 per bushel and buy the \$9.70 put option to increase the minimum expected selling price (MESP #3) to \$7.02 per bushel.

MESP #3 = strike price – net premium paid – commission and interest \pm basis

MESP #3 = \$9.70 - \$1.62 - \$0.06 - \$1.00 = \$7.02

Result: Rolling up the put option again allows the producer to raise the price floor, or minimum expected selling price, to \$7.02 per bushel, an increase of \$0.38 per bushel above the \$6.64 per bushel (MESP #2) established with the purchase of the \$9.00 strike price put option. If prices decline from this point, the producer can expect to receive no less than \$7.02 per bushel subject to basis risk.

This scenario illustrates the concept of rolling up put options to raise the minimum expected selling price when the price of the underlying commodity increases over time. Taking advantage of increasing prices is an opportunity agricultural producers would hope to have each year. Unfortunately, when it does occur, they often fail to capitalize on the situation. The strategy of rolling up a put option allows a producer to benefit from increasing prices.

Appropriate Uses of This Strategy

- An agricultural producer who uses a put option marketing strategy typically produces the underlying commodity, but is concerned about possible market risks.
- The primary motivation of the producer is to protect the value of the commodity from a decrease in market price.
- The quantity of production covered with a put option contract is identical to the quantity specified in the underlying futures contract.
- A put option can be purchased to protect all or a portion of a producer's expected or insured level of production.
- This strategy enables the producer to choose the most appropriate time to sell or contract the commodity.
- If there is sudden, significant decrease in the market price, a put owner has the luxury of time to react.