

COMMODITY PRODUCTS

Self-Study Guide to Hedging with Livestock Futures and Options

In a world of increasing volatility, CME Group is where the world comes to manage risk across all major asset classes – interest rates, equity indexes, foreign exchange, energy, agricultural commodities, metals, and alternative investments like weather and real estate. Built on the heritage of CME, CBOT and NYMEX, CME Group is the world's largest and most diverse derivatives exchange encompassing the widest range of benchmark products available. CME Group brings buyers and sellers together on the CME Globex electronic trading platform and on trading floors in Chicago and New York. We provide you with the tools you need to meet your business objectives and achieve your financial goals. And CME Clearing matches and settles all trades and guarantees the creditworthiness of every transaction that takes place in our markets.

COMMODITY PRODUCTS

MORE COMMODITY FUTURES AND OPTIONS. GREATER OPPORTUNITY.

CME Group offers the widest range of commodity derivatives of any U.S. exchange, with trading available on a range of grains, livestock, oilseed, dairy, lumber and other products. Representing the staples of everyday life, these products offer you liquidity, transparent pricing and extraordinary opportunities in a regulated centralized marketplace with equal access to all participants.

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INTRODUCTION

The Self-Study Guide to Hedging with Livestock Futures and Options is an introduction to the mechanics of using futures and options to forward price livestock. The booklet presents 17 short units of study to help livestock producers and processors become comfortable with the futures markets and how to use them.

Why learn about futures and hedging? Consider two producers, both of whom use excellent production methods. The first sells livestock when they're ready for market; if cash market prices happen to be low at that time, he may lose money despite his best efforts and all his skill. The second combines production and marketing skills. He knows his costs, understands his basis

and scans cash forward and futures markets for profitable opportunities throughout the production period. If a good opportunity presents itself, he acts. In effect, his reach for profitable market opportunities extends way beyond the day or week he happens to send his livestock to market.

This booklet is designed to enable livestock producers and processors to combine production and marketing into a comprehensive business strategy. It all begins with understanding futures.

UNIT 1 THE CONCEPT OF FUTURES

Dealing with Risk

Livestock producers face a great deal of risk. One is uncertain weather, which affects feed costs, the availability of feed and forage, rates of gain, conception rates, survivability of young animals and shipment. Another risk is the constant threat of disease. Livestock producers know that staying on top of animal health requires the best management in agriculture.

Producers have managed such production risk with top notch husbandry practices. But no amount of husbandry can address market risk – the uncertainty of prices at market time, owing to shifting supply and demand factors. That’s where the futures markets come in. CME Group developed livestock futures to provide producers with forward pricing opportunities for managing market risk – to lock in profits, enhance business planning and facilitate financing – all the benefits that futures provide other sectors of the farm economy.

What is a Livestock Futures Contract?

A livestock futures contract is a standardized agreement to buy or sell livestock at a date in the future. Each contract specifies:

- Commodity (live cattle, lean hogs, feeder cattle)
- Quantity of the commodity (pounds of livestock as well as range or weight for individual animals)
- Quality of the commodity (specific U.S. grades)
- Delivery point (location at which to deliver commodity, such as live cattle, or cash settlement in the case of feeder cattle and lean hogs)

The only aspect of a futures contract that is not specified is the price at which the commodity is to be bought or sold. The price varies: It is determined on the floor of the exchange as floor brokers execute buy and sell orders from all over the country, as well as on the electronic marketplace which operates simultaneously with the floor market. Market participants enter bids and offers that reflect the supply and demand for the commodity as well as expectations of whether the price will increase or decrease.

Futures Language

Bear: one who expects prices to fall

Bear Market: a falling market

Bull: one who expects prices to rise

Bull Market: a rising market

Cash Market: a marketplace for the physical commodity, such as an auction

Long Hedge: balancing a “short cash” position (unmet need) with a long futures position

Long Position: inventory of product or a purchased futures contract

Short Hedge: balancing a “long cash” position (inventory) with a short futures position

Short Position: unmet requirement for product or a sold futures contract

Who Can Trade Futures?

Anyone can buy or sell livestock futures contracts through the proper channels, including people who sell livestock futures but don't have any livestock to deliver. While many livestock futures contracts include an obligation to deliver, it is possible to remove that obligation at any time before the delivery date by buying back, or offsetting, the futures contract.

Similarly, many people buy livestock futures with no intention of taking delivery of any livestock. They also remove the obligation to take delivery by selling back the contract. With cash-settled contracts it is possible to hold a contract until expiration without delivery worries.

How Do Speculators Use the Futures Market?

Speculators have no intention of buying or selling actual commodities. They try to make money by buying futures contracts at a low price and selling back at a higher price or selling high and buying back lower. In doing so, they take on the risk that prices may change to their disadvantage. So, speculators provide risk capital and depth to the marketplace and make it possible for hedgers to use the futures market to reduce risk.

How Can Producers Use the Futures Market?

Producers can use the future markets as a temporary substitute for a cash sale or cash purchase to be made at a later date, as a way to hedge their price risk. The possibility of actual delivery causes futures prices to line up with cash market prices of the commodity as the delivery month on a futures contract approaches.

The Long and the Short of it:

- A trader who is long futures has bought a futures contract.
- A trader with a long hedge has bought a futures contract to protect against a price increase in a commodity the trader plans to buy later.
- A trader who is long cash owns and plans to sell a commodity later.
- A trader who is short futures has sold a futures contract.
- A trader with a short hedge has sold a futures contract to protect against a price decrease in a commodity the trader plans to sell later.
- A trader who is short cash needs and plans to buy a commodity later.

Producers don't want to take on the risk of changing prices in the cash markets, so they use the futures market to lock in a price ahead of actual merchandising. They transfer their risk to speculators. Most producers remove their obligation to deliver or take delivery on the futures contract just as speculators do – by offsetting their original futures position – but producers then sell or buy actual commodities in the cash markets.

What is Hedging?

Hedging is buying or selling futures contracts as protection against the risk of loss due to changing prices in the cash markets. Hedging is a risk-management tool for a producer who is feeding livestock to market and wants protection from falling prices in the cash markets. Similarly, processors, who need to buy livestock, want protection against rising prices in the cash markets. Either way, hedging provides that protection.

Producers use short, or selling, hedges for protection against falling prices. They sell futures contracts and, when they are ready to market their livestock, buy back the futures contracts and sell the livestock in the cash markets simultaneously.

Usually they can offset a decrease in cash market prices with a gain in the futures transaction.

Processors use a long, or purchasing, hedge when they plan to buy livestock and want protection against rising prices. They buy futures contracts and, when they are ready to purchase the livestock, sell back the futures contracts and buy the livestock in the cash markets simultaneously. An increase in cash prices would be mostly offset by a gain in the futures transaction.

How are Futures Traded?

Livestock futures are bought and sold through futures brokerage firms that execute trades for customers via open outcry or electronically on the CME Globex electronic trading platform. Customers of brokerages can also trade directly on the CME Group electronic markets if they wish. Before trading, all customers must deposit a performance bond with their brokerage firm to “pre-pay,” in a sense, any losses they may incur on the futures contracts. If the value of the contract goes against

their positions by a certain amount, they will be asked to deposit more funds before the start of the next day’s trading session. They also pay the broker a commission for every “round-turn” (sell-buy or buy-sell pair of transactions).

How are Hedges Offset?

Short hedgers who have sold futures contracts offset their hedges by buying back the same futures contracts at the same time they sell their livestock in the cash market. Long hedgers who have bought futures contracts offset their hedges by selling back the same futures contract at the same time they buy livestock in the cash market.

Key Points

1. A futures contract is a standardized agreement stating the commodity, quantity, quality and delivery point or cash settlement.
2. Price is discovered in futures trading by the interaction of buyers and sellers, representing supply and demand, from all over the country and around-the-world.
3. Sellers remove their obligation to deliver on a sold contract by buying back a contract before the delivery date.
4. Buyers remove the obligation to take delivery on a purchased contract by selling back the contract before the delivery date.
5. A short hedge protects the seller of a commodity against falling prices.
6. A long hedge protects the buyer of a commodity against rising prices.

UNIT 1 STUDY QUESTIONS

1. **A futures contract does not specify:**
 - A the delivery point
 - B the quality of a commodity
 - C the delivery price
2. **Someone who sold a December futures contract can remove the obligation by:**
 - A buying back the contract
 - B selling back the contract
 - C buying a February contract
3. **To offset a long position in the futures market a trader:**
 - A buys back futures
 - B sells back futures
 - C buys more futures
4. **A short hedge protects a producer who plans to sell a commodity against:**
 - A performance bond deposits
 - B rising prices
 - C falling prices
5. **A long hedge is:**
 - A protection against a price increase for a commodity needed in the future
 - B initiated by buying a futures contract
 - C both A and B

Answers

1. C The price of a futures contract is not specified in the contract. It is determined as traders bid and offer.
2. A A sold contract is offset by buying back the contract.
3. B A long position is offset by selling back the contract.
4. C A short hedge protects a producer against falling prices.
5. C A long hedge is both: protection against a price increase and initiated by buying a futures contract.

UNIT 2 WHO'S WHO IN THE FUTURES MARKETS

The Commodity Exchange

A commodity exchange is an organization that formulates rules for the trading of commodity futures contracts, provides a place to trade and/or an electronic trading platform and supervises trading practices. Its members are people whose business is trading. The exchange establishes the terms of standardized contracts that are traded subject to Commodity Futures Exchange Commission (CFTC) approval. It also disseminates price and market information and provides the mechanics to guarantee contract settlement and delivery.

CME Group

CME Group, the world's largest and most diverse financial exchange, does not buy or sell contracts, nor does any financial exchange. It hosts trading conducted through one of the more than 3,100 CME Group members.

CME Clearing

Substantially mitigating counterparty credit risk, CME Clearing acts as the counterparty to every trade – the buyer to every seller and the seller to every buyer. CME Clearing matches and settles all trades, collects and maintains performance bonds, regulates delivery and provides data reports – ultimately guaranteeing the creditworthiness of every transaction that takes place in CME Group's markets. This safeguard is the cornerstone of a market that has not suffered a default in more than 100 years.

Performance bond/margin deposits are required at each level in the clearing process – customer to broker, broker to clearing firm, clearing firm to clearing house. The performance bond is a good-faith deposit that represents the minimum amount of protection against potential losses.

CME Clearing handles more than 90 percent of all futures and options contracts traded in the United States. This requires management of the substantial exposure that results from guaranteeing the performance of each of nearly 2.2 billion contracts annually.

Futures Brokerage Firms

A futures brokerage firm places orders to buy and sell futures or options contracts for its customers: companies and individuals. Everyone who trades has to have an account with a brokerage firm. The brokerage firm conducting customer trades with the Exchange is either a clearing member of CME Group or a firm registered with a clearing member. All trades are settled through clearing firms, who interact through CME Clearing. The brokerage firm places orders for customers, collects performance bond monies, provides basic accounting records, disseminates market information and counsels customers in futures and options trading strategies. These firms charge a commission on transactions they conduct.

Traders

The traders are individuals or companies that buy and sell contracts on an exchange via a form of public auction. All bids and offers are made publicly so each trader has a fair chance to buy and sell. There are different categories or types of traders. Some are private speculators, called locals. Some locals are called scalpers because they make their living by buying and then quickly selling, or selling and then quickly buying, hoping for more profits than losses at the end of the day. Other locals are day traders, who buy and sell throughout the day, closing their positions before the end of trading; and position traders, who take relatively large positions in the market and may hold their positions for a day or longer. The second class of traders are the brokers who act as agents for customers who are individuals and companies. Brokers are paid a fee for executing customer orders.

Speculators

Speculators are people or firms who try to make money by buying and selling futures and options. They speculate that prices will change to their advantage. They don't intend to buy or sell the actual commodities. Speculators take on market price risk and provide liquidity.

Hedgers

People or firms who use futures and/or options as a substitute for buying or selling the actual commodities are called hedgers. They buy or sell contracts to offset the risk of changing prices in the cash markets. Hedgers transfer risk to speculators.

Key Points

1. Commodity exchanges provide the location, electronic marketplace and rules for trading.
 2. CME Clearing acts as the seller to every buyer and the buyer to every seller. It also is the central depository of required good-faith deposits (performance bonds) that act to guarantee contract performance by all parties.
 3. Everyone who trades futures must have an account with a futures brokerage.
 4. Hedgers transfer risk to speculators, who take on risk in pursuit of profit.
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UNIT 3 THE DEVELOPMENT OF CONTRACT SPECIFICATIONS

How are Futures Contract Specifications Determined?

Much research is done before a futures contract is introduced or an existing one is modified to ensure the contract will coincide with current industry practices and norms. Industry experts and contract users are consulted, along with academic experts and other experts like government graders.

The terms and conditions of a futures contract are set to encompass the mainstream of the commodity in the marketplace so futures prices and major cash market values converge when the futures expire. Convergence enables sellers of futures to easily find product to deliver when futures prices are high relative to cash prices, and also enables buyers of futures to easily find an outlet for the product they might receive on delivery, making them comfortable to “stand for delivery” when futures prices are low relative to cash prices. All of that makes futures prices reflective of the main cash markets. A stable and predictable basis (cash – futures difference) exists for most hedgers results, so they find it conducive to use the contract. Few deliveries are actually needed to achieve convergence – just the possibility of delivery is usually enough.

Cash market practices and norms change over time, so the futures contract terms need to keep pace. The process of altering futures contract specifications is lengthy, easily lasting a year or more, because of separate studies and the required approvals by the Exchange and later by the CFTC. Once a change that has an effect on prices has obtained final approval by the CFTC, it can only be implemented in contract months yet to be listed to avoid changing the rules in the middle of the game. A wait of another year or so is normal, for a total of about two years from the beginning of the process until a change is operational.

How Does Cash Settlement Work?

Feeder Cattle and Lean Hog contracts represent a real innovation in the specification of contract terms. Instead of relying on physical delivery to achieve convergence, these contracts employ a device called cash settlement. In the cash settlement procedure, all long contracts that remain outstanding after the last day of trading are automatically offset by CME Clearing against all remaining short contracts at a price set equal to the CME Feeder Cattle Index and to the CME Lean Hog Index. All contracts are thus canceled and, via the normal performance bond system, money moves from losing accounts to profiting accounts, based on the final one-day price change – hence the term cash settlement. It’s as if all the remaining contracts were simply offset by open outcry on the last day of trading, and all at the value of the appropriate Index.

The CME Feeder Cattle Index is calculated by the CME Group staff from United States Department of Agriculture (USDA) data. The data and the formula used to calculate the price are made available to the public. The Index includes auction, direct and video, sales of feeder steers in a 12-state region over a seven-day period. A price is calculated daily, but is used for cash settlement only on the last day of trading of each contract month. The CME Lean Hog Index is a two-day weighted average of national lean hog values. The data is collected by the USDA. The Index represents the most active trades in “lean-value” or “grade and yield” hogs.

Key Points

1. Futures contract specifications are developed to reflect industry standards.
2. Futures contract specifications change over time to reflect changing industry standards.
3. Know how your livestock compare to the specifications of the CME Group contracts.

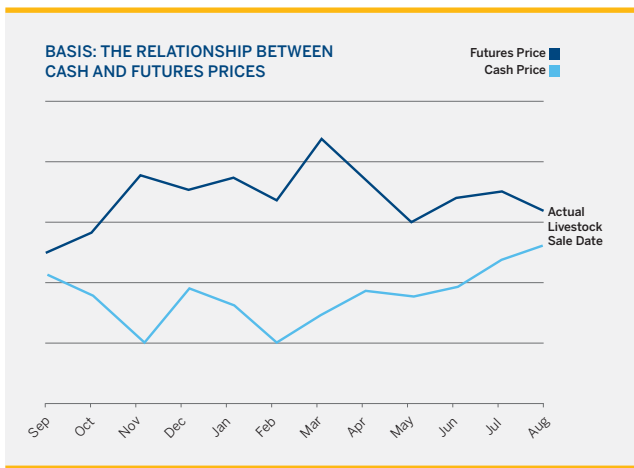
UNIT 4 THE IMPORTANCE OF BASIS

What is Basis?

The relationship of the local cash market price and the futures price at marketing time is called basis. Knowing the likely basis makes it possible to translate an available futures price for deferred delivery into an expected cash price that will result from a hedge. The basis is calculated by subtracting the price of the appropriate futures contract from the local cash market price.

$BASIS = CASH\ PRICE - FUTURES\ PRICE$ (when livestock are marketed)

For example, if the cash price for lean hogs is \$78/cwt. and the futures price is \$80/cwt., then the basis is $\$78 - \$80 = -\$2$, or \$2 under. With a cash price of \$79.50 and a futures price of \$78.50, the basis is $\$79.50 - \$78.50 = \$1$, or \$1 over.



Why is Basis Important?

Hedgers use their knowledge of the expected basis to translate a given futures price (for a deferred delivery period corresponding to when they expect to bring their livestock to market) into a likely cash price at that time. If they decide the futures price is favorable, they will establish a futures position as a hedge and maintain that hedge until the livestock actually move to market. They reduce their total price risk by the amount which the actual basis differs from the expected basis.

The short and long hedge examples presented later in this booklet show how important basis is to the price you receive or pay for livestock. You will need to forecast what the basis will be at the time you offset the hedge and sell or purchase livestock in the cash market.

For the short hedger, the more positive (stronger) the basis when the hedge is offset, the greater the actual price received for livestock. For the long hedger, the more negative (weaker) the basis when the hedge is offset, the lower the actual price paid for livestock.

Basis and the Hedger

	Short Hedger	Long Hedger
Stronger Basis	Higher price received	Higher price paid
Weaker Basis	Lower price received	Lower price paid

How Does Basis Differ Between Cash-Settled Contracts and Deliverable Contracts?

The Lean Hog and Feeder Cattle futures contracts are settled in cash, not livestock. That means if buyers or sellers do not offset their positions prior to the expiration of these contracts, the positions will be settled in cash to the current index for that commodity. Positions can be held until expiration without the worry of delivery.

Because the futures price converges to the cash index, perfect convergence occurs. Producers still have to compare the quality of their own livestock and their local market conditions to the CME Group contract specifications to determine their own basis.

The Live Cattle contract is a deliverable contract. Cattle meeting contract specifications can be delivered to anyone of several stockyard locations or, at the request of the buyer, directly to the packing house for slaughter on a grade and yield basis. The delivery costs for the cattle include transportation and marketing costs such as commissions, yardage and weight shrinkage.

The possibility of delivery on the futures contract generally causes the futures price during the delivery month to align with the cash price at the futures delivery locations. Basis differs from one location to another. Depending on the circumstances of the local market and its distance and direction from the futures delivery points, the basis may be consistently positive (over) or negative (under). The quality of the cattle delivered in relation to the par specifications also can vary your basis.

What is the Local Basis?

Livestock producers and processors find that the best way to predict local basis is to compile a local history of it themselves. They keep records of local cash prices for the months they normally sell livestock and compare that price to the current corresponding futures price, the nearby contract. By doing this for several years and averaging the results, they develop a valuable history of basis information that localizes the futures market to their own livestock markets. If local cash market conditions change – if local packing plants open or close, for instance – then they need to adjust historical basis averages accordingly.

There are, of course, ways to find out average historical basis without having to record it for several years. County extension offices and some local hedge brokers track historical basis information for their locations and types of livestock. Market advisors and lenders may also provide it. It is also possible to glean a basis estimate from available cash forward contracts or basis contracts. Keep in mind that operations that offer such forward contracts may estimate the basis conservatively.

Sources of Local Basis Information

- Personal records over several years
- County extension offices
- Local brokers, lenders and market advisory services
- Comparisons of cash forward contract prices and basis contracts to futures prices for like delivery periods

Key Points

1. Basis is the cash market price minus the futures price at the completion of production.
2. For a short hedger, the more positive (stronger) the basis, the higher the price received for livestock.
3. For a long hedger, the more negative (weaker) the basis, the lower the price paid for livestock.
4. Knowing the expected basis enables a hedger to translate a futures price into an expected local cash price, compare that to the expected breakeven price and decide whether or not to hedge.

UNIT 4 STUDY QUESTIONS

1. If the cash price for feeder cattle is \$100/cwt. and the nearby futures price is \$102/cwt., the basis is:
 - A \$2 over
 - B \$2 under
 - C \$100 under
2. If the basis is \$1 over and the local cash price for hogs is \$60/cwt., the nearby futures price is:
 - A \$59/cwt.
 - B \$60/cwt.
 - C \$61/cwt.
3. A stronger basis means a basis that is:
 - A zero
 - B more negative
 - C more positive
4. For the long hedger, basis is the difference between the cash price paid for feeder cattle and the:
 - A price at which futures were bought
 - B price at which futures were sold back
 - C neither A nor B
5. Which of the following is NOT true about basis:
 - A basis varies from location to location
 - B basis is always positive
 - C basis has a seasonal pattern

Answers

1. B Cash price minus futures equals basis: $\$100 - \$102 = -\$2$, or \$2 under
2. A Cash price minus basis equals futures: $\$60 - \$1 = \$59$
3. C A stronger basis is more positive.
4. B Basis is the difference between the cash price paid for feeder cattle and the futures price at which the futures were sold back.
5. B Basis can be positive or negative.

UNIT 5 THE SHORT HEDGE

How Does a Short Hedge Work?

Livestock producers who are feeding cattle or hogs for market can use a short hedge to offset their risks of prices falling by the time they're ready to sell. First, they sell futures contracts to cover the livestock they plan to market. When the livestock are ready for market, they buy back the futures contracts and sell in the cash market simultaneously. The short hedge allows them to lock in a price for the cattle or hogs to the extent that the basis turns out as expected.

Now	Later
Sell futures contract	Buy futures contract back + Sell livestock in the cash market

Example: Selling Live Cattle Futures

Suppose a livestock producer plans to have 40 head of steers ready for the cash market in October. It's now April, and the producer is uncertain about the outlook for cattle prices. The October futures price is \$80/cwt., and the producer expects the basis to be \$2 under. The producer sells an October Live Cattle futures contract at \$80/cwt.

	Cash Market	Futures	Basis
April	Expected 78	Sell Oct 80	Expected -2

What Happens if Cattle Prices Fall?

By October, suppose the futures price has fallen to \$75/cwt., and the cash price is \$73/cwt. The basis turned out to be -\$2 as expected. The hedger buys back the futures contract and realizes a gain of \$5/cwt. ($\$80 - \75). Then, the hedger sells the cattle in the cash market at \$73/cwt. The net price received is the cash price of \$73 plus the \$5 futures gain, or \$78/cwt.

	Cash Market	Futures	Basis
April	Expected 78	Sell Oct 80	Expected -2
October	Sell 73	Buy back 75	Actual -2
	Cash Market	Futures Gain	Net Price Received
	\$73	\$5	\$78

The lower price in the cash market is offset by the gain realized in the futures market.

Short Hedge Calculations

Determining the Futures Gain or Loss

Futures Selling Price - Futures Buying Price = Futures Gain/Loss

Determining the Net Price Received

Cash Price + Futures Gain/Loss = Net Price Received

What Happens if Cattle Prices Rise?

Suppose the cash price in October turns out to be \$82/cwt., and the October Live Cattle futures price turns out to be \$84/cwt. Again, the basis is \$2 under as expected. The livestock producer buys back the futures contract at \$84/cwt. and experiences a loss of \$4 (\$80 – \$84). Then the producer sells the cattle in the cash market at \$82/cwt. This time the net price received is the cash price of \$82 plus –\$4, the loss in the futures market, or \$78/cwt.

	Cash Market	Futures	Basis
April	Expected 78	Sell Oct 80	Expected –2
October	Sell 82	Buy back 84	Actual –2
	Cash Market	Futures Gain	Net Price Received
	\$82	\$4	\$78

The loss experienced in the futures market is offset by the higher price in the cash market. The net price received is the same as the previous example.

What if the Basis is Stronger?

Notice that the difference between the price at which the futures were sold and the net price received equaled the actual basis. The actual basis used in the previous examples was \$2 under. In each case, the net price received was the futures selling price of \$80 plus –\$2, or \$78.

But, suppose in October the futures price is \$75/cwt. and the cash price is \$74/cwt., so the basis turns out to be \$1 under. The net price received is the cash price of \$74 plus the futures gain of \$5, or \$79/cwt. Comparing this example to the two others, the stronger basis resulted in an improvement in net price received.

	Cash Market	Futures	Basis
April	Expected 78	Sell Oct 80	Expected –2
October	Sell 74	Buy back 75	Actual –1
	Cash Market	Futures Gain	Net Price Received
	\$74	\$5	\$79

Key Points

1. A short hedge protects a livestock seller against falling prices.
2. Selling livestock futures helps to lock in a sale price for livestock to the extent that basis turns out as expected.
3. A short hedge is completed by simultaneously buying back the futures contracts and selling the livestock in the cash market.
4. If prices fall, the lower cash price is offset by a gain in the futures market.
5. If prices rise, the loss in the futures market is offset by a higher cash market price.
6. Realized basis determines how advantageous the hedge results are.

UNIT 5 STUDY QUESTIONS

- The first step in executing a short hedge is to:
 - purchase a futures contract
 - sell a futures contract
 - buy back a futures contract
- When prices fall, the short hedger can offset the lower cash price with:
 - a gain in the futures transaction
 - a loss in the futures transaction
 - a gain in the basis
- A hedger who sells a futures contract at a certain price will:
 - receive that price plus the actual basis if the market goes higher
 - receive that price plus the actual basis if the market goes lower
 - both A and B
- A hedger who sold Lean Hog futures at \$59/cwt. and bought them back at \$54 experienced a:
 - loss of \$5
 - gain of \$5
- A hedger who sold Cattle futures at \$79/cwt., bought them at \$76 and sold in the cash market at \$75 received a net price of:
 - \$75
 - \$76
 - \$78

Answers

- B** A short hedge is initiated by selling a futures contract.
- A** A lower cash price is offset by a gain in the futures market, realized when the hedger buys back the futures contract at a lower price.
- C** Once a hedger sells a futures contract, whether the market moves up or down, the net price received will be the selling price plus the actual basis at the time the hedger buys back the contract.
- B** $\$59 \text{ futures selling price} - \$54 \text{ futures buying price} = \5 futures gain.
- C** $\$79 \text{ futures selling price} - \$76 \text{ futures buying price, } \$3 \text{ futures gain} + \$75 \text{ cash price} = \$78 \text{ net price received.}$

UNIT 6 LOCKING IN A SELLING PRICE – SELLING FUTURES CONTRACTS

Hedging for a Future Sale

Hedgers need to be sure they can handle the required performance bond deposits for the futures contracts they will trade and meet any performance bond calls that may occur. They should speak to their lenders about financing performance bond deposits, potential performance bond calls and the need to pay their brokers a commission for each contract sold and bought back.

Example: Locking in a Selling Price for Hogs

Suppose it is June and a livestock producer expects to have 220 hogs ready for market in October. As the producer looks at the market, he feels fairly certain that prices are heading down, and that he would like to lock in a price for October delivery now. He then sells one October Lean Hog futures contract to cover the 220 hogs, and arranges with his lender for a performance bond deposit of \$800 (the requirement at that time) and funds for possible performance bond calls.

How to Figure an Expected Selling Price

The October futures price is \$62/cwt. and the local cash forward price for October hogs is \$58/cwt, or \$4 under. Based on experience, the producer expects the basis to be \$2 under in October. Using this information, he figures an expected selling price. He adds the October futures price and the expected basis – futures price of \$62/cwt. plus -\$2 basis and gets an expected selling price of \$60/cwt.

Futures price	\$62/cwt.
Expected basis	+ -\$2/cwt.
Expected selling price	<u>\$60/cwt.</u>

The \$60/cwt. price would lock in a profit for the producer’s business, so he decides to sell one October Lean Hog futures contract.

What if the Actual Basis is \$2 Under?

In October, suppose futures prices have fallen to \$59/cwt. and cash prices to \$57/cwt. The basis is \$2 under – just as expected. The producer buys back the Lean Hog futures contract at \$59 and experiences a gain of \$3 (\$62 – \$59). Then he sells the hogs in the cash market at \$57/cwt. The total price received is \$60 (\$57 + \$3).

	Cash Market	Futures	Basis
June	Expected 60	Sell Oct 62	Expected -2
October	Sell 57	Buy back 59	Actual -2

	Cash Market	Futures Gain	Net Price Received
	\$57	\$3	\$60

Short Hedge Calculations

Determining an Expected Selling Price

Futures Selling Price + Expected Basis =
Expected Selling Price

If the basis is under, it is a negative number. For example, \$2 under is -\$2. Adding a negative number is like subtracting.

What are the Final Results?

Looking at the overall picture, the producer has done \$1,200 better by hedging (\$3 futures gain x 400 cwt.).

After paying the broker a commission for the contract sold and bought back, the actual gain is \$1,200 less the commission. A total of \$800 has been tied up in a hedging account since June, but that money is now returned to the hedger (or the lender).

What if the Basis is Weaker than Expected?

Suppose the futures price in October is \$55/cwt. and the cash price is \$52/cwt. Now the basis is \$3 under, which is weaker than expected. The producer buys back the futures contracts at \$55 and realizes a gain of \$7 ($\$62 - 55$). He sells his hogs in the cash market at \$52/cwt. And receives a net price of \$59 ($\$52 + \7). The weaker basis resulted in a lower net price than expected.

	Cash Market	Futures	Basis
June	Expected 60	Sell Oct 62	Expected -2
October	Sell 52	Buy back 55	Actual -3
	Cash Market	Futures Gain	Net Price Received
	\$52	\$7	\$59

What if the Basis is Stronger than Expected?

Suppose the futures price in October is \$63/cwt. and the cash price is \$62/cwt. The basis is \$1 under, which is stronger than expected. He buys back the futures contracts at \$63 with a loss of \$1 ($\$62 - 63$). He sells his hogs in the cash market at \$62/cwt. The net price he receives is \$61 ($\$62 + -\1). The stronger basis resulted in a higher net price than expected.

	Cash Market	Futures	Basis
June	Expected 60	Sell Oct 62	Expected -2
October	Sell 62	Buy back 63	Actual -1
	Cash Market	Futures Gain	Net Price Received
	\$62	\$1	\$61

Key Points

1. Before selling futures contracts it is necessary to deposit a performance bond.
2. Until the futures contract is sold, the contract holder may have to meet performance bond calls.
3. Brokers charge commission for each contract sold and bought back.
4. With a short hedge, the expected selling price is the futures price plus the anticipated basis.

UNIT 6 STUDY QUESTIONS

- If the performance bond deposit is \$800 per contract and a trader sells four contracts, the total deposit is:

 - A \$800
 - B \$3,200
 - C \$6,400
- The cash forward price offered for hogs will generally reflect a basis that is:

 - A about the same as the expected basis
 - B stronger than the expected basis
 - C weaker than the expected basis
- If Live Cattle futures are selling at \$80 and a hedger expects the basis to be – \$2, the expected selling price is:

 - A \$78
 - B \$80
 - C \$82
- If the actual basis is \$1 weaker than expected, the net price received is:

 - A \$1 higher than the expected price
 - B \$1 lower than the expected price
 - C the same as your expected price
- A hedger who sold Live Cattle futures at \$80, bought them back at \$82 and sold in the cash market at \$77, will receive a net price of:

 - A \$75
 - B \$79
 - C \$80

Answers

- B** A deposit of \$800 was made for each of the four contracts, or \$3,200 total.
- C** The cash forward price offered will generally reflect a weaker basis than the basis you can expect.
- A** \$80 futures price – \$2 basis = \$78 expected selling price.
- B** If the basis is weaker than expected, the net price will be lower than the target selling price.
- A** \$80 futures selling price – \$82 futures buying price, \$2 futures loss + \$77 cash price = \$75 net price received.

UNIT 7 THE LONG HEDGE

How Does a Long Hedge Work?

Hedgers who are planning to purchase livestock in the future will be at a disadvantage if prices increase. They can use long hedges to control that risk. First, they buy futures contracts to cover the cash livestock they plan to buy. When they are ready to purchase the feeder or stocker cattle, they will sell back the futures contracts and buy in the cash market simultaneously. The long hedges allow them to lock in a purchase price for the cattle.

NOW

Buy futures contract

LATER

Buy livestock in the cash market + sell futures contract back

What Happens if Feeder Cattle Prices Rise?

In March, the futures price has gone up to \$96/cwt. and the cash price is \$99/cwt. so, the basis is \$3 over. The hedger sells back the futures contract and realizes a gain of \$6/cwt. (\$96 – \$90). Then, you buy the yearling steers in the cash market at \$99/cwt. The net price you paid is the cash price of \$99 minus the \$6 futures gain, or \$93.

	Cash Market	Futures	Basis
December	Expected 93	Buy Mar 90	Expected +3
March	Sell 99	Sell back 96	Actual +3
	Cash Market	Futures Gain	Net Price Received
	\$99	\$6	\$93

Long Hedge Calculations

Determining the Futures Gain or Loss

Futures Selling Price – Futures Buying Price = Futures Gain/Loss

Determining the Net Price Received

Cash Price + Futures Gain/Loss = Net Price Received

What Happens if Feeder Cattle Prices Fall?

Suppose the cash price in October turns out to be \$82/cwt. and the October Feeder Cattle futures price turns out to be \$84/cwt. Again, the basis is \$2 under as expected. The livestock producer buys back the futures contract at \$84/cwt. and experiences a loss of \$4 (\$80 – \$84). Then the producer sells the cattle in the cash market at \$82/cwt. This time the net price received is the cash price of \$82 plus –\$4, the loss in the futures market, or \$78/cwt.

	Cash Market	Futures	Basis
December	Expected 93	Buy Mar 90	Expected +3
March	Sell 89	Sell back 86	Actual +3
	Cash Market	Futures Gain	Net Price Received
	\$89	\$4	\$93

What if the Basis is Stronger?

Notice that the difference between the price at which you bought futures and the net price you paid equals the basis. The actual basis in the previous examples was \$3 over. In each case, the net price paid was the futures price of \$90 plus \$3, or \$93/cwt.

But, suppose in March the futures price is \$93/cwt. and the cash price is \$97/cwt. So, the basis is \$4 over. The net price you would have paid is the cash price of \$97 minus the futures gain of \$3, or \$94/cwt. Comparing this example to the two others, a stronger basis resulted in an increase in net price paid.

	Cash Market	Futures	Basis
December	Expected 93	Buy Mar 90	Expected +3
March	Sell 97	Sell back 93	Actual +4
	Cash Market	Futures Gain	Net Price Received
	\$97	\$3	\$94

Key Points

1. The long hedge protects the livestock buyer against rising prices.
2. Buying futures contracts allows you to lock in a purchase price for your livestock.
3. You complete the long hedge by selling back the futures contracts and buying the livestock in the cash market simultaneously.
4. If prices rise, the higher cash purchase price is offset by a gain in the futures transaction.
5. If prices fall, the loss in the futures market is offset by a lower cash market purchase price.
6. With a long hedge, it's the realized basis that determines how advantageous the hedge results are.

UNIT 7 STUDY QUESTIONS

- The long hedger completes the hedge by:
 - buying back the futures contract and buying in the cash market
 - selling back the futures contract and buying in the cash market
 - both A and B
- When prices fall, the long hedger offsets the loss in the futures market with:
 - a narrower basis
 - a higher cash price
 - a lower cash price
- Which formula is NOT how to calculate the net price paid after a long hedge?
 - cash price + futures gain/loss
 - cash price – futures gain/loss
 - futures buying price + actual basis
- You bought Feeder Cattle futures at \$97/cwt., and sold them back at \$96. You experienced a:
 - loss of \$1/cwt.
 - gain of \$1/cwt.
 - gain of \$96/cwt.
- You bought Feeder Cattle futures at \$95/cwt., sold them back at \$97 and bought in the cash market at \$96. The net price you paid is:
 - \$98/cwt.
 - \$96/cwt.
 - \$94/cwt.

Answers

- B** You complete a long hedge by selling back futures contracts and buying in the cash market.
- C** The loss in the futures market is offset by a lower cash purchase price.
- A** The net price paid can be calculated by adding the buying price to the actual basis or by subtracting the futures gain or loss from the cash price.
- A** $\$96 \text{ futures selling price} - \$97 \text{ futures buying price} = \1 futures loss.
- C** $\$97 \text{ futures selling price} - \$95 \text{ futures buying price, } \$2 \text{ futures gain} - \$96 \text{ cash price} = \$94 \text{ net price paid.}$

UNIT 8 LOCKING IN A PURCHASE PRICE – BUYING FUTURES CONTRACTS

Locking in a Price for Purchase

With a long hedge, as with a short hedge, it is necessary to post a performance bond for each futures contract purchased and to meet any subsequent requirements that may arise. Some hedgers use their own money for the required performance bond and others arrange a hedging line of credit with their lenders. Brokers charge a commission for each contract traded.

Example: Locking in a Purchase Price for Feeder Cattle

Suppose it is October, and a hedger plans to purchase 135 head of feeder steers to place in the feedlot in January. All indications are that prices are heading up, and the hedger would like to lock in a purchase price for January. To cover the purchase of 135 head, the hedger needs to buy two Feeder Cattle futures contracts. The performance bond deposit at the time is \$700 per contract, which the hedger’s cash flow can handle.

Calculating an Expected Purchase Price

The January futures price is \$98/cwt. Based on historical basis data in the area, the hedger expects the basis in January to be \$2 under. Using this information, he calculates an expected purchase price by adding the January futures price and the expected basis (futures price of \$98/cwt. plus -\$2 basis). The result is an expected purchase price of \$96.

Futures price	\$98/cwt.
Expected basis	+ -\$2/cwt.
Expected selling price	\$96/cwt.

The \$96/cwt. purchase price would lock in an agreeable price, so the hedger decides to buy two January Feeder Cattle futures contracts.

What if the Actual Basis Turns Out as Expected?

In January, futures prices have risen to \$100/cwt. and cash prices to \$98/cwt. The basis is \$2 under – as expected. The hedger sells back the two Feeder Cattle futures contracts at \$100 and realizes a gain of \$2 (\$100 – \$98). Then he buys the feeder steers in the cash market at \$98/cwt. The net price he pays is \$96 (\$98 – \$2).

	Cash Market	Futures	Basis
October	Expected 96	Buy Jan 98	Expected -2
January	Sell 98	Sell back 100	Actual -2
	Cash Market	Futures Gain	Net Price Received
	\$98	\$2	\$96

Long Hedge Calculation

Determining an Expected Selling Price

Futures Buying Price + Expected Basis = Expected Purchase Price

What are the Final Results?

Looking at the overall picture, the hedger paid \$2,000 less than the local cash price by hedging (\$2 futures gain x 1,000 cwt.). Since one Feeder Cattle contract is equal to 500 cwt., and he purchased two contracts, he thus hedged 1,000 cwt. of your steers. He paid his broker a commission, so the actual improvement on the cash price is \$2,000 less the commission. When he offset his futures position, the funds deposited in his brokerage account were again available to him.

What if the Basis is Weaker than Expected?

Suppose the futures price in January is \$104/cwt. and the cash price is \$101/cwt. The basis is \$3 under, or \$1 weaker than expected. The hedger sells back the futures contracts at \$104 and realizes a gain of \$6/cwt. ($\$104 - \98). He buys the feeder steers in the cash market at \$101. The net price paid is \$95 ($\$101 - \6 futures gain). The weaker basis resulted in a lower net purchase price than the expected price.

	Cash Market	Futures	Basis
October	Expected 96	Buy Jan 98	Expected -2
January	Sell 101	Sell back 104	Actual -3
	Cash Market	Futures Gain	Net Price Received
	\$101	\$6	\$95

What If the Basis Is Stronger than Expected?

Suppose the futures price in January is \$92/cwt. and the cash price is \$91/cwt. The basis is \$1 under, which is stronger than expected. The hedger sells back the futures contracts at \$92 with a loss of \$6/cwt. ($\$98 - \92). He buys the feeder steers in the cash market at \$91. The net price paid is \$97 ($\$91 + \6 loss). The stronger basis resulted in a higher net purchase than expected.

	Cash Market	Futures	Basis
October	Expected 96	Buy Jan 98	Expected -2
January	Sell 91	Sell back 92	Actual -1
	Cash Market	Futures Gain	Net Price Received
	\$91	\$6	\$97

Because the difference in net price paid is the variation in basis, it is important to forecast the basis as well as possible when determining an expected purchase price.

Key Points

1. Purchasing a futures contract requires a performance bond deposit.
2. Until the futures contract is offset, the holder of the contract will have to meet all performance bond calls.
3. The broker will charge a commission for each contract bought and sold back.
4. With the long hedge, the expected purchase price is the futures price plus the expected basis.

UNIT 8 STUDY QUESTIONS

1. A hedging line of credit may be arranged with a lender to:
 - A pay in full for the futures the hedger buys
 - B make the performance bond deposit and meet performance bond calls
 - C both A and B
2. A futures broker charges commission on long hedge futures trades:
 - A when a performance bond is deposited
 - B when a futures contract is purchased
 - C when a futures contract is sold back
3. If the Feeder Cattle futures price is \$96/cwt. and the expected basis is \$2 under, the expected purchase price is:
 - A \$96/cwt.
 - B \$94/cwt.
 - C \$98/cwt.
4. If the actual basis is \$3 stronger than expected, the net price paid is:
 - A \$3 higher than the expected price
 - B \$3 lower than the expected price
 - C the same as the expected price
5. A livestock producer paid \$3,000 less than the cash price by hedging. If the total commissions due to the broker are \$100, the net improvement from the cash price is:
 - A \$3,100
 - B \$3,000
 - C \$2,900

Answers

1. B It is not necessary to pay in full when purchasing a futures contract, but only to make the performance bond deposit and meet any subsequent requirements. A hedging line of credit can be arranged for this purpose.
2. C The commission is usually paid after a position in the futures market is offset.
3. B $\$96 \text{ futures buying price} - \$2 \text{ expected basis} = \$94 \text{ expected purchase price}$.
4. A If the basis is stronger than expected, the net price paid would be higher than the expected price.
5. C $\$3,000 \text{ gain over cash price} - \$100 \text{ commissions} = \$2,900 \text{ net gain over cash price}$.

UNIT 9 HOW A HEDGING ACCOUNT WORKS

How Does a Performance Bond Work?

When selling or buying futures contracts, it is necessary to post a performance bond deposit with a futures broker. This is a small percentage of the value of each contract traded, representing the dollar value of the probable maximum price move in the next day's market, and thus the likely maximum loss that could be incurred in that day's trading.

Because no one knows whether prices will move up or down by this amount, parties on both the buy side and the sell side of all futures transactions post such a deposit. That way, the profiting side of the market can be immediately credited out of the balances of the losing side of the market. This flow of payments is conducted by CME Clearing, in transactions with all clearing members, who in turn "settle up" with each of their own customers.

This process reduces the amount of money required for trading to a prudent minimum, while ensuring remarkable financial integrity to the marketplace. That in turn facilitates trading and encourages plenty of liquidity, so that hedgers can enjoy ease of entry into and exit from the futures market.

Futures brokers calculate the value of their customers' market positions each day. This is called marking-to-market. If the value of a position falls and thus an account balance falls below a certain amount (called the maintenance level), the broker will issue a performance bond call, asking that customer to add more money to the account to replenish the performance bond deposit. The same arrangement for all traders ensures the financial integrity of the entire marketplace.

Example: Short Hedge with Hogs

Suppose a hedger sells one December Lean Hog futures at \$66/cwt. The total value of the contract is \$26,400 (400 cwt. times \$66/cwt.). The hedger will realize a gain if he buys back the contract for less than he sold it. As the futures price falls below the selling price, his position improves. But, if the futures price rises above the selling price, his position worsens.

The hedger started with a performance bond deposit of \$800. By the end of the second day, the contract decreased in value by \$320. The hedger would realize a gain if he bought it back for \$320 less than the selling price. The \$320 is credited to his account. Not until the fifth day does the futures price begin to rise again. This time the contract value has increased by \$340, which is subtracted from his account balance.

See chart on page 20.

Day	Market Action	Value of Position (40,000 lbs. or 400 cwt.)	Debit/Credit	Account Balance	Performance Bond Call
1	Deposit \$800			\$800	
	Sell 1 Dec Hog @ 66	\$26,400			
2	Close 65.20	26,080	\$ + 320	1,120	
3	Close 64.65	25,860	+ 220	1,340	
4	Close 63.15	25,260	+ 600	1,940	
5	Close 64	25,600	- 340	1,600	
10	Close 65.50	26,200	- 600	1,000	
15	Close 66.80	26,720	- 520	480	\$320
20	Close 67.25	26,900	- 180	620	
25	Close 68.15	27,260	- 360	260	540
60	Close 60.75	24,300	+ 2,960	3,760	
61	Buy 1 Dec Hog @ 60.95	24,380	- 80	3,680	

On the 15th day, the account falls below the \$600 maintenance level and the hedger gets a performance bond call for another \$320 to bring the balance back up to \$800. By the 60th day, the contract value has fallen considerably, and the hedger will realize a gain by buying back at this lower price. He decides to buy back the contract the next day at \$60.95/cwt. The futures gain is \$5.05/cwt., or a total of \$2,020 plus all performance bond deposits and performance bond calls, which total \$1,660. Commission would then be deducted from the account.

Remember, for a futures gain, the selling price must be higher than the buying price.

- When selling futures, the seller gains when the futures price falls below the selling price.
- When buying futures, the buyer gains when the futures price rises above the buying price.

Example – Long Hedge with Feeder Cattle

Suppose a livestock producer plans to purchase 130 head of feeder steers in March. The initial performance bond requirement is \$600 per contract, and the maintenance performance bond is \$400 per contract. He deposits \$1,200 in the hedging account for two contracts and buys two March Feeder Cattle futures contracts at \$98/cwt. The total value of the two contracts is \$98,000 (1,000 cwt. times \$98/cwt.).

The producer will realize a gain if he sells the contracts back for more than he bought them for. As the futures price rises above

the buying price, his position improves. As the futures price falls below the buying price, his position worsens.

He started with a deposit of \$1,200. By the end of the second day, the contracts increase in value by \$350. The hedger would realize a gain if he sold them back for \$350 more than he paid for them. The \$350 is credited to his account. On the fourth day, the price returns to the buying price. Notice that account balance returns to its original balance. If the account falls below the maintenance balance of \$800, the hedger will receive a call to bring the balance back up to \$1,200.

Day	Market Action	Value of Position (40,000 lbs. or 400 cwt.)	Debit/Credit	Account Balance	Performance Bond Call
1	Deposit \$1,200			\$1,200	
	Buy 2 Mar Feeders @ 98	\$98,000			
2	Close 98.35	98,350	+ \$350	1,550	
3	Close 99.10	99,100	+ 750	2,300	
4	Close 98	98,000	- 1,100	1,200	
5	Close 98.65	98,650	+ 650	1,850	
15	Close 97.15	97,150	- 1,500	350	\$850
30	Close 96.25	96,250	- 900	300	900
45	Close 97.30	97,300	+ 1,050	2,250	
90	Close 101	101,000	+ 3,700	5,950	
91	Sell 2 Mar Feeders @ 100.90	100,900	- 100	5,850	

When the hedger sells back the two Feeder Cattle contracts at \$100.90/cwt., he realizes a gain of \$2.90/cwt., or \$2,900 total, on the transaction. That amount plus his performance bond deposits of \$2,950, less commissions on two contracts, will be available to him.

Performance Bond Exercise

Used in conjunction with such newspapers as *The Wall Street Journal*, the following worksheet can help test understanding of the performance bond concept. Simply choose a commodity, then fill in an initial market action. Follow the commodity's price over a number of days, filling in the appropriate figures and

calculating each day's account credit or debit. For hypothetical purposes, assume that the initial performance bond is \$800 per contract, and the maintenance level is \$600 per contract. To be as accurate as possible, visit www.cmegroup.com and check on the performance bonds for the commodities being reviewed.

Day	Market Action	Value of Position (price x contract size x contracts)	Debit/Credit	Account Balance	Performance Bond Call

Avoiding Some Difficulties

People who decide to hedge their production or purchases sometimes discover a side of themselves they didn't know existed. Hedging with futures can be beneficial to a marketing program, but it isn't magic. Yet some producers go off the deep end in response to hedging. Being honest with themselves, keeping on a business head and not going overboard can help people avoid falling into some of the following traps.

1. Thinking They Know Everything

Some producers who have been involved in the livestock business for many years feel they have very good insight into where the price of livestock is going. These individuals might put on a "Texas Hedge" (buying Live Cattle futures contracts

when they already own cattle). Instead of reducing risk, they will increase it.

2. Hedging Without a Goal

Some producers want to hedge, but don't know their production costs. But to use the futures markets successfully, it is essential that producers accurately know their costs. Otherwise, they cannot know whether they are making good or bad moves.

3. Slipping into Speculation

Some producers switch from hedging to speculating, unable to resist what they think are good price moves in the livestock futures. If a producer is selling Lean Hog contracts without raising hogs, he's speculating. Watch out!

4. Being Too Nervous for Futures

Even if they have a profit locked in, some producers cannot stand day-to-day fluctuations in the markets. Performance bond calls almost drive them around the bend. This type of producer may be more comfortable with cash forward contracting or livestock options.

5. Bailing Out Too Soon

Some producers give in to the temptation to offset and profit from a short hedge after a market decline, but before livestock are marketed, anticipating that prices will rebound. But if the market keeps skidding, they are left without protection. Other producers hedge at reasonable levels, but watch the markets rally, causing performance bond calls that they or their lenders finally can't stand. They pull the plug and offset the hedges at a loss, only to watch in horror as the market drops and they suffer cash market losses as well. This kind of producer would be better off to hedge only a fraction of production, use cash forward contracts or use options.

Key Points

1. All futures traders must deposit a performance bond to guarantee against losses incurred in the futures markets.
2. When an account balance falls below the maintenance level, the account holder must deposit additional money to bring the account back up to the original balance.
3. Short futures positions improve when the futures price falls below their selling price and worsen as the price rises above the selling price.
4. Long futures positions improve when the futures price rises above the buying price and worsen as the price falls below the buying price.

UNIT 9 STUDY QUESTIONS

1. A livestock producer wants to buy three Mar Feeder Cattle contracts. If the performance bond deposit is \$600 per contract, his total deposit is:

 - A \$600
 - B \$1,200
 - C \$1,800
2. The performance bond deposit for selling a Dec Lean Hog contract is \$800. The maintenance requirement is \$600. If an account balance falls to \$500, the account holder will have to deposit another:

 - A \$100
 - B \$300
 - C \$500
3. A livestock producer sold Live Cattle futures at \$89/cwt. Now the futures price is at \$90/cwt. The futures position has:

 - A worsened
 - B improved
 - C stayed the same
4. A hedger bought Feeder Cattle futures at \$99/cwt. Now the futures price is at \$100/cwt. The position has:

 - A worsened
 - B improved
 - C stayed the same
5. When a trader offsets a futures position and realizes a gain in the transaction, the performance bond deposits in the traders' account:

 - A belong to the trader
 - B belong to the broker
 - C belong to the CFTC

Answers

1. C The performance bond deposit is \$1,800 (\$600 times three contracts).
2. B The account balance must be brought back up to \$800, so another \$300 is needed.
3. A If he bought back the contracts at \$90, he would experience a loss of \$1/cwt., so his position has worsened.
4. B If he sold back the contracts at \$100, he would realize a gain of \$1/cwt., so his position has improved.
5. A Performance bond deposits ensure against losses in futures transactions. When traders experience gains in futures transactions, the money deposited is theirs.

UNIT 10 OPTIONS ON LIVESTOCK FUTURES

The Advantages of Options

CME Group offers the most comprehensive livestock risk management tools ever developed – options on Live Cattle, Feeder Cattle and Lean Hog futures. Producers can establish a floor price for the livestock they sell and a ceiling price for the livestock they buy without giving up profit opportunity. What's more, all of this can be accomplished with one up-front cost – the premium. When options are purchased, there are no performance bond requirements. These features of options buying – limited risk, unlimited profit potential and the elimination of performance bond calls – explain why options should be considered in every producer's marketing strategy.

Learning to use this tool requires the same attention that most new skills require: a little time and patience to become familiar with the vocabulary and to develop a comfort level with the concepts. But options aren't that complicated. Some people find it useful to compare options to insurance: options can be purchased as a form of insurance to guard against price changes, just as home insurance or auto insurance protect against damage to your possessions. The purchase price of an option, like an insurance premium, can be thought of as a business expense. Like insurance, options give protection in the event of adverse market conditions or can simply be allowed to lapse if the protection is not needed.

The units that follow offer introduction to the mechanics of using options to forward price livestock. We will also look into the specific applications of basic options pricing strategies for Lean Hogs, Live Cattle and Feeder Cattle, examining some of the ways in which livestock options can help reduce the uncertainty that is naturally present when making key marketing decisions.

Understanding and using livestock options can increase confidence in those decisions, while adding flexibility to the range of marketing strategies available.

Options Terminology

The first and most important step to understanding options on futures is to understand the terms involved.

Option

An option is a choice. It is the right, but not the obligation, to buy or sell something – in this case, a futures contract – at a specific price on or before a certain expiration date. There are two different types of options: puts and calls. Each offers opposite pricing alternatives. Each offers an opportunity to take advantage of futures price moves without actually having a futures position.

Option buyer

Buyers or holders of options can choose to exercise their rights and take a futures position, although they nearly always sell the options back into the market if they have value. Producers who want to hedge either their production or purchases would typically be options buyers. It is important to understand that for every option buyer there is an option seller.

Option seller

Options sellers are also called writers or grantors. They are usually speculators and are obligated to take the opposite futures positions if buyers exercise their rights. In return for the premium, the seller assumes the risk of taking an adverse futures position.

Put option

A put option gives the buyer the right to sell (go "short") a futures contract at a predetermined price on or before an expiration date. For example, a July 70 Lean Hog put gives the buyer the right to be short July Lean Hog futures at \$70/cwt, even if July Lean Hog futures are trading at \$65/cwt. This is a form of insurance against falling prices.

Call option

A call option gives the buyer the right to buy (go “long”) a futures contract at a specific price on or before an expiration date. For example, a September 98 Feeder Cattle call gives the buyer the right to be long September Feeder Cattle futures at \$98/cwt. even if September Feeder Cattle futures are trading at \$102/cwt.

Puts and calls are separate option contracts. They are not the opposite side of the same transaction. For every put buyer there is a put seller; for every call buyer there is a call seller. The buyer pays a premium to the seller in each transaction.

Calls and Puts**Call Buyer**

Pays premium
Has right to exercise

Call Seller

Collects premium
Has obligation if exercised

Put Buyer

Pays premium
Has right to exercise

Put Seller

Collects premium
Has obligation if exercised

Strike price

The strike price, also known as the exercise price, is the price at which the option holder – the buyer – may buy or sell the underlying futures contract. Exercising an option results in a futures position at the designated strike price. Strike prices are set by CME Group at \$1 or \$2/cwt. intervals for livestock.* Strike prices are set around the existing futures prices. Additional strike prices are added as the futures market moves higher or lower. The initial strike prices will continue to be listed.

Underlying futures contract

An underlying futures contract is the corresponding futures contract that may be purchased or sold upon the exercise of the option. For example, an option on a June Live Cattle futures contract is the right to buy or sell one June Live Cattle futures contract.

Premium

A premium is the market-determined cost of an option. The premium of an option at a specific strike price is ultimately determined by the willingness of buyers to purchase the option and sellers to sell it. Factors that affect this willingness are: strike price level relative to futures price level, time remaining until expiration and market volatility.

Exercise

Exercise is the action taken by the buyer of an option who wants to have a futures position. Only the buyer has the right to exercise the option. (The seller has the obligation to take an opposite, possibly adverse, futures position than the buyer, and for this risk receives the premium.)

Expiration date

An expiration date is the last day that an option may be exercised or offset. Exercising a put results in a short futures position. Exercising a call results in a long futures position. It is important to know exactly when livestock options expire to determine strategies accordingly. Current Livestock and meat options expiration dates can be viewed on www.cmegroup.com.

* Options on Feeder Cattle futures are listed with 1/2-cent intervals in a 2-cent range for the nearby contract month.

UNIT 10 STUDY QUESTIONS

- 1. Which of the following describes an option?**
 - A the right to buy or sell a futures contract
 - B establishing a fixed price
 - C opposite of a futures contract
- 2. A put option is:**
 - A the other side of a call option transaction
 - B the right to buy a futures contract
 - C the right to sell a futures contract
- 3. A call option is:**
 - A the other side of a put option transaction
 - B the right to buy a futures contract
 - C a short futures position
- 4. Strike prices are:**
 - A set by the seller
 - B set by the buyer
 - C the exercise prices set by the exchange
- 5. The premium is:**
 - A set by the exchange staff
 - B determined by buyers and sellers
 - C unaffected by the futures price

Answers

- 1. A** The right to buy or sell a futures contract.
- 2. C** The right to sell a futures contract.
- 3. B** The right to buy a futures contract.
- 4. C** The strike price is set by the exchange.
- 5. B** Determined by buyers and sellers.

UNIT 11 HOW OPTIONS WORK

The Right But Not the Obligation

Choice is the main feature of an option. Buying a livestock option provides the right, but not the obligation, to take a long or short position in a specific futures contract at a fixed price on or before an expiration date. The right granted by the option contract is purchased from the option seller and called the premium. The option seller, or writer, keeps the premium whether the option is used or not. The seller must fulfill the contract terms if the buyer exercises the option.

Buying an option means buying a choice. The buyer can choose to let the option expire without a commitment or delivery obligation. This is not an alternative with most cash or agricultural futures contracts.

Who Buys and Sells Options?

There are two types of traders in the futures and options markets – speculators and hedgers. Speculators accept risk in the hope of profit; hedgers want to transfer that risk to someone else. Speculators play a necessary part in the futures and options markets. Without them, hedgers could not transfer risk because there would be no capital available to absorb it.

Where are Options Traded?

Options on futures are traded at exchanges such as CME Group. CME Group provides a centralized marketplace for buyers and sellers to meet and trade options, very much like futures. Options are available through open outcry and on the CME Globex electronic trading platform.

How are Option Prices Determined?

Buyers and sellers of options, representing supply and demand, ultimately determine the price. Several factors affect option premiums:

1. **The volatility of the underlying futures price** – A more volatile futures market will command a higher premium than a less volatile market. This is because when future prices fluctuate significantly, option buyers think there is a greater chance of a price change and are willing to pay more to protect against it or to capitalize on it. Sellers tend to see this situation as more risky, and are only willing to accept that risk if they can receive a higher premium.

Volatility Comparison

June Lean Hog: 70 put
4 months to expiration
Futures @ \$71/cwt.

Cash Market	17%	20%	24%
Approximate Option Premium	2.85/cwt.	3.35/cwt.	4.02/cwt.

2. **The strike price compared to the futures price** – The relationship between the strike price and the underlying futures price is a key influence on option premiums. Options can be in-, at- or out-of-the-money.

A call option is in-the-money when the price of the underlying futures contract is above the strike price. This makes sense because buying at a lower price has greater value than buying at a higher price. A put option is in-the-money when the price of the underlying futures contract is below the strike price. This makes sense because selling at higher prices has greater value than selling at lower prices. In-the-money options are always more expensive than out-of-the-money options.

Call and put options are at-the-money when the price of the underlying futures is the same as the strike price. A call option is out-of-the-money when the underlying futures price is below the strike price. A put option is out-of-the-money when the current price of the underlying futures contract is above the strike price.

3. **Time** – An option's value erodes as the option moves toward the expiration date. This is because the longer the time remaining until expiration, the more chance that the underlying futures price will move to a point where the purchase or sale of the futures at the option strike price will become desirable. Time value is usually greatest when the futures price and the strike price are the same.

What Effect Does Time Have on Option Premiums?

100 days to expiration

Feeder Cattle futures at \$94/cwt.

Strike price at 96

	Call	Put
Approximate Option Premium	\$1.05	\$3.03

30 days to expiration

Feeder Cattle futures at \$94.00/cwt.

Strike price at 96

	Call	Put
Approximate Option Premium	\$0.33	\$2.33

4. **Market expectations** – Options market participants will pay according to their expectations of futures price movements.

Options Specifications

Like futures contracts, livestock options contracts are standardized. There are four basic standard elements for each contract:

1. **The type or kind of option** – that is, whether the option is a put or a call.
2. **The underlying or corresponding futures contract** – in this case Lean Hogs, Live Cattle or Feeder Cattle.
3. **The option month** – the listed futures contract months on which options contracts will be based. Live Cattle options contracts expire on the first Friday of the month of the underlying futures contracts. Feeder Cattle and Lean Hogs expire the same time as the futures contracts. Serial month expirations also are available; these vary from contract to contract, so contact the Exchange or your broker for further information.
4. **The strike price** – which is set by the Exchange.

Note: Contact CME Group or your broker for current contract information.

What is Time Decay?

It is important to note that an option is a wasting asset; that is, its market value erodes as the option approaches expiration. This time decay normally accelerates the last 35 to 40 days before expiration. A similar analogy would be how a term insurance premium would erode in value as the policy approaches the renewal period.

What is Delta?

The price of an option does not move exactly with the futures price. For example, the price of a deep out-of-the-money option will move differently than the price of an at-the-money option for the same price movement of the corresponding futures contract.

The word “delta” means change. In the options market, delta refers to the change – either an increase or decrease – in an option's premium in relation to the change in the underlying futures price.

For example, a put option with a .3 delta implies that the put option would increase in value about \$.30/cwt. with a \$1 drop in the futures price.

Where are Options Premiums Listed?

Options premiums are available in major newspapers, from your broker, electronic news systems and on the Internet (www.cmegroup.com). Livestock option premiums are quoted in dollars per hundredweight. The following illustration can help understand the information in newspapers such as *The Wall Street Journal*.

Options on Live Cattle Futures

Cattle-Live (CME Group) 40,000 lbs.; cents per lb.

1-Strike Price	2-Feb-c	3-Calls-Settle Apr-c	Jun-c	Feb-p	4-Puts-Settle Apr-p	Jun-p
\$78	\$5.10	\$7.20	\$6.50	\$0.15	\$0.35	\$0.70
\$80	\$3.32	\$5.50	\$4.92	\$0.37	\$0.52	\$1.10
\$82	\$1.85	\$3.97	\$3.55	\$0.90	\$0.97	\$1.77
\$84	\$0.90	\$2.65	\$2.50	\$1.95	\$1.60	\$2.60
\$86	\$0.37	\$1.67	\$1.70	\$3.42	\$2.60	\$3.77
\$88	\$0.15	\$1.00	\$1.00	\$5.20	\$3.85	\$5.03

5-Est. vol. 3,732; Thur. vol. 1,486 calls, 883 puts

6-Open interest Thur.: 30,585 calls, 30,767 puts

1 Most active strike prices 2 Expiration month 3 Closing prices for call options 4 Closing prices for put options 5 Volume of options transacted in the previous two trading sessions. Each unit represents both the buyer and the seller 6 The number of options that were still open positions at the end of the previous day's trading session.

Key Points

1. An option gives the buyer the right, but not the obligation, to buy or sell a futures contract.
2. Speculators and hedgers are the two types of traders in the futures and options markets.
3. Options are traded at exchanges such as CME Group, where they trade through open outcry and on CME Globex.
4. Buyers and sellers ultimately establish the price or premium of an option. Volatility, time to expiration and the relationship of the futures price to the strike price are the major factors that affect option prices.
5. Option contracts are standardized and one option equals one futures contract in quantity and quality.

UNIT 11 STUDY QUESTIONS

- Who buys and sells options?
 - speculators
 - hedgers
 - both of the above
 - neither of the above
- What following two factors affect option premiums?
 - volatility of the underlying future
 - brokerage firms
 - market expectations
- Livestock option quotes are available from which of the following?
 - The Wall Street Journal*
 - Newsweek*
 - your local broker
- Choose two basic standard elements for each contract:
 - cash settlement
 - the option month
 - the strike price
- If the futures price drops \$1/cwt. and the put premium increases \$.40/cwt., the put option has which of the following delta factors?
 - .40
 - .60
 - .80

Answers

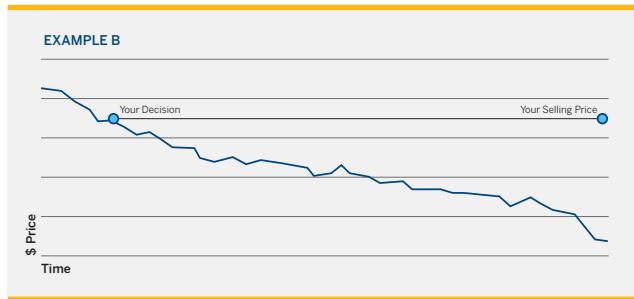
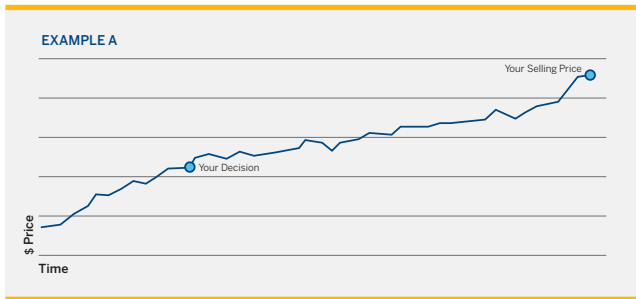
- C Speculators and hedgers buy and sell options.
- A and C Volatility of the underlying futures and market expectations affect options premiums.
- A and C Options quotes are available in *The Wall Street Journal* and local brokers.
- B and C The option month and the strike price are basic standard elements for each contract.
- A Delta reflects this ratio between the premium change and the futures price changes: $40/100 = .40$

UNIT 12 WHICH OPTION TO BUY?

Choosing Puts or Calls

Once livestock producers have determined their costs of production and estimated their local basis, it is time to determine which type of option to buy: puts or calls. Puts are used by short hedgers – those with livestock to sell at some future date – to establish a floor price, leaving open an opportunity for upward price movement.

For example, imagine a producer who uses options to hedge a group of cattle he purchased in October and expects to sell in March. As a short hedger, he will buy a put option in this case. Since the April Live Cattle put options expire in early April, the April contract is the most logical choice.



A farmer knowing his breakeven and anticipated basis makes his marketing decision to purchase a put option. If prices increase (Example A), he sells his livestock at the higher price, less the cost of the option. If prices decrease (Example B), he simply sells the option back at the increased value, which helps offset the decline in cash value.

Calls are used by long hedgers or by someone who wants to purchase livestock in the future and wants to guarantee a ceiling on that price, leaving a downward price move open.

You must also determine the month you want to sell or buy your livestock and choose a put or call option that corresponds to that month. If there is no option month available when you want to sell or buy your livestock, you should consider purchasing an option in the following month. This will give you time to market your livestock and get out of the option hedge.

Which Strike Price to Choose?

There is no one right answer to this question. This depends on a hedger's ability to bear risk, which direction the hedger thinks the market is going and how much the hedger is willing to pay for the option. For example, the higher the strike price (and resulting floor price) on a put option, the more it is going to cost. If the market goes down by the time the hedger sells his livestock, the higher price has been worth the additional cost. However, if the market remains stable or goes up, the higher floor price would not be needed and the premium paid would be left on the table. So it is up to each hedger, and to some extent each lender, to determine the amount of insurance or protection to take.

The same consideration, in reverse, must take place to purchase a call. The higher strike price would offer the least amount of insurance or protection against rising prices but would cost the least. Keep in mind that there is no one strike price that is right for everyone.

Choosing a Strike Price

	Market Down	Market Up
Higher Strike	Higher Floor	Less Opportunity
Lower Strike	Lower Floor	Greater Opportunity
Strike Price	Premium	Floor*
\$70	\$2.50	\$67.50
\$66	\$1	\$65
\$62	\$.50	\$61.50

*Assuming that basis is zero.

Choosing a Call Price

	Market Down	Market Up
Higher Strike	Greater Opportunity	Higher Ceiling
Lower Strike	Less Opportunity	Lower Ceiling
Strike Price	Premium	Ceiling*
\$66	\$2.35	\$68.35
\$70	\$1.02	\$71.02
\$74	\$.35	\$74.35

*Assuming that basis is zero.

Alternatives After Buying an Option

Hedgers who have bought have three alternatives:

1. Sell the option back if it has value. Typically, hedgers offset their options prior to or at expiration and receive the current premium value. Prior to expiration, the premium value could be higher or lower than the original purchase price, depending on how the underlying futures price has changed.
2. Exercise the option. Hedgers do this if they want to take a short futures position if they have bought a put, or a long futures position if they have bought a call.
3. Let the option expire if it has no value. Should the options have no value at the time of expiration, hedgers can simply let their options expire without taking any action.

Purchased option has value: [Sell back](#)

Purchased option has no value: [Let expire](#)

A futures position desired: [Exercise](#)

Key Points

1. It is essential to know breakeven costs in order to determine profits or losses.
2. Basis is used to translate a futures or options quote into a price that is meaningful to a hedger's business.
3. Puts are used by short hedgers to protect against falling prices. Calls are used by long hedgers to protect against rising prices.
4. No one strike price is right for everyone. The level of protection or insurance desired determines which strike price is right.
5. The three alternatives after purchasing an option are: selling it back, letting it expire or exercising it.

UNIT 12 STUDY QUESTIONS

1. It is important that hedgers know their cost of production when using options because:
 - A they can compare their costs to other operators
 - B they will know if they are hedging at a profit or loss
 - C they can determine contract size
2. Basis is:
 - A not important
 - B local cash price
 - C the difference between the local cash price and the closing futures price on the day you sell your livestock
3. The best way to determine your basis is to:
 - A get the information from a neighbor
 - B read your local newspaper
 - C calculate the information yourself
4. A livestock producer interested in establishing a minimum selling price for his commodity would most likely:
 - A buy a call
 - B buy a put
 - C sell a put
5. An individual who has purchased an option can:
 - A offset (sell back) the option
 - B exercise the option into a futures position
 - C let the option expire
 - D all of the above
 - E none of the above

Answers

1. B Producers must know costs to determine if they are hedging at a profit or loss.
2. C Basis is the difference between the local cash price and the closing futures price on the day livestock is sold.
3. C Calculating local cash price and the closing futures price on the same day is the best way for hedgers to determine their own basis.
4. B Purchasing a put establishes a floor price and leaves potential for further gain open.
5. D An individual buying an option can either offset it, exercise it or let it expire.

UNIT 13 ESTABLISHING A MINIMUM SALE PRICE FOR LIVESTOCK – BUYING PUT OPTIONS

Creating a Floor Price

Livestock put options can be used to create a floor price for livestock. Choosing a particular strategy depends mainly on the level of protection desired. Consider these two short hedging strategies using put options.

Example One: Buying a Put Option

A producer purchases a February 84 put option @ \$2/cwt. to price a group of cattle. At the time, February Live Cattle futures

are at \$84.75/cwt. Estimated basis for the end of January is -\$1/cwt. The producer’s estimated minimum selling price would be the 84 strike, minus the premium of \$2, and the estimated basis of -\$1, which would equal \$81/cwt. Let’s take a look at what happens in late January if the market goes up, stays roughly the same or goes down.

At the end of January, the cattle are ready for market:

If Feb futures are	Value of 84 Put	A 84 Put Net Gain/Loss	B Local Cash Sale	C Net Realized Price
\$94	\$0	-\$2	\$93	\$91
84	0	-2	83	81
74	10	+8	73	81
				A + B = C

When the futures price drops below the put strike price, the minimum selling price or insurance kicks in and protects the floor that was established when the 84 Live Cattle put was purchased. If the market goes higher, the producer will be able to realize the increase less the cost of the premium, while having enjoyed protection from a price drop.

Example Two: Rolling Up to a Higher Floor

Imagine that a livestock producer has purchased a put option similar to Example One and the market increases after the original purchase. What are the alternatives? The producer still wants protection but also wants to establish a higher floor price. He establishes that higher floor by purchasing a June Lean Hog 70 put option for \$1.95, which are then selling at \$70.85. Estimated basis for the end of May is +\$1/cwt. The producer’s estimated minimum selling price is \$70, minus the premium of \$1.95, plus the estimated basis of \$1, or \$69.05/cwt.

Two months later, June Lean Hog futures are trading at \$76.25/cwt. The producer buys a June 76 Lean Hog put for \$1/cwt. He can either sell it back or offset it at the original 70 put if it has value or leave it in place for extra protection if the market should drop below his established floor. In this example, he will leave the 70 put in place. His new minimum price is the put strike price of 76, minus the premium of \$1, minus the \$1.95 premium of the 70 put, plus the estimated basis of \$1, or \$74.05/cwt. The producer increased his floor, or minimum selling price, by \$5. Let’s take a look at what happens when the market goes up, sideways or down from its initial position.

At the end of May, the hogs are ready for market:

Without Rolling Up to Higher Floor

If June futures are	Value of 70 Put	A 70 Put Net Gain/Loss	B Local Cash Sale	C Net Realized Price
\$80	\$0	-\$1.95	\$81	\$79.05
70	0	-1.95	71	69.05
60	10	+8.05	61	69.05
				A + B = C

Rolling Up to Higher Floor

If June futures are	A 70 Put Gain/Loss	Value of 76 Put	B 76 Put Net Gain/Loss	C Local Cash Sale	D Net Realized Price
\$80	-\$1.95	\$0	-\$1	\$81	\$78.05
70	-1.95	6	+5	71	74.05
60	+8.05	16	+15	61	84.05
					A + B + C = D

These opportunities do not come along that often to pass up. Rolling up a put is a good way to take advantage of a price increase while maintaining the downside price protection you need. Many strategies can be used to forward price livestock. Once hedgers are comfortable with the basics of options, we recommend that they learn additional strategies for options trading available in other CME Group publications, CME Group online Webinars, CME Group seminars and trainings, and other industry publications.

Key Points

1. Purchasing a put option establishes a floor price for a sale of livestock.
2. Rolling up to a higher strike price can be used as a follow-up strategy to purchasing a put.

UNIT 13 STUDY QUESTIONS

- 1. Purchasing a put option:**
 - A establishes a ceiling price
 - B establishes a floor price
 - C fixes a price
- 2. If a livestock producer purchases a \$70 put with a premium of \$1.50 and estimated basis of zero, the estimated minimum selling price is:**
 - A \$71.50
 - B \$70
 - C \$68.50
- 3. A put option is in-the-money when:**
 - A the underlying futures price is above the strike price
 - B the underlying futures price is the same as the strike price
 - C neither of the above
- 4. The follow-up strategy of rolling up to a higher floor is considered:**
 - A a way to reduce premium cost
 - B very risky
 - C a sound hedge strategy
- 5. When rolling up to a higher floor price, it is possible to:**
 - A sell back the first put option
 - B keep the first put option
 - C neither of the above
 - D either of the above

Answers

- 1. B** Purchasing a put option establishes a floor price, leaving the opportunity open for a higher price.
- 2. C** \$68.50 estimated minimum selling price ($\$70 \text{ strike price} - 1.50 \text{ premium} + 0 \text{ basis}$).
- 3. C** Neither of the above. A put option is in-the-money when the underlying futures price is below the strike price.
- 4. C** Rolling up to a higher floor price is considered a sound hedging strategy.
- 5. D** It is possible to either sell back the original put option if there is some value or keep it in place for additional downside protection.

UNIT 14 ESTABLISHING A MAXIMUM PURCHASE PRICE – BUYING CALL OPTIONS

Forward Pricing a Purchase

A long hedger (such as a feedlot operator, a backgrounder or a stocker operator) is someone who needs a commodity at some point in the future and seeks to forward price the anticipated purchase. Again, choosing a particular hedging strategy depends upon the level of protection desired. Consider these two long hedging strategies using call options.

Example One: Buying a Call Option

The long hedger purchases a January 94 call option @ \$2.55/cwt. to protect the purchase price of feeder cattle that

will be needed in January. At the same time, January Feeder Cattle futures are at \$95.50/cwt. The estimated basis for the end of January is +\$3. The estimated maximum purchase price would be the 94 strike price, plus the premium of \$2.55, plus the estimated basis of +\$3, or a total of \$99.55/cwt. Let's take a look at what happens in late January if the market goes up, stays the same or goes down.

At the end of January when feeder cattle are purchased for feeding:

If Jan futures are	A Local Cash Purchase	Value of 94 Call	B 94 Call Net Gain/Loss	C Net Realized Price
\$104	\$107	\$10	+\$7.45	\$99.55
94	97	0	-2.55	99.55
84	87	0	-2.55	89.55
				A - B = C

Example Two: Rolling Down to a Lower Ceiling Price

A hedger has purchased a call option similar to Example One, but the market falls after the original purchase. What can the hedger do as a follow-up strategy? Assume that the hedger purchased a September 96 Feeder Cattle call option for \$2.60/cwt. anticipating a + \$1 basis, and the market goes down by \$4. Should he just ignore the decrease or is there something he can do to take advantage of the decrease before the purchase

of the feeder cattle in September? Let's take a look at what would happen if he were to purchase a September 92 Feeder Cattle call option for \$2/cwt. and leave the 96 September call in place. The new maximum price is the call strike price of 92, plus the \$2 premium, plus the \$2.60/cwt. premium of the 96 call, plus the estimated basis of \$1, or \$97.60/cwt. Here's what happens if the market goes higher, sideways or lower from the initial position.

When the hedger is ready to purchase the feeder cattle in September:

Without Rolling Down to a Lower Ceiling Price

If Sep futures are	A Local Cash Purchase	Value of 96 Call	B 96 Call Net Gain/Loss	C Net Realized Price
\$106	\$107	\$10	+\$7.40	\$99.60
96	97	0	-2.60	99.60
86	87	0	-2.60	89.60
				A - B = C

Rolling Down to a Lower Ceiling Price

If Sep futures are	A Local Cash Purchase	B 96 Call Net Gain/Loss	Value of 96 Call	C 96 Call Net Gain/Loss	D Net Realized Price
\$104	\$107	+\$7.40	\$14	+\$12	\$87.60
94	97	-2.60	4	+2	97.60
84	87	-2.60	0	-2	91.60
					A - B - C = D

The follow-up strategy of purchasing a call at a lower strike price was advantageous if the market turned around and became higher. Both premiums were lost if the market continued lower; however, the hedger had a lower ceiling price in place and additional protection against an increase in the purchase price of the feeder cattle.

Key Points

1. Purchasing a call option establishes a ceiling price for purchase of your livestock.
2. Rolling down to a lower strike price can be used as a follow-up strategy to purchasing a call.

UNIT 14 STUDY QUESTIONS

1. Purchasing a call option to protect a purchase price:
 - A establishes a floor
 - B establishes a ceiling
 - C fixes a price
2. If a hedger purchases a \$75 call with a premium of \$2 and expected basis time of \$2, what is the estimated maximum purchase price?
 - A \$75
 - B \$79
 - C \$77
3. If the underlying futures price moves up \$1, the call option premium can generally be expected to:
 - A increase in value
 - B decrease in value
 - C remain stable
4. A call option is in-the-money when:
 - A the underlying futures price is above the strike price
 - B the underlying futures price is below the strike price
 - C the underlying futures price is the same as the strike price
5. Rolling down to a lower ceiling price involves:
 - A buying back the first call option
 - B selling back the first call option
 - C keeping the first call option
 - D none of the above

Answers

1. **B** Purchasing a call option is essentially establishing a ceiling price, leaving the downside potential open.
2. **B** \$79 estimated maximum purchase price ($\$75$ strike price + 2 premium + 2 basis).
3. **A** Generally speaking, when the underlying futures price rises, a call option (right to buy) becomes more valuable.
4. **A** A call option is in-the-money when the underlying futures price is above the strike price.
5. **B and C** When rolling down to a lower ceiling price, a trader can sell back the first call option if it has any value or keep it for upside protection.

UNIT 15 OPENING A HEDGING ACCOUNT

About Futures Brokers

Producers and processors who plan to hedge their livestock purchases and sales with futures must work through a futures brokerage firm.

There are basically two kinds of brokers – full service brokers and discount brokers – who offer different levels of service.

Full-service brokers help customers make hedging decisions using market information. They will take the time to understand their clients' situations and be available for discussion and advice regarding trade orders, possibly even suggesting what their clients' next moves should be. The brokerage firm may also send out market information and newsletters, and have telephone hot lines to keep customers informed. Commissions with a full-service broker, which usually are paid at the end of a sell-buy (or buy-sell) transaction, depend on the level of service and quantity traded. Commissions vary from broker to broker.

Discount brokers specialize in order execution only. Hedgers who feel that the commissions they pay per transaction are the most important criteria for selecting a broker may wish to choose a discount broker. Generally, customers simply call their discount brokerage firms and place their order.

Choosing a Broker

Here are a few hints on how to go about finding the right broker:

1. Talk to other producers and get referrals. Find out which brokers have happy clients. Find out which brokers are considered to be outstanding.
2. Look for brokers who have a strong farm orientation, understand hedging and have hedging accounts.
3. Call or visit the brokers. Look for someone who is down to earth, interested in your operation and who pays attention to your goals. A compatible relationship requires the ability to work through important hedging decisions. This can be personal and sometimes emotional, and it is important to have a broker you can talk to and trust.

Whose Money is Being Used for Hedging?

Some hedgers use their own money to support their hedging activities, while others use funds from lenders. Whether a short hedger or long hedger, it is vital to have enough money to place the required performance bond deposits on the contracts being sold or purchased and to be able to meet any subsequent requirements.

Key Points

1. A full-service broker provides market information and advice as well as placing trades for customers.
2. A discount broker takes orders and places trades for customers, and may provide limited services.
3. Commissions depend on level of service and quantity traded.
4. A hedge broker should have hedging experience and be familiar with agriculture.
5. Lenders should understand the mechanics of hedging.

General Services to Look for with a Broker

Market Background

The type of orders to use when entering or exiting the market and awareness of successful market practices.

Information Center

Cash and futures prices and anticipated price movement.

Hedging Strategies

Types of strategies available that are consistent with your cash marketing plans and hedge objectives.

Market Guidance

Monitoring local basis movements, supply and demand factors, market do's and don'ts and monitoring your account in conjunction with your lender.

Hedging Advice

Assistance in the overall planning of your hedge program from your production, breakeven and target prices to trading.

Arranging for Hedging Funds

Some producers may want to set up a hedging line of credit with a lender. In this case, a security agreement and hedge assignment with the lender will have to be signed – the broker may have to sign the agreement as well. This agreement includes clauses such as:

- The lender agrees to supply funds for hedging only, not speculation
- Hedging profits are applied against your loan balance
- The lender will receive frequent reports on trading activity

Customers who set up a hedging line of credit must be sure that their lenders:

- Are willing to work with them and their brokers in a team effort
- Understand the mechanics and fundamentals of hedging
- Are willing and able to provide a line of credit for hedging, including possible performance bond calls

Opening an Account with a Futures Broker

Opening a futures account involves filling out and signing a number of forms, including:

1. Personal information, including annual income, net worth, liquid assets and number of years of experience as a hedger. This information is confidential.
2. Risk disclosure information, required by the CFTC and provided by the broker. For futures, customers are made aware that they might lose their entire performance bond deposits and performance bond calls. They are warned that if they can't meet a performance bond call, their brokers may liquidate their positions at a possible loss to them.
3. The brokerage firm's agreement, which states what customers each agree to. Basically, customers give the firm permission to enter trades according to their instructions. Customers agree to deposit the required performance bond, meet performance bond calls and pay commissions. The brokerage firm agrees to place orders according to customers instructions, subject to the rules of the exchanges and CFTC regulations.
4. A hedge account designation that states that all transactions will be hedges according to CFTC regulations. The form will list all the commodities for which each customer may be considered a hedger.

UNIT 15 STUDY QUESTIONS

- 1. A discount broker's commission will generally be lower than a full-service broker because the discount broker:**
 - A has more clients
 - B provides fewer services
 - C is less knowledgeable about hedging
- 2. Help in reaching decisions for an inexperienced hedger is usually available from:**
 - A a full-service broker
 - B a discount broker
 - C either A and B
- 3. A lender may be asked to meet a performance bond call on your short hedge position when:**
 - A the futures price falls below your selling price
 - B the futures price rises above your selling price
 - C both A and B
- 4. The security agreement and the hedge assignment with the lender will most likely allow you to use the funds for:**
 - A hedging and speculating
 - B speculating only
 - C hedging only
- 5. Opening an account with a broker involves signing risk disclosure forms because:**
 - A lenders require it
 - B the CFTC requires it
 - C the broker requires it

Answers

- 1. B** Discount brokers provide fewer services, so the commission is generally lower.
- 2. A** Full-service brokers usually provide more assistance to inexperienced hedgers.
- 3. B** When the futures price rises above the selling price, a hedger may have performance bond calls.
- 4. C** The lender will most likely want to restrict a hedger's activity to hedging only.
- 5. B** The CFTC requires that brokers inform all traders of trading risks.

UNIT 16 TYPES OF FUTURES ORDERS

Choosing the Appropriate Order

Several different kinds of orders can be placed through a broker for floor or online trading or for individuals entering their own trades electronically. The four most common are presented here.

Market Order

An order for the sale or purchase of a futures contract to be filled as soon as possible at the best possible price. For example, a trader working through a broker would say, “Sell four July Lean Hog futures contracts at the market.” The four contracts will be sold promptly at the best price that can be obtained. In an active, high-volume market, market orders can usually be executed without substantial price concessions.

Price Limit Order (Limit Order)

A price order is an instruction to fill an order at a certain price or better. For example, if a hedger says, “Sell four July Lean Hogs at \$60,” the futures price must be \$60 or above before the trade is eligible for execution.

Stop Order

A stop order is an instruction to place an order at a certain price level. A sell stop must be below the market; a buy stop must be above the market. For example, suppose the July Lean Hog futures price is at \$60, and a hedger says, “Sell four July Lean Hogs at \$59.50 stop.” This order is not executed unless the market falls to \$59.50 or below, at which point the stop order becomes a market order and is executed.

A stop order can be hard to understand. Why not sell at the higher price, instead of allowing prices to fall before selling? Let’s say that July Lean Hogs are at \$60, and a hedger placed a price order at \$60. He would sell at that time. If he placed a stop at \$59.50, the order wouldn’t be filled. But suppose the market rises to \$62. The hedger can replace the stop order with one at \$61.50. If the market rises again, this time to \$64, the hedger can replace the stop with one at \$63.50. Finally, if the market turns down, the order is filled at \$63.50 or below – a much better than the price order at \$60.

The objective with a sell stop order (for entering a short-hedge position) is to be unhedged when prices appear to be rising and hedged when they appear to be declining. The objective with the buy stop order (for entering a long-hedge position) is to be unhedged when prices appear to be falling and hedged when they appear to be rising.

Stop Close Only Order

This is a stop order that is executed only within the last minute of trading, during the close. The hedger says, “Sell four July Lean Hogs at a stop close only of \$59.50,” where this price is under the futures price at the time he places the order. The hedger wants the order to be filled only if the market is going to close at or below \$59.50. This order can be filled only in the last minute, or less, of trading.

For the short hedger planning to sell livestock

Taking a short position: Sell 5 June Lean Hogs or go short 5 June Lean Hogs

Offsetting a short position: Buy 5 June Lean Hogs

For the long hedger planning to buy livestock

Taking a long position: Buy 2 January Feeder Cattle or go long 2 January Feeder Cattle

Offsetting a long position: Sell 2 January Feeder Cattle

Will Orders Always Be Filled?

The possibility always exists with price, stop and stop close only orders that the order won't be filled the day a customer places it, or at all. The market may never penetrate the price specified in the order.

What's the Proper Trading Language to Use?

When placing an order with a broker, it is important to be very careful with the language used. Giving incorrect instructions can result in situations that are totally unexpected. It's best to place the order in simple language. Just to be sure, repeat the order to the broker and have the order read back. It's not unheard of for a producer who wants to offset a short hedge position to say "sell" when he means "buy" and end up with twice as many short contracts.

Key Points

1. A market order will be filled promptly at the best possible price.
2. A price order to sell is filled at the stated price or above; a price order to buy is filled at the stated price or below.
3. A stop order to sell is placed below the market and is filled at the stated price or below.
4. A stop order to buy is placed above the market and is filled at the stated price or above.
5. A stop close only order is a stop order that is filled during the last minute, or less, of trading.

UNIT 16 STUDY QUESTIONS

1. If the market is at \$80.25, it is possible to place a stop order to buy a futures contract:
 - A above \$80.25
 - B below \$80.25
 - C at \$80.25
2. Go short three futures means:
 - A buy three contracts
 - B buy back three contracts
 - C sell three contracts
3. A stop close only order can be filled only:
 - A when you say so
 - B during the first minute of trading
 - C during the close
4. A price order to sell futures at \$59 can be filled only:
 - A if the market reaches \$59 or above
 - B if the market is below \$59
 - C during the close
5. When a stop order's price is reached, the order can be filled:
 - A only below stop price
 - B only above the stop price
 - C above, below or at the stop price

Answers

1. A A buy stop is placed above the market. If the market is at \$80.25, the buy stop must be placed above \$80.25.
2. C Go short means to sell futures.
3. C The stop close only order can be filled during the close only if the price is reached.
4. A A price order to sell can be filled at the stated price or above if the stated price is reached.
5. C When a stop order's price is reached, the order becomes a market order and can be filled at the best price that can be obtained.

UNIT 17 POINTS TO SUCCESSFUL HEDGING

What Factors Should Be Considered?

A number of different options strategies can be used to forward price livestock. Some are very simple and have limited risk. Others are more complex and require more knowledge and attention. Hedgers using options for the first time may want to use simple strategies on a portion of their production or inventory, and then evaluate the results. In addition to understanding the risks and rewards of a particular option strategy before actually “pulling the trigger” to get started, the following other factors should be kept in mind.

1. Cost of Production

Unless a hedger knows his cost of production, it is impossible to know if he is pricing in a profit or loss. To successfully price livestock futures and options, a good estimate of breakeven costs is essential.

2. The Futures and Options Contract Specifications

Hedgers need to be familiar with the major aspects of both the option contract and the underlying futures contract. Knowing the contract month, weight, type and expiration date ensures that a hedge for purchases or sales is for the appropriate contract. It is important to remember that some option contracts expire prior to the underlying futures delivery month.

3. Knowledge of Local Basis

The relationship of the local cash market to the futures market when selling or buying livestock is known as the basis. It is extremely important to estimate basis at sale or purchase time to calculate what the end result will be. As previously mentioned, it is best if hedgers chart their own basis to use in their calculations.

4. Knowledgeable Lenders and Brokers

If hedgers are borrowing money for a livestock operation, it is important that their lenders understand what the hedgers' marketing objectives are and that the lenders are willing to provide the necessary capital. It is not wise to begin a hedging program and then find that the lender is not in support of that program. Likewise, it is important that hedgers find knowledgeable brokers who understand the agriculture in their areas. The brokers should be aware of what basis is and what their clients' goals are as hedgers. Understanding and communication between lenders, brokers and hedgers is essential to meeting marketing goals.

5. Specific, Written Marketing Objectives

Specific, written marketing objectives are more easily achieved than mental plans that can be easily changed.

6. Discipline

Once hedgers have decided on their marketing plans, they need the discipline to stick to them and not let market movement excite them into becoming selective hedgers. Discipline is a key to marketing success. Individuals who understand and effectively use the marketing tools available will certainly stand a better chance of financial success in their livestock production business.

GETTING STARTED

including highly complex options spreads.

Getting Started in Livestock Products

Before trading futures or options on livestock products, a company or individual must have a commodity broker. Commodity brokers can be located in branch offices of a CME Group clearing firm or in independent brokerage houses (IBs) associated with a CME Group clearing firm. It is important to shop around to find a broker that is the right fit for the company or individual.

Once the company or individual has found a broker with whom they feel comfortable and who understands their trading plan, the company or individual will need to open an account. This requires signing a customer security deposit statement. This agreement binds an individual customer or an organization to make good on any losses incurred in the course of trading. In addition, a Risk Disclosure Document needs to be signed that indicates that the customer understands the risks of futures and options trading. Then, once the customers have deposited the required amount of performance, they may begin trading. Today's greater need for risk management and hedging tools has required investors to become increasingly sophisticated about futures and options on futures products. In light of growing global demand and expanding electronic accessibility, CME Group Commodities are generating increased opportunities for hedgers and speculators in these markets. With customers around the world, a diverse product line, deep, liquid markets and strategic alliances with other exchanges, CME Group is truly a global marketplace. Why not make it yours?

To start trading CME Group Commodity products, please contact your broker directly or visit our Web site at www.cmegroup.com/commodities. If you would like to talk to a CME Group representative, please call our Customer Service Line, 800 331 3332. Outside the U.S., please call 1 312 930 2316.

Electronic Trading and Livestock Futures

As a leader in electronically traded derivatives products, CME Group offers customers commodity futures contracts on its CME Globex trading platform. Livestock futures and options – Live Cattle, Feeder Cattle and Lean Hogs – trade electronically, as do Frozen Pork Bellies futures. Traders are able to see free real-time price quotes in the livestock markets at www.cmegroup.com/elivestockquotes, where current prices are posted continuously.

You can easily access the CME Globex trading platform because it's open virtually 24 hours a day through approximately 1,000 direct connections in more than 90 countries and foreign territories around-the-world, as well as through several telecommunications hubs – located in London, Amsterdam, Dublin, Milan, Paris and Singapore. That means reduced connectivity costs, increased accessibility and fast, efficient trading of CME Group products.

The platform's open architecture enables customers to access CME Globex using their own proprietary trading applications or the systems provided by futures brokers and independent software vendors, as well as a CME Group-provided trading application. Traders are able to see the top prices and other data right on their screen and transactions are executed in less than a second. The advanced capabilities of the CME Globex platform allow traders to execute all of the traditional (outright) transactions in futures as well as a variety of spread trades,

CME GROUP COMMODITY PRODUCTS

Prices of these primary products are subject to factors that are difficult or impossible to control, such as weather, disease and political decisions. In addition, they are also short-term fixed-supply products offered in a context of growing worldwide demand and global economic expansion. As such, CME Group Commodity products serve commodity producers and users seeking risk management and hedging tools, alongside funds and other traders looking to capitalize on the extraordinary opportunities these markets offer.

CME Group offers the widest range of commodity futures and options of any U.S. exchange, with trading available on the following products:

Grains and Oilseeds

- Corn futures and options
- Mini-sized Corn futures
- Ethanol futures, options and swaps
- Oat futures and options
- Rough Rice futures and options
- Soybean futures and options
- Mini-sized Soybean futures
- Soybean Meal futures and options
- Soybean Oil futures and options
- Wheat futures and options
- Mini-sized Wheat futures
- Corn Calendar Swap
- Soybean Calendar Swap
- Wheat Calendar Swap
- Eastern Nebraska Basis Swap
- Eastern South Dakota Basis Swap
- Northeastern Iowa Basis Swap
- Northwestern Iowa Basis Swap
- Southern Iowa Basis Swap
- Southern Minnesota Basis Swap

Commodity Indexes

- Dow Jones-AIG Commodity Index Excess Return futures
- S&P Goldman Sachs Commodity Index (GSCI) futures and options
- S&P GSCI Excess Return Index futures
- S&P GSCI Excess Return Index swaps

Dairy Products

- Butter futures and options
- Cash-settled Butter futures and options
- Milk Class III futures and options
- Milk Class IV futures and options
- Nonfat Dry Milk futures and options
- Deliverable Nonfat Dry Milk futures and options
- Dry Whey futures and options

Livestock

- Feeder Cattle futures and options
- Live Cattle futures and options
- Lean Hogs futures and options
- Frozen Pork Bellies futures and options

Lumber and Wood Pulp

- Random Length Lumber futures and options
- Softwood Pulp futures and options
- Hardwood Pulp futures and options

Contract specifications and additional resources can be found at www.cmegroup.com/commodities.

For more information or to begin trading, contact your broker directly or e-mail commodities@cmegroup.com.

Futures trading is not suitable for all investors, and involves the risk of loss. Futures are a leveraged investment, and because only a percentage of a contract's value is required to trade, it is possible to lose more than the amount of money initially deposited for a futures position. Therefore, traders should only use funds that they can afford to lose without affecting their lifestyles. And only a portion of those funds should be devoted to any one trade because a trader cannot expect to profit on every trade.

All references to options in this brochure refer to options on futures.

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