

Commodity Challenge

Section II: Basic Pricing Tools

Chapter 9: Commodity buyers and long hedging (buying futures)

Learning objectives

- Buying futures contracts to hedge against rising prices

Key terms

- **Hedging:** To buy or sell a futures contract on a commodity exchange as a temporary substitute for an intended later transaction in the cash market.
- **Long hedge:** The purchase of futures contracts against cash market sales or to protect against higher input costs. The long hedge protects the hedger against rising prices.
- **Put on a hedge (place a hedge):** Buying or selling futures contracts to establish a hedge position in the market.
- **Offset a position:** Buying or selling futures contracts to remove a position in the market.
- **Unwind a hedge:** Making a purchase or sale in the cash market and simultaneously lifting a corresponding hedge position in the market.

Commodity buyers and long hedging

Commodity Challenge places you in the role of a grain producer, emphasizing the seller's perspective. However, many market participants worry about rising prices rather than falling ones. These participants use **long hedges**.

A **long hedge** involves buying futures contracts to protect against higher input costs. Common long hedgers include:

- Flour millers
- Grain exporters

- Food manufacturers
- Livestock and dairy producers providing feed

These buyers use futures to lock in costs and reduce exposure to rising prices.

Formula for expected price using a long hedge

$$\text{futures price (when bought)} + \text{expected basis} + \text{fees} = \text{expected price}$$

Example: Cattle feeder buying corn futures

Initial hedge

Date	Cash	Futures	Basis
March	No action taken. Cattle feeder anticipates buying corn in summer.	Buy September corn futures at \$4.55/bu.	Expected basis: -\$0.10 (10 cents under). Expected price: \$5.45

This is a straightforward long hedge by a cattle feeder to control feed costs. In this example, the producer bought September futures at \$4.55 per bushel and expected a basis of 10 cents under (-\$0.10) when the corn is purchased in July. Let's do the math and ignore brokerage fees.

Expected corn price:

$$\text{futures price (when bought)} + \text{expected basis} = \text{expected price}$$

$$\mathbf{\$4.55 + (-\$0.10) = \$4.45 \text{ per bushel}}$$

Help this cattle feeder unwind the following hedge in July (buy cash corn and sell futures) under three different scenarios. Let's calculate the final price per bushel for corn (ignoring brokerage costs).

Scenario #1: Modestly higher prices

Cash price in July: \$4.81 per bushel

September futures price: \$4.83 per bushel

Basis: (-\$0.02)

We have two ways to calculate the final price. We can take the cash price when corn is purchased in July, and subtract the gain (or add the loss) in the futures market. In this scenario, the futures gain was \$0.28 (\$4.55 purchase - \$4.83 sale).

$$\text{\$4.81 (cash purchase in July) - \$0.28 (futures gain) = \$4.53}$$

Or we can think like a hedger and look at the original futures purchase and adjust for the July basis.

$$\text{\$4.55 (original futures purchase) + (-\$0.02) July basis = \$4.53}$$

Why was the final price of \$4.53 per bushel eight cents higher than expected (\$4.45)? Because the buying basis at -\$0.02 per bushel was eight cents stronger than expected (-\$0.10).

Scenario #2: Lower prices

Cash price in July: \$4.07 per bushel

September futures price: \$4.20 per bushel

Basis: (-\$0.13)

Again, two ways to calculate the final price. We can take the cash price when corn is purchased in July, and subtract the gain (or add the loss) in the futures market. In this scenario, the futures loss was \$0.35 (\$4.20 sale - \$4.55 purchase).

$$\text{\$4.07 (cash purchase in July) + \$0.35 (futures loss) = \$4.42}$$

Or we can think like a hedger and look at the original futures purchase and adjust for the July basis.

$$\text{\$4.55 (original futures purchase) + (-\$0.13) July basis = \$4.42}$$

Why was the final price of \$4.42 per bushel three cents less than expected (\$4.45)?
Because the buying basis at -\$0.13 per bushel was three cents weaker than expected (-\$0.10).

Scenario #3: Basis only

Basis: (-\$0.18)

To calculate your final price here you must think like a hedger.

$$\$4.55 \text{ (original futures purchase)} + (-\$0.18) \text{ July basis} = \$4.37$$

Why was the final price of \$4.37 per bushel eight cents less than expected (\$4.45)?
Because the buying basis at -\$0.18 per bushel was eight cents weaker than expected (-\$0.10).

Exercise #9: Hedging corn feed costs with long futures

You have a hog finishing operation. Harvest has just ended but you are concerned about higher feed costs next spring. To hedge your feed costs, you buy May corn futures contracts at \$4.29. You expect a buying basis of 20 cents under the May contract in the month of April (-\$0.20).

Use the following formula to calculate your expected price in April (ignore brokerage).

$$\text{futures price (when bought)} + \text{expected basis} = \text{expected price}$$

Now complete the transaction, under three different scenarios; higher futures prices, lower futures prices and steady futures prices. Use one of the two equations to calculate your final price when the hedge is finished in June. Ignore brokerage costs.

$$\text{cash purchase in April} +/- \text{futures gain or loss} = \text{price in April}$$

or...

$$\text{original futures purchase price} + \text{April basis} = \text{price in April}$$

Scenario #1: Futures prices rise

Cash price in April: \$5.03/bu.

May futures in April: \$5.39/bu.

May basis: (-\$0.36)

Scenario #2: Futures prices fall

Cash price in April: \$3.41/bu.

May futures in April: \$3.65/bu.

May basis: (-\$0.24)

Scenario #3: basis only

May basis in April: -\$0.18/bu.