

## Risk Management

# Using a Bear Put Spread

Stan Bevers, Steve Amosson, Mark Waller and Kevin Dhuyvetter\*

Options on agricultural commodities are often purchased to protect against unfavorable price moves. However, a disadvantage of buying options as price protection is the cost of the premium. Depending upon the volatility and time to expiration, option premiums can sometimes seem expensive. To reduce the premium cost a producer might consider selling (writing) an option. As the writer of an option, the producer is paid the option premium. This simultaneous buying and writing of options (creating an options spread) can be used to reduce option expenses while gaining some level of price protection. However, writing options does have risks, and producers should fully understand the risks and rewards of such strategies before attempting to use them.

One example of an option spread is the bear put spread. It involves simultaneously buying and selling different put options of the same contract month. Selling an out-of-the-money put option limits the amount that can be gained if prices decrease, but the premium received from the option sale reduces the net cost of the option purchased. This strategy might be used when the marketer is bearish on a market to a point (i.e., the marketer believes the market has limited downside risk). An attractive feature of the bear put spread is that once the strike prices are selected and the premiums are known, the maximum loss and net potential gain from the spread are also known.

## When to Use a Bear Put Spread

A producer can use a bear put spread to hedge against a falling market. However, if the market falls below the strike price of the sold put option, the producer's net price received (cash price plus gain from the spread) will decrease. In other words, a bear put spread provides limited downside protection. However, this marketing strategy may still be appropriate in certain situations. An example of a bear put spread would be hedging a growing crop such as corn. This spread is usually used when market volatility is fairly high and the outright purchase of a put option is considered too expensive.

The bear put spread may be of particular interest to dryland crop producers who face greater uncertainty in production. Like a put option, the bear put spread can protect a price (to a point) without having to deliver the commodity. While spreads have limited gains, the lower cost of the bear put spread can help the producer cover more production for the same cost.

## How a Bear Put Spread Works

In this type of spread, the producer of a commodity would buy a put option at a particular strike price and simultaneously sell a put option at a lower strike price. Typically, both options are traded in the same contract month. The spread loss is limited to the difference between the cost of the put option bought and the put option sold, plus commissions (i.e., the net cost



\*Professor and Extension Economist—Management, Professor and Extension Economist—Management, Associate Department Head and Extension Program Leader for Agricultural Economics, The Texas A&M System; and Professor and Extension Economist—Farm Management, Kansas State University Agricultural Experiment Station and Cooperative Extension Service.

of the two options). The spread gain is limited to the difference between the strike price of the put option bought and the strike price of the put option sold, less commissions and the net cost of the premium paid.

As an example, consider a corn producer who wants limited pre-harvest price protection. It is currently June 1 and he wants to protect a price on 5,000 bushels of his corn. He expects the futures price for corn to fall into harvest. Assume the producer does not want to use futures because of their upside price risk, but the premiums for at-the-money put options are relatively expensive because of the time to expiration and market volatility. In this case, the producer could use a bear put spread.

In this example, assume the current Chicago Board of Trade December Corn contract is trading at \$6.00 per bushel. The associated December put option premiums are listed in Table 1. The producer begins the strategy by buying a put option near the money, in this case a \$6.00 put option for \$0.90 per bushel (\$4,500 per 5,000-bushel contract). At the same time, he also writes (sells) a put option with a strike price below the put option. In our example, he writes a \$5.00 put option and receives \$0.45 per bushel (\$2,250 per 5,000-bushel contract). His net cost to implement the strategy (excluding commissions) is \$0.45 per bushel or \$2,250 per contract. This is demonstrated in Table 2.

The producer is assured that the most he will lose from the spread strategy alone is \$0.45 per bushel (\$2,250 per contract) plus commission costs. That would happen if the December futures price was at or above \$6.00 when the options contracts expire. In this case, both put options would expire worthless. However, the producer would have fulfilled his goal of protecting his corn price given an expected basis. The producer's net price received for his corn would be his cash price less the cost of implementing the strategy.

Table 1. December corn CBOT put option premiums, June 1.

Strike price	Premium
\$6.00	\$0.90
\$5.80	\$0.75
\$5.60	\$0.65
\$5.40	\$0.55
\$5.20	\$0.50
\$5.00	\$0.45

Table 2. Costs to implement strategy.

Action	Income/expense (\$/bu)	Income/expense (total \$)
Buy CBOT December \$6.00 put option	-\$0.90	-\$4,500
Sell CBOT December \$5.00 put option	+\$0.45	+\$2,250
Total expense	-\$0.45	-\$2,250

If the December futures price is below \$6.00 when the options contracts expire, the most the producer stands to gain from the spread would be \$0.55 per bushel (\$2,750 per 5,000-bushel contract) less commission costs. To determine the maximum gain, start with the strike price of the put option purchased, subtract the strike price of the put option sold, subtract the cost to implement the strategy (i.e., the net premium), and subtract the commission costs. In this example, the maximum gain, before commission costs, equals \$6.00 - \$5.00 - \$0.45, or \$0.55. Table 3 and Figure 1 summarize the results of the example bear put spread at varying futures settlement prices. This table shows the gain or loss on the options spread position, but it does not take into account the net price received by the producer

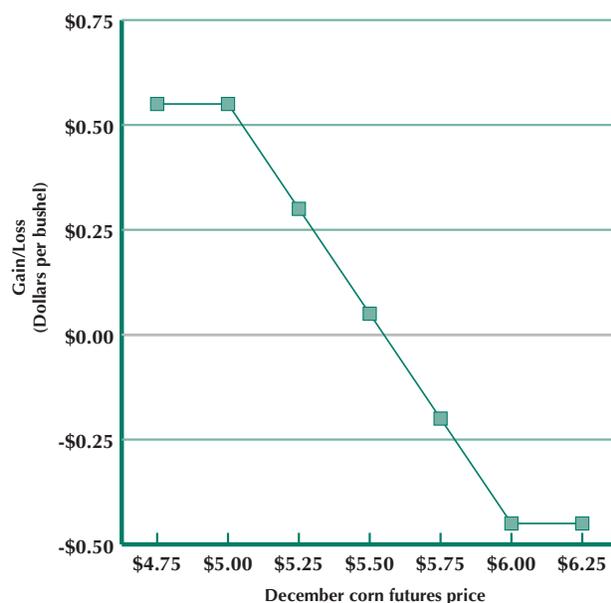
from the cash sale.

Table 3. Bear put spread results.

Dec. settle price	\$5.00 corn put	\$6.00 corn put	Initial cost (\$/bu)	Gain/loss <sup>1</sup> (\$/bu) (\$/contract)
\$6.25	\$0.00	\$0.00	\$0.45	-\$0.45 -\$2,250.00
\$6.00	\$0.00	\$0.00	\$0.45	-\$0.45 -\$2,250.00
\$5.75	\$0.00	\$0.25	\$0.45	-\$0.20 -\$1,000.00
\$5.50	\$0.00	\$0.50	\$0.45	\$0.05 \$250.00
\$5.25	\$0.00	\$0.75	\$0.45	\$0.30 \$1,500.00
\$5.00	\$0.00	\$1.00	\$0.45	\$0.55 \$2,750.00
\$4.75	\$0.25	\$1.25	\$0.45	\$0.55 \$2,750.00

<sup>1</sup>These values do not include commission costs.

Figure 1. Bear put spread.



Keep in mind that the gains and losses shown in Table 3 assume there is no remaining time value of the options when the position is liquidated. If there is time value remaining when the futures price is at \$4.75 (or \$6.25), you would

have a slightly smaller profit (loss) than the \$0.55 (-\$0.45) shown in Table 3. How much it would differ would depend on the difference in the time value of the two options when you got out of the trade; this is a function of the time remaining until expiration and the perceived risk in the market.

## Net Price Received by Using a Bear Put Spread

When determining the net price received (cash price plus bear put spread gain or loss), marketers should remember that the bear put spread protects a net price down to the strike price of the put option sold. After that point, the marketer is again at risk of a price drop. Table 4 and Figure 2 summarize the net price a producer would receive from both the cash price (considering a basis of \$0.25 under the December futures price) and the bear put spread.

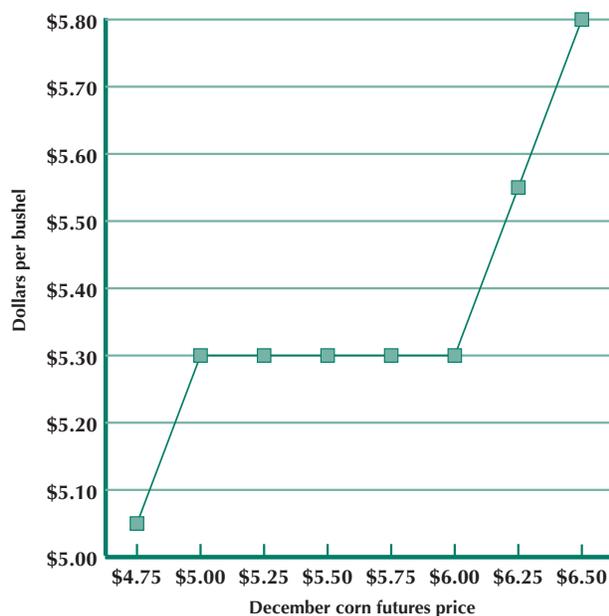
Table 4. Net price received from cash price and bear put spread gains/losses.<sup>1</sup>

Dec. settle price	Cash price <sup>2</sup>	Spread gain or loss	Net price received
\$6.50	\$6.25	-\$0.45	\$5.80
\$6.25	\$6.00	-\$0.45	\$5.55
\$6.00	\$5.75	-\$0.45	\$5.30
\$5.75	\$5.50	-\$0.20	\$5.30
\$5.50	\$5.25	\$0.05	\$5.30
\$5.25	\$5.00	\$0.30	\$5.30
\$5.00	\$4.75	\$0.55	\$5.30
\$4.75	\$4.50	\$0.55	\$5.05

<sup>1</sup>These values do not include commission costs.

<sup>2</sup>A basis of \$0.25 under December futures.

Figure 2. Net price received by producer.



## Margin Requirements

Ordinarily, producers do not like to write (sell) options because of the limited gains and unlimited risks. They must also make a margin deposit and have money for potential margin calls. With put options, if the market drops toward the writer's position, the writer will be subject to margin calls as the value of the put premium increases. However, with a bear put spread no margin money is necessary as long as both positions are maintained. The rationale for this is that in the case of a falling market, the purchased put option premium will always increase at the same rate or faster than the sold put option premium because it was purchased at a higher strike price. In other words, there would always be enough profit from the purchased put to more than offset the losses on the sold put as the futures market price falls.

## Option Exercise Risk

As the purchaser of an option, you have the right to exercise the option at any time from the purchase date until the expiration date. As the writer of an option, you must stand ready to be assigned a long position in the futures market if the option is exercised by the purchaser. However, if the purchaser

does exercise the option you sold, the value of the option you purchased with the higher strike price would maintain the margin deposit.

## Why Consider a Bear Put Spread

A bear put spread is a marketing tool that requires less cash outlay than the outright purchase of a put option, but also has less profit potential. This strategy will protect the net price received down to the strike price of the option sold. If the price continues to fall below this point, the marketer is again at risk of a falling market. Marketers would want to sell a put option with a strike price below a support plane on the futures chart.

### Advantages of a Bear Put Spread

- It is easy to implement.
- Little or no margin deposit or margin calls are required (check with your own broker).
- It may require less capital outlay than an outright purchase of a put option.
- A producer knows the most he can gain or lose from the spread.

### Disadvantages of a Bear Put Spread

- There is limited gain from the spread strategy.
- It offers only limited downside price protection (i.e., only protects prices down to the strike price of the put option sold).
- Two commission costs will probably be charged (check with your own broker).
- The put option sold can be exercised by the buyer of the option at any time.
- Both positions must be held until expiration to reap the maximum benefit.

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Partial funding support has been provided by the  
Texas Corn Producers, Texas Farm Bureau, and  
Cotton Inc.–Texas State Support Committee.

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Issued in furtherance of Cooperative Extension Work in Agriculture and Home Economics, Acts of Congress of May 8, 1914, as amended, and June 30, 1914, in cooperation with the United States Department of Agriculture. Edward G. Smith, Director, Texas AgriLife Extension Service, The Texas A&M System.