

Grain Price Hedging Basics

The business of a crop producer is to raise and market grain at a profitable price. As with any business, some years provide favorable profits and some years do not. Profit uncertainty for crop producers arises from both variance in the cost of production per bushel (especially from yield variability) and uncertainty of crop prices.

Many techniques are used by producers to reduce risk from production loss. These may include adequate size of machinery, rotating crops, diversification of enterprises, planting several different hybrids, crop insurance and many others.

Crop producers also have marketing techniques which can reduce the financial risk from changing prices. Rising prices generally are financially beneficial to producers and falling prices are generally harmful. However, it is never known with certainty whether prices will rise or fall. Futures hedging can help establish price either before or after harvest. By establishing a price, the producer protects against declines in price, but also generally eliminates any potential gain if price rises. Thus, through hedging with futures, producers can greatly reduce the financial impact of changing prices.

How Prices are Established

Prices of corn and soybeans are established in two separate but related markets. The futures market trades contracts for future delivery. These future contracts are traded at a commodity exchange and are for a specific time (contract delivery month), place (primarily Chicago, Illinois), grade (#2 yellow shelled corn), and quantity (5,000 or 1,000 bushel contract sizes). The cash market is where the physical grain is handled by firms such as country elevators, processors and terminals.

The term *basis* refers to the price difference between the local cash price and the futures price. The basis is different at alternative marketing locations. Thus, for effective marketing, it is important to be aware of the local basis at country elevators, as well as at nearby processors or terminals.

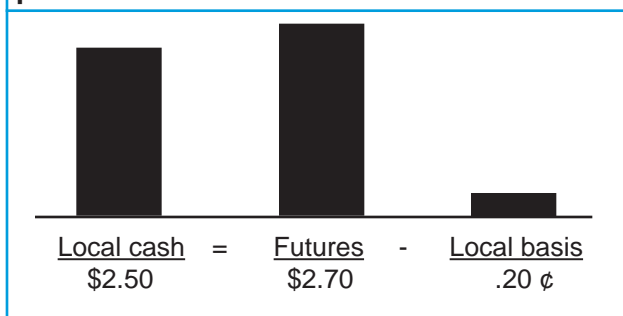
Local cash prices thus reflect two components: the futures price and the local basis. Figure 1 helps illustrate this point. As an example, a local cash bid of \$3.50 per bushel for corn may be derived from a futures price of \$3.70 and a local basis of 20 cents. It is helpful to think of local cash prices in terms of the futures component and the basis component when examining marketing alternatives.

The Hedging Concept

Producer hedging involves selling corn futures contracts as a temporary substitute for selling corn in the local cash market. Hedging is a temporary substitute, since the corn will eventually be sold in the cash market.

Hedging is defined as taking equal but opposite positions in the cash and futures market. For example, assume a producer who has harvested 10,000 bushels of corn and placed it in storage in a grain bin. By selling 10,000 bushels of corn futures the producer is in a hedged position. In this example, the producer is long (owns) 10,000 bushels of cash corn and short (sold) 10,000 bushels of futures corn.

Since the producer has sold futures, price has been established on the major component of the local cash price. This can be seen in Figure 1, which illustrates that the futures component is the most substantial portion of the local cash price.

Figure 1. Components of local cash corn prices

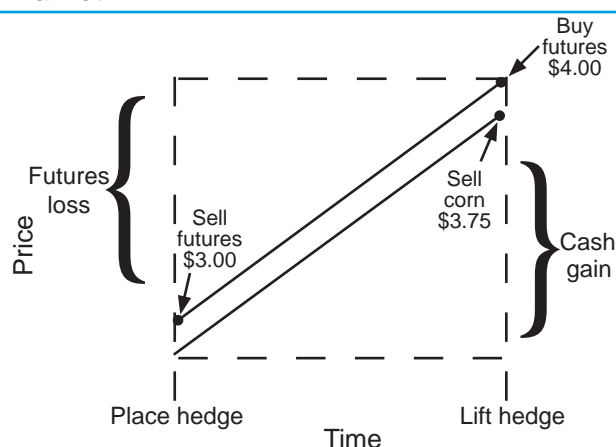
Selling futures in a hedge leaves the local basis unpriced. Thus, the final value of the corn is still subject to fluctuations in local basis. However, basis risk (variation) is much less than futures price risk (variation). By selling futures, the producer has eliminated the financial loss which would occur on the cash grain from a futures price decline.

The hedge position is removed or lifted when the producer is ready to sell the corn in the cash market. It is lifted in a simultaneous two-step process. The producer sells 10,000 bushels of corn to the local grain elevator and immediately buys back the futures position. The purchase of futures *offsets* the original short (sold) position in futures, and selling the cash grain converts the position to the cash market.

Producer Hedging Illustrations

Hedging involves taking opposite but equal positions in the cash and futures markets. If you own 10,000 bushels of corn as discussed above, you are long cash corn. If you sell 10,000 bushels of corn on the futures market you are short corn futures.

If the price increases as shown in Figure 2, the value of the cash corn also increases. However, the futures contract incurs a loss because you sold (short) corn futures and now have to buy corn futures at the higher price to close out the futures position. If both the cash and futures prices increase by the same amount, the increase in the value of the corn will exactly offset the loss in the futures market. The net price received from the hedge is exactly the same as the cash price when the hedge was initiated (not including trading cost, interest on margin money or storage costs).

Figure 2. Producer hedging in a rising market.

Place Hedge

\$3 futures price
 \$2.75 cash price
 \$-.25 basis (\$2.75 less \$3)

Lift Hedge

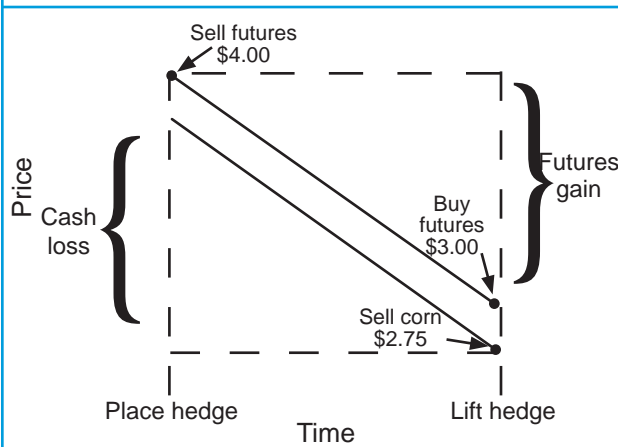
\$4 futures price
 \$3.75 cash price
 \$-.25 basis (\$3.75 less \$4)

Net Sale Price

\$3.75 cash sale less \$1 futures loss (sold at \$3 and bought at \$4) equals \$2.75 net price

If the price decreases as shown in Figure 3, the value of the cash corn also decreases in value. However, the futures contract results in a gain because you sold (short) corn futures and now can buy corn futures back at a lower price to close out the futures position. If both the cash and futures price decrease by the same amount, the decrease in the value of the corn will exactly offset the gain in the futures market. The net price received from the hedge is exactly the same as the cash price when the hedge was initiated (not including trading cost, interest on margin money and storage costs.)

Figure 3. Producer hedging in a declining market.



Place Hedge

\$4 futures price
 \$3.75 cash price
 \$-.25 basis (\$3.75 less \$4)

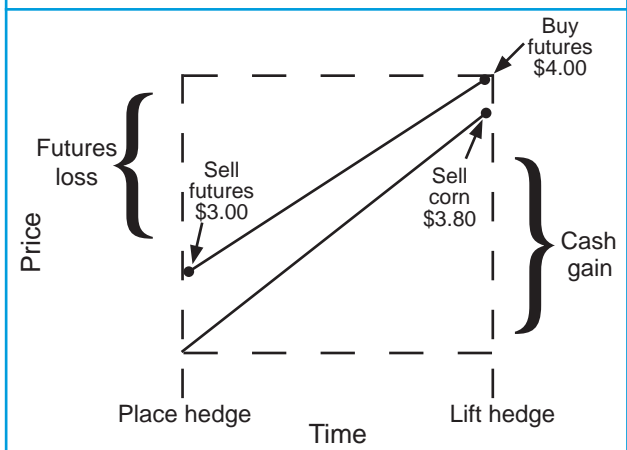
Lift Hedge

\$3 futures price
 \$2.75 cash price
 \$-.25 basis (\$2.75 less \$3)

Net Sale Price

\$2.75 cash sale plus \$1 futures gain (sold at \$4 and bought at \$3) equals \$3.75 net price

Figure 4. Producer hedging in a rising market.



Place Hedge

\$3 futures price
 \$2.60 cash price
 \$-.40 basis (\$2.60 less \$3)

Lift Hedge

\$4 futures price
 \$3.80 cash price
 \$-.20 basis (\$3.80 less \$4)

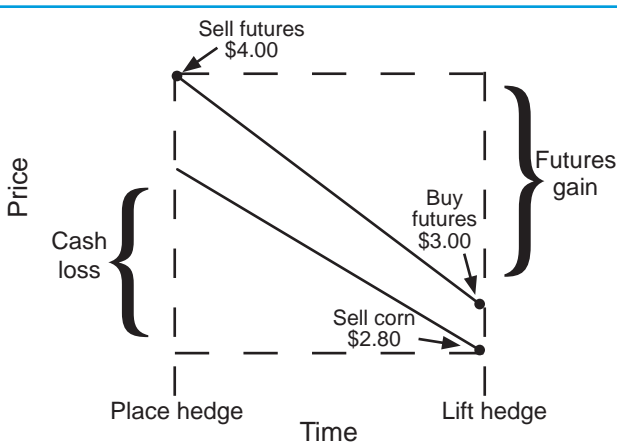
Net Sale Price

\$3.80 cash sale less \$1 futures loss (sold at \$3 and bought at \$4) equals \$2.80 net price

The difference between the cash price and the futures price is the basis. The basis in the illustrations in Figure 2 and 3 is the same when the hedge is lifted as when it was initially placed. However, if the basis is smaller when the hedge is lifted as shown in Figure 4, the gain in the cash market will be greater than the loss in the futures market and the net price received from the hedge will be slightly larger. The outcome is the same if prices decline (Figure 5). The loss in value of the cash grain will be less than the gain in the futures market resulting in a higher net price.

Basis usually narrows from harvest into the winter, spring and summer; resulting in a higher price. However, a higher price is needed due to the cost of storing grain past harvest. Whether the basis narrows and by how much is not known until the hedge is lifted. Although hedgers can lock in the futures price when they hedge, they are vulnerable to basis changes.

Figure 5. Producer hedging in a declining market.



Place Hedge

\$4 futures price
 \$3.60 cash price
 \$-.40 basis (\$3.60 less \$4)

Lift Hedge

\$3 futures price
 \$2.80 cash price
 \$-.20 basis (\$2.80 less \$3)

Net Sale Price

\$2.80 cash sale plus \$1 futures gain (sold at \$4 and bought at \$3) equals \$3.80 net price

Hedging can also be used to establish a price for a crop before harvest. Assume the hedge is placed before harvest but lifted at harvest. The net price (not including trading cost or interest on margin money) is the futures price at the time the hedge is placed, less the expected harvest basis. If prices are higher at harvest, the higher cash price is offset by the futures loss. If prices are lower, the futures gain is added to the lower cash price.

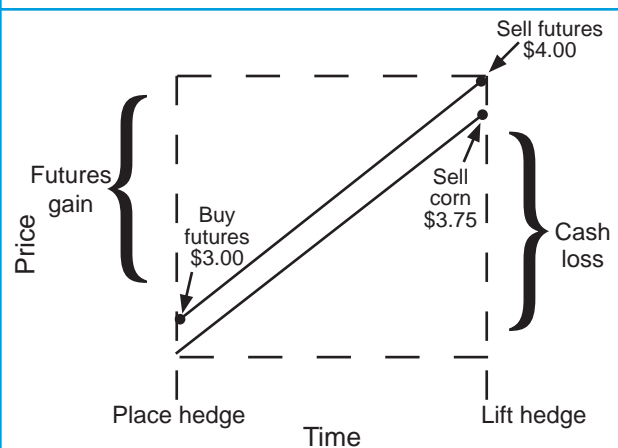
Processor Hedging Illustrations

If you are a grain processor or livestock producer needing grain for processing or feed, hedging can be used to protect against rising grain prices. Once again hedging involves taking opposite but equal positions in the cash and futures markets. But in this case, you don't have grain that you plan to sell but rather plan to buy grain at a future time period to

fill your processing or feed needs. Instead of selling futures at the time of placing the hedge, you buy futures. So you own grain (futures) in the futures market but are short grain in the cash market (will need grain but don't own any).

If grain prices rise as shown in Figure 6, you make money in the futures market because you purchased futures and can now sell them at a higher price. However, the grain for processing or feed needs now cost more. So the gain in the futures market offsets the increase in the grain purchase price.

Figure 6. Processor hedging in a rising market.



Place Hedge

\$3 futures price
 \$2.75 cash price
 \$-.25 basis (\$2.75 less \$3)

Lift Hedge

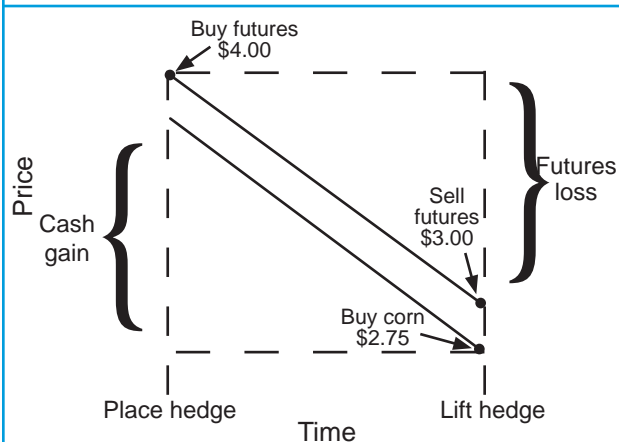
\$4 futures price
 \$3.75 cash price
 \$-.25 basis (\$3.75 less \$4)

Net Purchase Price

\$3.75 cash purchase less \$1 futures gain (bought at \$3 and sold at \$4) equals \$2.75 net purchase price

If grain prices drop as shown in Figure 7, the futures you purchased at the beginning of the period must now be sold at a lower price. However, the grain for your processing or feed needs now cost less. So the loss in the futures market offsets the decrease in the grain purchase price.

Figure 7. Processor hedging in a declining market.



Place Hedge

\$4 futures price
 \$3.75 cash price
 \$-.25 basis (\$3.75 less \$4)

Lift Hedge

\$3 futures price
 \$2.75 cash price
 \$-.25 basis (\$2.75 less \$3)

Net Purchase Price

\$2.75 cash purchase plus \$1 futures loss (bought at \$4 and sold at \$3) equals \$3.75 net purchase price

If the difference between the cash and futures prices remains the same over the hedging period, the loss in one market will exactly offset the gain in the other market (not considering transaction and interest costs).

Mechanics of Placing a Hedge

Once hedging principles are understood, a key decision in the hedging process is selecting the right commodity broker. A producer or processor should expect the broker to accurately and quickly execute orders and serve as a source of market information. Most brokerage firms have weekly market reports as well as periodic in-depth research reports on the market outlook which may be useful in formulating a marketing strategy. Also, a commodity brokerage firm that is familiar with local cash market opportunities has some distinct advantages.

It is extremely important that a broker understand how hedging and price risk management fit into the marketing program of the producer or processor. The producer (processor), and the broker must realize that hedging is a tool to reduce price risk. However, producers (processors) sometimes use futures markets to speculate on price changes and thus are exposed to increase price risk. Generally, speculation and hedging should be done in two separate accounts. Inexperienced hedgers should seek a broker willing to help them increase their understanding of market mechanics.

After selecting a broker, formulating a marketing plan, and opening a hedge account, the producer is ready to place trading orders. The broker can supply information on the types of orders to place. Once the broker receives the order, it will be phoned or wired to the floor of the commodity exchange. The order is relayed to a pit broker who will execute it in the trading pit, provided it is within the current market range. A confirmation of the executed order is then phoned or wired back to the local broker. Many brokerage firms can execute the order while the client waits on the phone for the confirmation price.

To maintain a position in the futures market, producers (processors) must deposit margin money with the brokerage firm. Initial margin requirements provide financial security to insure performance on

the futures commitment. If the producer (processor) sells (buys) a contract in the futures market and the futures price subsequently rises (declines), this represents a loss of equity in the futures position. These higher (lower) prices may require additional funds to maintain the hedge position. If the futures price moves down (up); the producer (processor) who sold (bought) futures will have futures profits credited to his/her account. The producer (processor) can call for this excess margin to be paid to him/her. In the futures market the margin position is updated each day.

Margin calls should not be viewed as a loss but rather as part of the cost of insuring against a major price decline (increase). In a producer hedged position, losses on futures contracts are offset by the increasing value of the physical grain inventory. In a processor (livestock producer) hedged position, losses on futures contracts are offset by lower priced cash grain purchases.

Although margin calls should not be viewed as a loss, they complicate a producer's cash flow. If prices rise, the futures loss must be paid (additional margin) as the loss accrues. However, the additional value of the grain is not realized until the grain is sold when the hedge is lifted. For grain processors and livestock producers, falling grain prices can result in margin calls before the benefits of lower priced cash grain purchases are realized. So, a cash flow problem may occur.

Once the position is closed out, the producer is no longer required to maintain a margin account (for that transaction). Thus the producer (processor) can receive his margin deposits, plus (minus) futures profits (losses), less brokerage fees.

. . . and justice for all

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