Commodity Challenge

Section I: Introduction to Futures and Options Markets

Chapter 1: Introduction to the Feed Buyers Challenge

Learning objectives

- Register for Commodity Challenge and join an open game
- Understanding your challenge
- Ground rules for trading in Commodity Challenge
- Illustrate a simple hedge with futures
- Learning to read grain quotes

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.

Lift a hedge (aka offset a hedge): Buying or selling futures contracts to remove a hedge position in the market. For example, a producer who bought May contracts to hedge the price of corn might consider offsetting the hedge with a sale of May corn futures if lower prices are expected.

Welcome to Commodity Challenge, an on-line trading game that features real-time quotes from grain futures markets and numerous local cash markets located throughout the country. It differs from other trading simulations by emphasizing the use of futures and options for risk management purposes (hedging), and not for speculation.

In the feed buyers version of Commodity Challenge, every player is asked to play the role of a grain buyer, procuring feed for a dairy or livestock operation. Each player needs to buy the same number of bushels - for example, 50,000 bushels of corn. The price of corn can vary greatly - as high as $8 and as low as $3 per bushel since 2005 – and you have to make some difficult choices. You may choose to buy corn today from the local market at the current price, or do nothing in the hope that prices will decline in the weeks ahead. Alternatively, you may choose to buy futures contracts to establish a price, or use option contracts to establish a maximum price. You have choices, and Commodity Challenge gives you the chance to explore your alternatives, learn about the markets and have some fun in a safe, “no real money” situation.

Commodity Challenge is also an opportunity to compete with your peers as you manage the risk and opportunity in marketing your crop. What price will you pay for your feed?

What is the “Challenge” in Commodity Challenge?

Every player in a Commodity Challenge game faces the same challenge. As a dairy or livestock producer, the cost of feed is your primary cost of production, and your hard work is exposed to price changes in the market. Commodity Challenge asks you to think like a risk manager, while understanding that risk management is not simply risk avoidance. Needing to buy grain is both a risk and an opportunity, depending upon whether or not prices rise or fall. Your challenge is to minimize feed costs, while keeping your risk exposure at a level that does not put your business in peril. You have a position to manage!

How will you manage your position? Your choice of tools is large. If, for example, you need to buy 50,000 bushels of corn, you have action choices that include:

- Do nothing and hope prices trade lower
- Buy cash grain from your local market today
- Buy futures contracts with the intent of later buying cash grain
- Buy call options to establish a maximum price with the intent of later buying cash grain

Ground rules for trading in Commodity Challenge

Commodity Challenge differs from other trading simulations because of the link to cash markets, and by emphasizing the use of futures and options for hedging, and not for speculation. However, there is opportunity for players to trade the market. Here are some important ground rules to consider when participating in Commodity Challenge.

- Players cannot buy more than the amount of grain they originally needed to buy. If you need to buy 50,000 bushels of corn, then you can buy no more than 50,000 bushels using any combination of the cash and futures (or options) markets. To buy more than you need would be speculative – you are trying to feed your animals, not profit from a rising market.

- Players cannot sell more than the amount of feed needed to buy. If you need to buy 50,000 bushels of corn, you are not allowed to place an order to sell more corn through the futures or options markets. This is a speculative action and not good risk management – your risk of loss due to higher prices is increased.
- Players are allowed to re-sell cash grain sales by selling futures contracts, or with an equivalent options position, within the limit of their initial position. Players are also allowed to re-buy and re-sell futures and options positions, again within the limits of their initial position.

Introduction to the Feed Buyers Challenge is intended to serve as an introduction to important terms and concepts in grain markets. It is also intended as a hands-on opportunity to play the role of a feed buyer and try a number of different pricing tools to manage your feed costs. The game is there for some competitive fun, and to keep you engaged as you learn about the markets.

A Note on Futures and Options Contracts as "Derivatives"

Most news sources have adopted the practice of referring to futures and options contracts as derivative contracts. This is a relatively new term - 35 years ago, the leading University textbook on agricultural futures and options did not have the term "derivative" in its index or glossary. Technically, the term derivative is correct because a futures contract "derives" its value from the underlying cash market. Options contracts derive their value from the underlying futures market.

While "derivative" is technically correct, futures and options contracts are different from many over-the-counter financial derivatives. Futures and options contracts are highly liquid, transparent, standardized and marked-to-market daily. Many financial derivatives lack these qualities.

Problems with collateralized debt obligations and other financial derivatives have transformed "derivative" into a negative term. In Commodity Challenge training segments, we will not use the term derivatives when referring to futures and options contracts.

A Simple Hedge Illustrated

Instead of buying grain from the local market, grain buyers can also hedge using futures contracts. For example, think of yourself as a manager of a dairy operation. You harvested and stored enough corn to cover your feed needs for the next six months. However, you know that you will need an additional 30,000 bushels of corn to cover your feed needs for the last six months of the crop year, when the next corn crop is harvested. Corn prices are good but you don't have the storage capacity to buy and hold more corn.

To illustrate hedging with futures and options, we use T diagrams to track three market components:

- Cash
- Futures / Options
- Basis

Hedging Example

Date	Cash	Futures	Basis
October	Harvest is complete and your storage is filled with 30,000 bushels of corn, but you need an additional 30,000 bu. to cover your crop year needs. Current cash price: $4.35 per bushel	With December corn futures at $4.82 and May corn futures at $4.97/bu., you decide to buy 6 contracts of May corn futures to lock-in your corn costs and hedge against a price increase. Futures price: $4.97	Basis is -$0.47/bu., or 47 cents "under" the December contract, and 62 cents under the May contract. ($4.35 cash - $4.82 futures)

This simple hedge raises more questions than answers. For example, the December and May contracts are not the same price – there is 15 cents "carry" from December to May. Why the price difference, and why buy the May contract? And what is basis? Why is the cash price 47 cents less than the December futures price, and 62 less than the May price? These topics will be covered in later segments.

While you may have questions, there is a simple formula you can use to calculate the expected feed cost (aka the price of corn) next spring:

futures price (when bought) + expected basis – fees = expected price

By spring, your feed supplies are running low. It's time to buy corn in the local market and sell May corn futures.

Hedging Example

Date	Cash	Futures	Basis
October	Harvest is complete and you need an additional 30,000 bu. to cover your crop year needs. Cash price at harvest: $4.35 per bushel	Buy 6 contracts of May corn futures to lock-in your corn costs. Futures price: $4.97	Basis at harvest is -0.62K, or 62 cents under the May contract.
April	Buy corn to from your local elevator. Cash price: $4.61 per bushel	"Offset" the hedge - sell May corn futures. Futures price: $5.03	Basis is now 42 cents under the May. ($4.61 cash - $5.03 futures)

We have two ways to calculate the final purchase price for corn. Take the cash price when corn is purchased in the spring and subtract the gain (or add the loss) in the futures market. In this example, the futures gains was $0.06 ($4.97 purchase - $5.03 sale).

$4.61 (cash purchase in April) - $0.06 (futures gain) = $4.55

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

$4.97 (original futures purchase) + (-$0.42) April basis = $4.55

Note that in each example I ignored brokerage costs, which are generally near one cent per bushel.

Consider a different scenario. What if cash and futures prices decreased from October to April? Lower corn costs in April would have been erased by a loss in the futures markets. This is the cost of hedging - the hedge protects against higher prices, but also takes away the chance to benefit from lower prices.

Learning to read grain quotes

Cash and futures grain quotes are presented in a number of different ways, and the differences can be confusing. If you want to understand grain markets, you must learn to read price quotes.

Most grains and soybeans trade in bushels. Cash grain quotes are typically shown in dollars per bushel, while futures and options quotes are typically shown in cents per bushel. Futures and options trade in 1⁄4- and 1/8-cent increments, respectively.

In Commodity Challenge, cash and futures quotes can be found on the dashboard, below the leaderboard. Commodity Challenge shows futures quotes in cents per bushel. For example, December corn futures trading at $4.58 3⁄4 /bu. is shown as 458.75. The CME website shows it as 458’6, where the last number represents eighths of a cent.

Example

- March corn futures trading at $4.75 1⁄4 per bushel
- Commodity Challenge shows: 475.25
- CME shows: 475’2

Options can be more confusing because two prices are quoted - the strike price and the premium.

Example

- 480 call on March corn (right to buy March futures at $4.80/bu.)
- Premium: $0.47625/bu. (47 5/8 cents)
- Commodity Challenge shows strike price only
- CME shows strike price as 480 and premium as 47’5

Cash grain quotes are the most consistent, generally shown in dollars per bushel and often rounded to the nearest cent.

Further readings and resources from the CME Group

- Learn about the futures and options markets: https://www.cmegroup.com/education/courses.html#filters=futures,agriculture
- Introduction to Grains and Oilseeds: https://www.cmegroup.com/education/courses/introduction-to-grains-and-oilseeds.html
- Hedging with Grain and Oilseed Futures and Options: https://www.cmegroup.com/education/courses/hedging-with-grain-and-oilseed-futures-and-options.html

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Exercise #1

Register for Commodity Challenge, establish your profile and join a game. Place an order in the market!

Registering to play Commodity Challenge is easy and free. Go to commoditychallenge.com and click the "Join" button to create your account. You will be asked for your name and email address, and to create your own password. Once submitted, you will receive a confirming email with a link to complete the registration process.

To join a game, click the **Join A Game** button from your home page. Some games are password protected; others are open. Open games are a great way to learn how to place orders.

Place an order in the market! Make a sale in the cash or forward market, or make a sale using futures or options.