CME Commodity Trading Manual

To the Reader...

This book was originally designed as a guide for teachers of high school agricultural education programs. It contained supplemental materials and study pages, and was one of the first organized commodity marketing courses for high school students.

The original course was funded by Chicago Mercantile Exchange (CME) in conjunction with the National FFA Foundation and the Stewart-Peterson Advisory Group. Several individuals contributed to the project, including high school instructors to whom CME is grateful.

The success of the course in the schools has prompted CME to redesign the book as a textbook, revise and update it once again, and make it available to anyone who wishes to gain a comprehensive introduction to commodity marketing.

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Chapter 1

Marketing Basics

Chapter One Objectives

- To understand the evolution of the commodity marketplace
- To understand the role commodity exchanges play in the market
- To learn the four marketing alternatives and to be able to describe their advantages and disadvantages
- To introduce the basic vocabulary of the commodities trading marketplace
- To learn about cash sales and forward contracts

Marketing Choices

Producers have four marketing alternatives.

If you are involved in the production of agricultural commodities, you can price your commodities using one or more combinations of these four alternatives:

- Cash sales
- Forward contracts
- Futures contracts
- Options on futures contracts

1. With *cash sales* you deliver your crop or livestock to the cash markets (such as the grain elevator or meat packer) and receive the price for the day. You get cash right away, and the transaction is easy to complete. But using this alternative, you have only one chance to sell. You take what you can get. This is actually one of the riskiest marketing alternatives for producers.

2. *A forward contract* is negotiated now for delivery later. It is easy to understand. You enter a contract with the buyer who agrees to buy a specified quantity and quality of the commodity at a specified price at the time of delivery. The price is locked in, and you are protected if prices fall. However, you cannot take advantage of price increases, and you must deliver the specified amount, even if you have a crop failure. Both parties have some risk that the other will not honor the contract.

Forward contract	A private, cash market agreement between a buyer and seller for the future delivery of a commodity at an agreed price. In contrast to futures contracts, forward contracts are not standardized and not transferable.

3. A *futures contract* is an agreement to buy or sell a commodity at a date in the future. You buy or sell through a brokerage firm that transacts the trade for you. Once you are set up with a firm, it is as easy as a phone call to make a trade. You must deposit a performance bond (a small percentage of the contract value) with the brokerage firm to guarantee any loss you may incur on the futures contract. If the value of the contract goes against your position, you will be asked to deposit more money. You also pay a broker a commission for every contract traded. (You will learn more about futures later in the chapter.)

Futures contract	An obligation to deliver or to receive a specified quantity and grade of a commodity during a designated month at the designated price. Each futures contract is standardized by the exchange and specifies commodity, quality, quantity, delivery date and settlement.

Hedging is selling or buying a futures contract as a temporary substitute for selling or buying the commodity at a later date. For example, if you have a commodity to sell at a later date, you can sell a futures contract now. If prices fall, you sell your actual commodity at a lower cash price, but realize a gain in the futures market by buying a futures contract at a lower price than you sold. If prices rise, your higher price in the cash market covers the loss when you buy a futures contract at a higher price than you sold. This may be considered a pure hedge, or a replacement hedge. It minimizes your risk and often earns you more than the forward contract price.

Hedging	1 - Taking a position in a futures market opposite to a position held in the cash market to minimize the risk of financial loss from an adverse price change. 2 - A purchase or sale of futures as a temporary substitute for a cash transaction which will occur later.

4. *Options on futures contracts* are traded at futures exchanges too. (You will learn more about options in Chapter Six.) An option is the right, but not the obligation, to buy or sell a futures contract at a specified price. You pay a premium when you buy an option, and you pay a commission to the broker.

   For example, if you buy a put option and prices rise, you can let the option expire and sell in the cash markets at a higher price. If prices fall, you can protect yourself against the low cash price by:

   • Offsetting the option (sell the same type of option).
   • Exercising the option (exchange the option for the underlying futures contract).

Option	The right, but not the obligation, to sell or buy the underlying (in this case, a futures contract) at a specified price on or before a certain expiration date. There are two types of options: call options and put options. Each offers an opportunity to take advantage of futures price moves without actually having a futures position.

Marketing Alternative	Advantages	Disadvantages
Cash sales	• Easy to transact • Immediate payment • No set quantity	• Maximize risk • No price protection • Less flexible
Forward contract	• Easy to understand • Flexible quantity • Locked-in price • Minimize risk	• Must deliver in full • Opportunity loss if prices rise
Futures contract	• Easy to enter/exit • Minimize risk • Often better prices than forward contracts	• Opportunity loss if prices rise • Commission cost • Performance bond calls • Set quantities
Options contract	• Price protection • Minimize risk • Benefit if prices rise • Easy to enter/exit	• Premium cost • Set quantities • Commission cost

Cash Sales

Cash sales involve risk for the producer.

As a producer of corn, wheat, soybeans, cattle, hogs or dairy products, you will eventually sell your commodity in the cash markets. You can sell directly in your local markets or negotiate a forward contract for sale at a later date. Even if you sell futures contracts or buy options to sell futures, you will close out your position and sell your commodity in the cash markets. Very few futures contracts are actually delivered.

If you are selling grain or livestock on a cash basis, the terms are negotiated when you bring in the grain or livestock. The price is established then and there, and you make immediate delivery and receive payment. This type of sale occurs at elevators, terminals, packing houses and auction markets.

You can choose when to sell grains in the cash market. You can sell at harvest or store the grain until later when you expect prices to be better. Because of storage costs, there is risk involved in waiting for prices to rise. For example, if it costs you $0.05/bushel per month to store soybeans, then the price four months from now would have to be more than $0.20/bushel ($0.05 x 4 months) better than harvest prices for you to gain any advantage over selling at harvest.

You can also make a cash sale with a *deferred pricing agreement.* You deliver the commodity and agree with the buyer to price it at a later time. For example, you may deliver corn in October and price it at any time between then and March. In this way, you transfer the physical risk of having the corn and the storage cost, and you may be able to get a higher price for the corn. Of course, there is the added risk of the elevator's financial stability.

Forward Contracts

You can negotiate a forward contract with your local merchant for future delivery of your crop or livestock. You and the buyer agree on quantity, quality, delivery time, location and price. *This should be a written contract.* Once you enter into this contract, you eliminate the risk of falling prices. However, if prices go higher at delivery time, you'll still receive the negotiated price.

When you make delivery, it will be inspected before payment is made. There may be a premium or discount in price if quality or quantity vary.

>   **Cash Markets**
>   - Cash Sales/Deferred Pricing
>   - Forward Pricing/Basis Contract

A *basis contract* is another method of forward contracting. In this case, you lock in a basis relating to a specified futures contract. When you deliver, the price you receive is the current price of the specified futures contract adjusted by the basis you agreed upon. For example, if a basis of $0.20 under was specified in the contract and the futures price is $3.04 on the delivery date, then the cash price you receive is $2.84 ($3.04 + -$0.20 = $2.84). You need to know the local basis patterns before entering into this type of forward contract.

Basis

The relationship of the local cash market price and futures market price is called *basis.* The value of basis is calculated by subtracting the price of the nearby futures contract from the local cash market price. For example, if the cash price for corn is $2.80 and the futures price is $3.00, then the basis is $0.20 under ($2.80 – $3.00 = -$0.20). With a cash price of $2.95 and a futures price of $2.90, the basis is $0.05 over ($2.95 – $2.90 = $0.05).

Basis = Cash Price - Futures Price

Basis	The difference between the spot or cash price and the futures price of the same or a related commodity. Basis is usually computed to the near future, and may represent different time periods, product forms, qualities and locations. The local cash market price minus the price of the nearby futures contract. A private, cash market agreement between a buyer and seller for the future delivery of a commodity at an agreed price. In contrast to futures contracts, forward contracts are not standardized and not transferable.

Storable commodity futures prices reflect the cost of delivering a commodity to a specific place. Cash prices reflect the cost of delivering (perhaps a different quality) to a different place. These costs include transportation, carrying charges such as storage costs for grain, and marketing costs such as weight shrinkage for livestock. Basis reflects supply and demand for a given commodity in a given location along with the cost of delivering (perhaps a different quality) to a different place.

NOTE: In your area, people may consider basis to be *futures minus cash.* However, in this course, as in most works on futures, the formula used is cash *minus futures.*

Basis	• Basis is the local cash price for a commodity minus the futures market price. • When basis becomes more positive, it is said to *strengthen.* • When basis becomes less positive, it is said to *weaken.*

Basis varies from one location to another. Depending on the circumstances of the local market, the basis may be consistently positive (over) or negative (under). Each local market has its own pattern. Storable commodity basis also changes during the life of the futures contract. Basis tends to start wide, but the threat of delivery on the futures contract generally causes the basis to narrow. That is, the futures price moves closer to the delivery point cash price during the delivery month.

Evolution of Futures

The first futures contracts were established in Chicago.

No one person invented futures trading, and no one invented the futures exchanges at which this trading takes place. The futures market evolved out of the circumstances of the market and the need to improve the existing marketing system. This evolution took place over a long period of time from the practice of forward contracting.

It all started in Chicago. Chicago was a growing city in the 1830s and a center for the sale of grains grown nearby to be shipped to the East.

In the 1840s, farmers spread over the countryside farther and farther away from Chicago where sales were transacted. Local merchants began to buy corn from farmers for subsequent sale in Chicago.

By the early 1850s, the local merchants began to sell corn to the Chicago merchants on time contracts, or forward contracts, to minimize their risk. The farmers risked not having anyone buy their corn or having to sell at rock-bottom prices. The merchants risked not having any corn to buy or having to buy at sky-high prices. The forward contract set forth the amount of corn to be sold at a future date at an agreed-upon price. Forward contracts in wheat also started in the early 1850s.

As soon as the forward contract became the usual way of doing business, speculators appeared. They did not intend to buy or sell the commodity. Instead, they traded contracts in hope of making a profit. Speculation itself became a business activity. Contracts could change hands many times before the actual delivery of the corn. During this time, contracts were negotiated and traded in public squares and on street curbs.

The **Board of Trade of the City of Chicago** (CBOT) had been organized in 1848 with the intention to promote commerce. In 1859, the state of Illinois authorized the Board of Trade to develop quality standards and to measure, gauge, weigh and inspect grain. This made the process of buying and selling grain and the trading of forward contracts more efficient. Trading moved from the street to a meeting place that the Board of Trade provided.

At first, there was little control over the trading of forward contracts. Sometimes, people disappeared when the time came to settle contracts, and others could not pay. In 1865, the CBOT issued general rules setting forth:

- A requirement for a margin, or good faith, deposit
- Standardized contract terms for quantity and quality of the commodity and delivery procedures
- Payment terms

They called these standardized contracts *futures contracts.* All the ingredients for futures trading were now in place. In the years following, the Board gradually extended its control and developed further rules, driven by disputes and problems that arose.

There were as many as 1600 commodity exchanges formed in the 1880s.

In 1874, merchants formed the Chicago Produce Exchange, which dealt primarily with butter, eggs, poultry and other farm products. It was later named the Chicago Butter and Egg Board. In 1919, it became the **Chicago Mercantile Exchange** (CME).

Across the country a similar evolution was taking place. Forward contracts in cotton were reported in New York in the 1850s, although it would be 20 years before the New York Cotton Exchange was organized. New Orleans started its own cotton exchange in 1870. Grain exchanges began in Minneapolis, Duluth, Milwaukee, Omaha, Kansas City, St. Louis, Toledo, Baltimore, San Francisco and New York.

Many commodity exchanges have been organized since 1848. Some are still here today. Others have closed or merged with other exchanges.

Futures contracts have evolved over the years. CME developed such features as cash settlement (no physical delivery is involved; only the change in price is settled at the contract maturity) and electronic trading. But successful futures contracts – those with adequate volume for both hedgers and speculators – generally have certain features in common.

The underlying cash commodity market should be large, with a substantial deliverable supply (to prevent market manipulation) and easily available, up-to-date price information. The commodity should also be fungible, meaning that the units of the commodity should be very similar. There is very little difference between one bushel of corn and another. The commodity should also have substantial price volatility, because it is the hedger's need for risk management that ultimately fuels trading.

Futures trading evolved from the circumstances and needs of the markets, and it is still changing today. Some commodities have been traded for over a hundred years, some have been dropped from the exchanges for lack of trading activity, and others have been added only recently. For example, CME introduced futures based on live animals in the 1960s (cattle and hogs), currency futures in the 1970s, stock index and interest rate futures in the 1980s and many new contracts in the 1990s, including milk, butter and cheese futures. CME continues to add contracts: most recently, options and futures on real estate and weather.

Some CME Weather contracts are based on temperature differences from an average, some on the number of days frost occurs, and others on the amount of snowfall in a given location. Derivative products are also traded on economic announcements, such as economic growth and unemployment statistics.

Futures trading is a global industry, and CME futures can be traded electronically outside the United States in more than 80 countries and foreign territories through approximately 110 direct connections to the CME Globex® electronic trading platform.

Regulation

Both the exchanges and the government play a role in regulating futures market activity.

The rules set forth by the CBOT in 1865 and by the other developing exchanges across the country formalized the practice of futures trading, but by no means got rid of problems associated with this speculative activity. In the years to follow there were situations of fraud and attempts to manipulate the market. As new problems arose, the commodity exchanges continued to refine the rules of behavior required of their members.

Federal Regulation
- Grain Futures Act of 1922
- Commodity Exchange Act of 1936
- Commodity Futures Trading Act of 1974, birth of CFTC
- Commodity Exchange Act of 1981, birth of NFA
- Commodity Futures Modernization Act of 2000

Government initially took a negative view. Outwardly, few of the benefits of futures trading were apparent. It looked like feverish speculation, spectacular price fluctuations and trouble for farmers. For 50 years from the 1860s onward, bills were introduced in both state legislatures and the Federal Congress to abolish or tax futures trading out of existence, but did not pass. Opposition was highest during periods of low prices and lowest when prices rose. Over time, the importance of futures trading to the development of agriculture and trade gradually became apparent.

The *Grain Futures Act of 1922* was the first federal law regulating futures trading. It allowed the government some control over the exchanges by requiring them to be licensed and to prevent price manipulation by their members. It also provided for a supply of continuous trading information. This Act was amended and became the *Commodity Exchange Act (CEA) of 1936*. It dealt with market abuses by traders and commission merchants as well as the exchange members. Price manipulation became a criminal offense. More amendments were made over the years.

The Commodity Futures Trading Act of 1974 created the *Commodity Futures Trading Commission* (CFTC), the independent body that oversees all futures trading in the United States. Although the futures exchanges were essentially self-regulating, they had to obtain CFTC approval for any regulatory changes or for the introduction of new futures and Commodity Marketing contracts. They also had to have trading rules, contract terms and disciplinary procedures approved by the CFTC.

The National Futures Association (NFA) was incorporated under the *Commodity Exchange Act of 1981*. Its purpose was to regulate the activities of its members – brokerage houses and their agents. Futures Commission Merchants (FCMs), brokerage firms that accept futures orders and funds from the public, must be registered with the NFA.
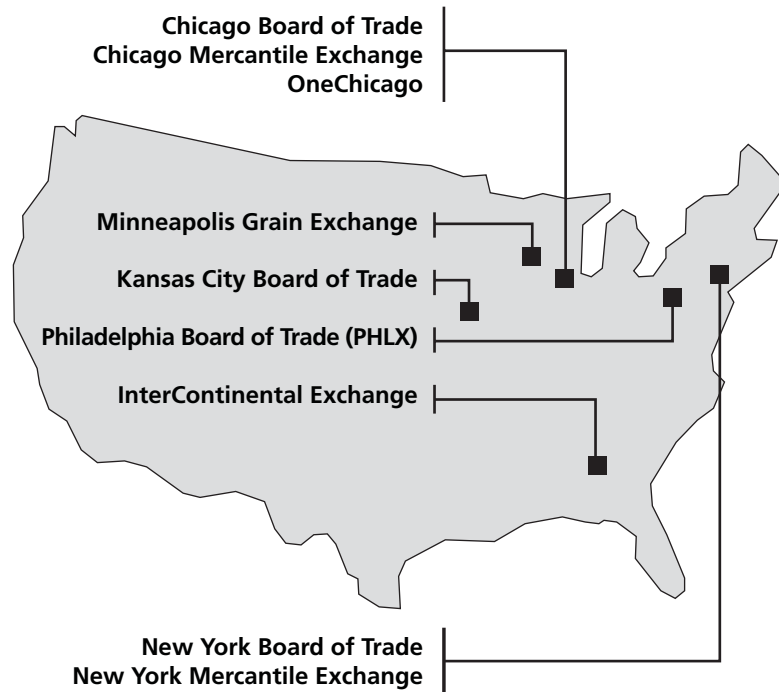
The *Commodity Futures Modernization Act (CFMA)* amended the CEA so that the amount of CFTC regulation depends on the kind of market participant and on the type of futures contract traded. Under CFMA, a retail investor has more CFTC protection than a large Wall Street investment bank. Similarly, futures contracts that are more susceptible to market manipulation, like commodities, are traded on organized futures exchanges such as CME where the exchange and the CFTC can monitor activity. Other sorts of contracts used primarily by big institutions, such as oil and metals, are regulated more lightly. Another purpose of the CFMA was to make it easier for exchanges to innovate and introduce new contracts.

The Exchanges Today

The exchanges provide the place and the rules under which trading takes place.

A futures exchange formulates rules for trading of futures contracts, provides a place to trade and supervises trading practices. Its members are people whose business is trading. There are nine futures exchanges in the United States as of January 2006.

There are many different products traded at the nine futures exchanges. Although agricultural commodities were the only ones traded when the futures markets first began, today there is more emphasis on the financial and global markets.

Chicago Board of Trade
Chicago Mercantile Exchange
OneChicago

Minneapolis Grain Exchange

Kansas City Board of Trade

Philadelphia Board of Trade (PHLX)

InterContinental Exchange

New York Board of Trade
New York Mercantile Exchange

Commodity Categories

- **Grains and oilseeds:** Wheat, corn, oats, soybeans, soybean meal, soybean oil, barley, rice
- **Livestock and meat:** Cattle, feeder cattle, hogs, pork bellies
- **Dairy products:** Milk, butter, nonfat dry milk
- **Foods and fibers:** Including sugar, cocoa, coffee, cotton
- **Wood and petroleum:** Including lumber, crude oil, heating oil, gasoline
- **Metals:** Including gold, silver, copper
- **Foreign currencies:** Including the British pound, Brazilian real, and the euro
- **Interest rate products:** Including CME Eurodollars, T-bills, T-bonds, T-notes
- **Index products:** Including the S&P 500® Index, NASDAQ-100® Index, Goldman-Sachs Commodity Index®, S&P/Case-Shiller Home Price Indices®
- **Energy:** Including oil, natural gas, electricity
- **Events:** Including U.S. unemployment rate, Eurozone inflation, GDP

Futures exchanges continue to evolve as well. Some futures exchanges have merged with stock exchanges (such as the Philadelphia Board of Trade with the Philadelphia Stock Exchange, or PHLX) to offer a range of financial assets and derivatives for trading. There is also great interest in merging futures exchanges in different countries to increase cross-border trading opportunities. And the InterContinental Exchange (ICE) has no trading floor; it is an all-electronic futures exchange with its primary server located in Atlanta, Georgia.

The Participants

There are various participants involved in futures and options trading:

- A futures exchange provides a place and time for trading and the rules under which trading takes place. It establishes the terms of the standardized contracts that are traded. It disseminates price and market information and provides the mechanics to guarantee contract settlement and delivery.
- Clearing firms are responsible for the day-to-day settlement of all customer accounts at futures exchanges. They act as a third party to all trades, serving as buyer to every seller and seller to every buyer, and guarantor of all contracts.

An Analogy

The exchanges provide the playing field and equipment, write the rules, and act as referee, head linesman, and field judges, but do not handle the football. They do not trade and neither win nor lose."

Thomas Hieronymus
Economics of Futures Trading, 1971

Traders on the floor and/or screen

Brokers	Traders
• Trade for customers of various brokerages	• Trade for themselves or accounts they control-can be scalpers, day traders or position traders

- *Brokerage firms* place orders to buy and sell futures and options contracts for companies or individuals. Firms earn a commission on all transactions. Everyone who trades must have an account with a brokerage firm.
- *Floor traders* are members of an exchange. They buy and sell contracts on the floor of the exchange in open outcry (and via electronic trading for some contracts). All trading is done publicly so each trader has a fair chance to buy and sell. There are two types of traders on an exchange floor:

  - *Floor traders:* People who trade for themselves or the accounts they control, using different trading strategies. *Scalpers* make a living by buying and then quickly selling, or vice versa, at fractions of a cent profit. *Day traders* buy and sell contracts throughout the day, closing their position before the end of trading. *Position traders,* who take relatively large positions in the market, may hold their positions over a long period of time.

- *Floor brokers:* Floor brokers act as agents for customers by trading futures and options contracts on the floor of an exchange for other people.

- *E-traders:* With the introduction of CME Globex and other electronic trading platforms, traders no longer need to be physically present on the floor. CME Globex is linked to the CME open outcry floor system, so electronic trading can take place anywhere there is a CME Globex terminal (and at any time, including after regular floor trading hours). While electronic traders can choose to trade alone, others come together in small, off-floor areas called trading arcades, which gives electronic traders some of the interaction available on the floor and the chance to share the overhead expense of computers and information feeds.

- *Commodity Pool Operators:* CPOs pool investors' funds and operate much like a mutual funds for stocks. Because these funds can make large trades, they can have a significant impact on individual futures markets and on price trends.

- *Speculators* try to make money by buying and selling futures and options. They speculate that prices will change to their advantage. They do not intend to make or take delivery of the commodities. Speculators assume the risk in the market and provide liquidity.

- *Hedgers* are people or firms who use futures or options as a substitute for buying and selling the actual commodity. They buy and sell contracts to offset the risk of changing prices in the cash markets. Hedgers use futures or options to transfer risk to speculators.

The Futures Market

Hedgers	Speculators
• Avoid risk	• Accept risk
• Protect against price changes	• Try to profit from price changes

Chapter One Exercise

1. You sell 4,000 bushels of soybeans in the cash market at a price of $5.80/bushel. What is the total value of the sale?

2. You buy 10,000 bushels of corn in the cash market at a price of $2.50/bushel. What is the total price of the purchase?

3. You are planning to sell four 250-pound hogs at $44.00/cwt. How much will you receive for the sale?

4. You are planning to buy three 750-pound feeder steers at $62.50/cwt. How much will you pay for the purchase?

5. If the cash price is $5.10 and basis is $0.15 under, what is the nearby futures price?

6. If the nearby futures price is $68.00 and the cash price is $69.50, what is the basis?

7. If the cash price is $2.80 and the nearby futures price is $2.95, what is the basis?

8. If the nearby futures price is $54.00/cwt and the basis is $1.00 under, what is the cash price?

9. If a basis of $0.35 under was specified in a basis contract and the futures price is $3.40/bushel on delivery date, what is the cash price you receive on delivery?

10. Today's cash price for corn is $2.80/bushel. You can store your corn for two months at a cost of $0.03/bushel/month. What selling price do you need after two months to break even?

Chapter 2

Futures Markets

Chapter Two Objectives

- To understand how producers can use the futures market as protection against price risk
- To understand the principles of hedging
- To learn the mechanics of short and long hedges
- To understand the reasons and ways that producers use the futures markets to hedge
- To be able to calculate a simple hedge

Futures Contracts

A futures contract specifies everything but the price.

The activity of trading standardized contracts for commodities to be delivered at a later date began in the U.S. more than 130 years ago in Chicago. Today, the futures market provides the opportunity for producers to lock in prices for their commodities and for speculators to trade for profit.

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

- **Commodity** (live cattle, feeder cattle, lean hogs, corn, soybeans, wheat, milk, and so on)
- **Quantity** (number of bushels of grain or pounds of livestock as well as the range of weight for individual animals)
- **Quality** (specific U.S. grades)
- **Delivery point** (location at which to deliver commodity) or cash settlement*
- **Delivery date** (within month that contract terminates)

   Some futures contracts, such as CME Lean Hogs, are cash settled at expiration rather than involving the actual delivery of the commodity.

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, or electronically, as traders buy and sell the contracts. The prices they offer and bid reflect the supply and demand for the commodity as well as their expectations of whether the price will increase or decrease.

CME Lean Hog Futures	
Trade Unit	40,000 pounds
Point Descriptions	1 point = $0.01 per hundred pounds = $4.00
Contract Listing	Feb, Apr, May, Jun, Jul, Aug, Oct, and Dec. Seven months listed at a time on CME Globex.
Product Code	Clearing = LN Ticker = LH CME Globex = HE

Trading Venue: Floor		
Hours	9:10 a.m. - 1:00 p.m. LTD (12:00 p.m. close on last day of trading)	
Limits	$0.03/lb, $1200 See Rule 15202.D	
Minimum Fluctuation	Regular	0.00025/lb = $10.00

Trading Venue: CME Globex®		
Hours	9:10 a.m. - 1:00 p.m. LTD (12:00 p.m. close on last day of trading)	
Limits	See Floor Venue limits	
Minimum Fluctuation	Regular	0.00025/lb = $10.00

Here are some contract sizes and examples of contract value at example prices. Remember that the contract value varies as the price changes.

	Exchange	Quantity	Example Price and Value of One Contract
Corn	**CBOT**	**5,000 bushels**	**At $2.55/bushel, value would be $12,750**
Soybeans	**CBOT**	**5,000 bushels**	**At $6.11/bushel, value would be $30,550**
Wheat	**CBOT**	**5,000 bushels**	**At $3.90/bushel, value would be $19,500**
CME Lean Hog	**CME**	**40,000 pounds**	**At $70.00/cwt*, value would be $28,000**
CME Live Cattle	**CME**	**40,000 pounds**	**At $84.00/cwt, value would be $33,600**
CME Feeder Cattle	**CME**	**50,000 pounds**	**At $114.00/cwt, value would be $57,000**

cwt = hundredweight (100 pounds)

Offsetting Futures

Anyone can buy and sell futures contracts.

Anyone can buy or sell futures contracts through the proper channels. For example, you can sell a CME Live Cattle futures contract even if you do not have any cattle to deliver. Although under the futures contract you are obligated to deliver, you can remove that obligation at any time before the delivery date by *offsetting* or buying the same type of futures contract.

Similarly, you could buy a CME Live Cattle futures contract without the intention of taking delivery of the cattle. You remove the obligation to take delivery by offsetting or selling the same type of futures contract.

Buy a futures contract	**Offset it by** →	SELLING the same type of contract		SELL a futures contract	**Offset it by** →	BUYING the same type of contract

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 by selling futures contracts at a high price and buying back lower. They take on the risk that prices may change to their disadvantage.

As the delivery month of a contract approaches, the futures price tends to fall in line with the cash market price of the commodity. Thus, most producers remove their obligation to deliver or take delivery on the futures contract just as speculators do. But producers will then sell or buy actual commodities in the cash markets.

Hedging with Futures

Hedging is a risk-management tool for both producers and users of commodity products.

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 the producer. If you have a crop of livestock to market, you want to protect yourself against falling prices in the cash markets. If you need to buy feed or feeder cattle, you want to protect yourself against rising prices in the cash markets. Either way, hedging provides you with that protection.

Hedging	1 - Taking a position in a futures market opposite to a position held in the cash market to minimize the risk of financial loss from an adverse price change. 2 - A purchase or sale of futures as a temporary substitute for a cash transaction which will occur later.

There are two basic types of hedges:

- The *short hedge,* or selling hedge, used when you plan to sell a commodity. The short hedge protects the seller of a commodity against falling prices.
- The *long hedge,* or buying hedge, used when you plan to purchase a commodity. The long hedge protects the buyer of a commodity against rising prices.

Long and Short

If you are *long futures,* you bought a futures contract. If you made a long hedge, you bought a futures contract to protect against price increase. (You plan to buy the commodity.)

If you are *short futures,* you sold a futures contract. If you make a short hedge, you sold a futures contract to protect against price decrease. (You plan to sell a commodity.)

The Short Hedge

The short hedge protects a producer with a commodity to sell against falling prices.

When you plan to sell a commodity, you can use a short hedge to lock in a price and protect against price decreases. This flow chart shows the steps taken in a short hedge.
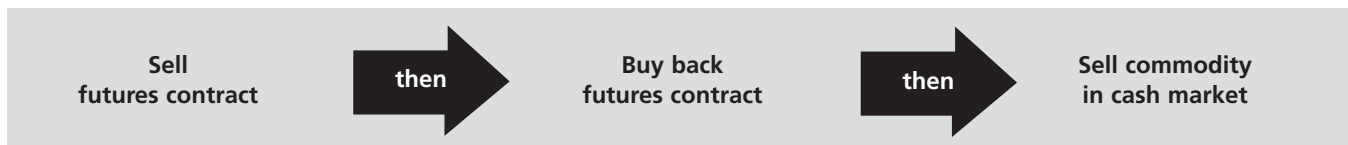
| Sell futures contract | then | Buy back futures contract | then | Sell commodity in cash market |

| **The Short Hedger** | Plans to sell a commodity and sells a futures contract to lock in a selling price and protect against falling prices. |

Short hedge example: Suppose it is April. You are offered $67.50 by your packer for hogs to deliver in December, while the Dec CME Lean Hog futures price is $70.00. Your decision is to take the contract or hedge on your own. With Dec CME Lean Hog markets trading at $70.00 and expecting a $1.50 basis in December, you decide to hedge ($70.00 – $1.50 = $68.50).

Forward Contract Offer	67.50
December Futures	70.00
Expected Basis	– 1.50
Expected Hedged Return	68.50

Expected Dec Basis	Futures Price	Cash Price	Futures Gain/Loss	Net Price Received
1.50	Buy back 67.00	Sell at 65.50	+ 3.00	= 68.50

The profit in the futures market offsets the lower price in the cash market.

The results above show that the cash price has fallen to $65.50 and the futures price to $67.00. The basis is $1.50 under. You buy a Dec CME Lean Hog futures contract at $67.00. Because you sold it at $70.00, you receive a gain of $3.00 per pound ($70.00 – $67.00 = $3.00). Then you sell the hogs in the cash market at $65.50. The total price you received is the cash price of $65.50 plus the $3.00 futures gain, or $68.50. That is $1/cwt more than the price you would have received if you had accepted the forward contract price of April.

What if prices had risen? Suppose the December cash price is $71.00, the futures price is now $72.50 and the basis is $1.50 under. You buy a Dec CME Lean Hog futures contract at $72.50 at a loss of $2.50 ($70.00 – $72.50 = -$2.50). Then you sell in the cash market at $71.00. This time the total price you receive is the cash price of $71.00 plus -$2.50, the loss in the futures market, or $68.50, as estimated.

Expected December Basis	Futures Price	Cash Price	Futures Gain/Loss	Net Price Received
-1.50	Buy back 72.50	Sell at 71.00	+ -2.50	= 68.50

The loss in the market is offset by the higher selling price in the cash market.

Both of these results assume that the basis in April and December is the same at $1.50 under. This is called a perfect hedge. We used the example only to show how the mathematics of the short hedge works. In real life, it is highly unlikely that the basis will remain the same as expected.

Here are the results showing what happens to a $70.00 hedge when the basis strengthens (becomes more positive) and when prices fall or rise.

Basis	Futures Price	Cash Price		Futures Gain/Loss		Net Price Received
-1.00	Buy back 67.00	Sell 66.00	+	+3.00	=	69.00
-0.50	Buy back 67.00	Sell 66.50	+	+3.00	=	69.50
-1.00	Buy back 72.50	Sell 71.50	+	-2.50	=	69.00
-0.50	Buy back 72.50	Sell 72.00	+	-2.50	=	69.50

Whether the futures price rose or fell, your net price was higher with a stronger basis.
(Compare to earlier results.) However, you cannot take full advantage of a price increase.

The Long Hedge

The long hedge protects against a rise in input costs such as those incurred by a packer procuring cattle and hogs, or a producer who needs to insure against higher feed costs.

When you plan to buy a commodity, you can use a long hedge to lock in a price and protect against price increases. This flow chart shows the steps taken in a long hedge.

Buy futures contract	**then** →	Sell back futures contract	**then** →	Buy commodity in cash market

The Long Hedger	Plans to buy a commodity and buys a futures contract to lock in a purchase price and protect against rising prices.

Long hedge example: Suppose it is December. A packer wants to protect procurement cost for hogs purchased in July. The Jul CME Lean Hog futures price is $71.00. The packer decides to buy a Jul CME Lean Hog futures contract at $71.00, expecting a -1.50 basis or $70.00 – 1.50 = $69.50 procurement protection price. In July, he will sell a Jul CME Lean Hog futures contract to offset his position and purchase the hogs in the cash market.

Futures	71.00
Expected Basis	– 1.50
Expected Hedged Return	69.50
Buy July futures	71.00
Results - Prices rise:	

Expected July Basis	Futures Price	Cash Price	Futures Gain/Loss	Net Price Received
-1.50	Buy back 81.00	Buy at 79.50	– 10.00	= 69.50

The profit in the futures market offsets the higher price in the cash market.

The results above show that the cash price has risen to $79.50 and the futures price to $81.00. The basis is $1.50 under. The packer sells a Jul CME Lean Hog futures contract at $81.00. Because he bought it at $71.00, he receives a gain of $10.00 ($81.00 – $70.00 = $10.00). Then he buys the hogs in the cash market at $79.50. The total price he paid is the cash price of $79.50 minus the $10.00 futures gain, or $69.50. That is the same hedged procurement price estimated when the hedge was placed in December.

What if prices had fallen? Suppose the July cash price is $64.50, the futures price is now $66.00 and the basis is $1.50 under. The packer sells a Jul CME Lean Hog futures contract at $66.00 at a loss of $5.00 ($66.00 – $71.00 = -$5.00). Then he buys in the cash market at $64.50. This time the total price he pays is the cash price of $64.50 minus -$5.00, the loss in the futures market, or $69.50.

Results – Prices Fall				
Expected Dec Basis	Futures Price	Cash Price	Futures Gain/Loss	Net Price Paid
1.50	Sell back 66.00	Buy at 64.50	– 5.00	= 69.50

The loss in the futures market is offset by the lower purchase price in the cash market.

With a basis at $1.50 under in both of these examples, we are again talking about a *perfect hedge.* Actually, it is highly unlikely that the basis will be exactly the same as expected.

Results – Basis Weakens						
Basis	**Futures Price**	**Cash Price**		**Futures Gain/Loss**		**Net Price Received**
-2.00	Buy back 81.00	Sell 79.00	-	+10.00	=	69.00
-2.50	Buy back 81.00	Sell 78.50	-	+10.00	=	68.50
-2.00	Buy back 66.00	Sell 64.00	-	-5.00	=	69.00
-2.50	Buy back 66.00	Sell 63.50	-	-5.00	=	68.50

Whether the futures price rose or fell, your net purchase price was lower with a weaker basis.
(Compare to earlier results.) However, you cannot take full advantage of a price decrease.

Note: When the packer quotes a forward contract price to buy your lean hogs, he will offer a weaker basis than will most likely occur at contract delivery. Since there is a risk in the basis, the packer builds in protection by lowering the contract offer to you.

Futures Cash Flow

You have to look at the cash required for futures trading.

Before considering some practical hedging examples, we will take a look at the finances of hedging:

- The performance bond, or good faith, deposit
- Broker commission

The exchange clearing house requires that clearing members deposit *performance bonds* to guarantee performance on their customers' open futures contracts. Individuals trading in the market make the deposit with their brokerage houses.

Performance bond	The amount of money or collateral deposited by a client with his broker, or by a clearing firm with CME Clearing on open futures or options contracts before a customer can trade. The performance bond is not a part payment on a purchase.

When you sell a futures contract, you do not receive payment. Instead, you deposit a performance bond (money) with your broker to guarantee payment of immediate losses you may suffer.

The value of your contract is calculated on a daily basis. If the futures price increases significantly and causes the value of your contract to increase beyond a certain point, you will get a *performance bond call* and be asked to deposit more money to cover the loss in your account. A smaller *maintenance performance bond* balance must be maintained to protect against the next day's possible losses.

Performance Bond

Performance bond: A deposit to cover any loss you may incur on the futures contract.

Maintenance performance bond: A sum less than the initial performance bond that must be maintained in your account.

Performance bond call: A demand for an additional deposit to bring your account up to the initial performance bond level.

Your contract obligation is *offset* when you buy back (or sell back) a futures contract. The difference between the selling price and the buying price is your gain or loss. If the buying price is lower than the selling price, you earn a profit and receive the money. If it is higher, you suffer a loss, which is covered by the initial performance bond and any additional money you may have deposited with the broker.

If you decide to hedge the sale or purchase of a commodity, be prepared for performance bond calls. If your cash is tight, you may wish to have a lender finance the performance bond deposit and potential performance bond calls. If you close your position in the market with a gain, this deposit is yours – although you may want to leave it on deposit for your next hedge.

A flat cost to producers who use the futures market is the commission charged by the broker for each contract traded for you. This cost is negotiable and depends on the level of service and the quantity of contracts traded.

Short Hedge Strategy

A wheat producer may sell wheat futures to hedge the sale if he or she thinks prices are heading down.

In September, you have planted winter wheat and you expect a crop of over 20,000 bushels. You would like to sell the crop soon after the June harvest. You are fairly certain that prices are heading down, so you want to lock in a price for July delivery. The performance bond deposit of $700.00 per contract and possible performance bond calls will not cause you a cash-flow problem. You decide to sell four July wheat futures contracts (5,000 bushels each, or 20,000 bushels).

What price can you expect to get for your crop? The July futures price today is $3.90, and the local forward cash price for July is $3.63, or $0.27 under. Based on your experience, it is more likely to be about $0.16 under in July, so you set a target price of $3.74 ($3.90 + -$0.16). You sell July wheat futures at $3.90.

Futures	3.90
Expected Basis	+ -0.16
Bid Price	3.74
Sell July futures	$3.90

In July, futures prices have fallen to $3.65 and cash prices to $3.50. The basis is $0.15 under ($0.01 better than you expected). You buy four July wheat futures contracts at $3.65 to offset your position and experience a $0.25 gain ($3.90 – $3.65). Then you sell the actual 20,000 bushels of wheat in the cash market at $3.50. The total price you received per bushel is $3.75 ($3.50 + $0.25).

Cash price received	3.50
+ Futures gain/loss	+ -0.25
Net price received	3.75

Looking at the overall picture, you have done $5,000 ($0.25 x 20,000 bushels) better than the cash price by hedging. You pay a broker a commission of $50.00 for each contract, which totals $200.00 for four contracts sold and bought, so your actual gain is $4,800. A total of $2,800 of your money has been tied up in the performance bond account since last fall. You can choose to leave the deposit with the broker for your next transaction or have it returned to you.

Long Hedge Strategy

A feedlot operator may buy feeder cattle futures to hedge placements to protect against higher prices.

You plan to buy 135 head of feeder cattle to place in the feedlot in March. Now in December, all indications are that prices will be rising, and you would like to lock in a low price for March. You decide to buy two Mar CME Feeder Cattle futures contracts (50,000 pounds each contract or approximately 135 head total). You make arrangements with a lender for a performance bond deposit of $1,350 per contract and possible performance bond calls.

How can you estimate a target purchase price? A local forward contract bid may not be available to use as a guide in estimating basis. Cash prices and futures prices of livestock are largely independent of each other until the delivery period approaches. But based on previous history of feeder cattle cash and futures price relationship in March, you expect a basis of $2.00 under. The futures price is at $103.00/cwt, so you calculate a target price of $101.00 ($103.00 + -$2.00) in March. You buy Mar CME Feeder Cattle futures at $103.00/cwt.

Buy March Futures	103.00
Expected Basis	+ – 2.00
Target Price	101.00

Expected Basis	Futures Price	Cash Price	Futures Gain/Loss	Net Price Received
-1.50	Sell back 105.90	Buy at 104.00	– 2.90	= 101.10

In March, the futures price has gone up to $105.90, and the cash price is $104.00. The basis is $1.90 under ($0.10 narrower than you expected). You sell back the two Mar CME Feeder Cattle futures contracts at $105.90 and realize a gain of $2.90/cwt ($105.90 - $103.00). Then you purchase the 135 head of feeder cattle in the cash market at $104.00/cwt. The total price you paid per cwt is $101.10 ($104.00 – $2.90).

Cash price paid	104.00
Futures gain/loss	– 2.90
Net price received	101.10

By initiating a long hedge, you have reduced the cost of the feeder cattle by $2,900 ($2.90 x 500 cwt/contract x two contracts) from the cash price. After paying the commission of $50.00 per contract, or $100.00 total, you have saved $2,800 on the purchase. Your performance bond deposit of $1,350 per contract has been tied up with the broker since December, but now you can choose to have it returned.

Cwt. = Hundredweight

- The CME Feeder Cattle futures contract is 50,000 pounds, or 500 cwt.
- The CME Live Cattle futures contract is 40,000 pounds, or 400 cwt.
- The CME Lean Hogs futures contract is 40,000 pounds, or 400 cwt.

Real Life

Producers use the futures market in a variety of ways.

A hog producer may be said to be a pure hedger when placing a hedge to protect a target price that will cover the cost of production and allow for a profit. The producer is not concerned about the movement of prices. The concern is protecting the target price. The short hedge is maintained by the producer until he is ready to market his hogs. Then, the producer buys futures contracts to offset a position and sells simultaneously in the cash market.

Pure Hedger	A person who places a hedge to lock in a price for a commodity. He or she offsets the hedge and transacts in the cash market simultaneously.

The selective hedger is very common in real life. A milk producer who is a selective hedger would stay out of the futures market if he believes that prices will go up and hedge only if it is perceived that there will be a price decrease. Similarly, a hog producer who needs to purchase feed will stay out of the futures market if he thinks feed prices are falling and hedge only if a price increase is perceived. Both of them could be wrong.

Selective hedger	A person who hedges only when he or she believes that prices are likely to move against him or her.

Some producers wait to place a hedge during the growing season. If they believe prices are going to rise and then fall, they want to sell futures contracts near the top of the market and buy back after prices fall again. Other variations are producers who hedge only part of their production, hedge it in stages, or combine cash market sale, forward contracting and hedging.

The Emotional Marketer

"Greed causes a producer to hold his commodity too long as prices rise. High hopes cause him to hold when prices collapse. Fear causes him to sell at the bottom of the market when he thinks prices will never go up again."

Robert and Lyn Sennholz
Step-by-Step Guide to Developing a Profitable Marketing Plan, 1986

Without a definite plan, a producer can make the wrong move. For example, a producer who has not hedged his crop waits until prices fall and then decides he had better hedge because he thinks prices will never stop falling. Or, a producer holds off hedging because she believes that prices will never stop rising. She may wait so long that she watches the top of the market come and go, missing her chance. Making a plan and sticking with it can make all the difference.

Chapter Two Exercise

1. For an expected harvest of 40,000 bushels of wheat, how many CBOT wheat futures contracts would you sell to hedge the sale?

2. You plan to buy 195 head of feeder cattle or about 150,000 pounds. How many CME Feeder Cattle futures contracts would you buy to hedge the purchase?

3. You sell CME Lean Hog futures contracts at $56.00/cwt. You expect the basis to be $1.50 under. What is your target sales price?

4. You buy corn futures contracts at $2.55/bushel to hedge a corn purchase. You expect the basis to be $0.20 under. What is your target purchase price?

5. If the futures price is at $6.25/bushel, what is the value of one soybean contract?

6. You bought CME Feeder Cattle futures at $72.00/cwt and sold them back at $75.00. You bought the cattle in the cash market at $74.00. What is the total price you paid for the cattle?

7. You bought corn futures at $2.60/bushel and sold them back at $2.50. You bought corn in the cash market at $2.25. What is the total price you paid for the corn?

8. You hedged the sale of hogs by selling four contracts and then offsetting four futures contracts. The hedged return was $3.00/cwt. Your broker charged you a total commission of $200. What is your futures account net gain?

Chapter 3

The Brokerage Account

You will need to know the practical aspects of futures trading.

You have learned about the development of the futures market and who the participants are. You have also studied the mechanics of a futures trade and how to hedge a sale or a purchase using futures. But before you can begin to trade futures, there is a lot you need to know about what you actually *do* when you trade.

Choosing a Broker

If you are a producer who trades futures contracts, you will have to trade through a brokerage firm. First, you will have to find a broker.

The most important aspect of choosing a broker is finding one that is right for you. It depends on how much assistance you need in making your hedging decisions. There are basically two different kinds of brokers to choose between:

- Full-service brokers
- Discount brokers

If you want help in using market information to make hedging decisions, you may want to have a *full-service broker.* This type of broker will take the time to understand your situation, will be available for discussion and advice when you call to place an order and may even call you to suggest what your next move should be. The brokerage firm may also send out market information and newsletters, and have telephone hotlines to keep you informed. Commissions are negotiable and vary from broker to broker.

If you do not need advice to make your own hedging decisions and do not need the broker's opinions, a *discount broker* may be right for you. In this case, you simply call in an order to the brokerage firm, and without any conversation, the order is placed – clean and simple. Commissions will be lower with a discount broker.

In any case, you should find out the broker's commission and fee schedule, which he or she is required to disclose to you in a way that is not misleading. Note that commissions – the payment for a broker's services – vary between brokers, and can be calculated on a per-trade, or round trip (both initial trade and offset) basis, and as a fixed charge or a percentage of the price of the option you are purchasing. Since the broker's fees and commission directly impact your total profit and loss, it is important to know these costs when you choose a broker.

Suppose you decide to go with a full-service broker. Do not automatically choose the one that is closest to you. Here are a few hints on how to go about finding a broker:

- Talk to other producers and get referrals. Find out which brokers have happy clients. Find out which brokers are considered to be outstanding.
- Look for brokers who have a strong farm orientation and have many hedging accounts. Ask if the broker has experience with your specific commodity.
- Call or visit the brokers you are considering. You want someone who is down to earth, is interested in your operation and pays attention to what your situation is. You want a relationship that is compatible. Working through important hedging decisions is personal and sometimes emotional. You want a broker you can talk to and trust.
- The National Futures Association (www.nfa.futures.org) keeps an online data base on firms and individuals registered with the CFTC called BASIC (Background Affiliation Status Information Center; http://nfa.futures.org/basic/about.asp). You can search by both individual and firm name for information on regulatory actions and dispute resolution cases in which they were involved.

The Broker for You
- **Full service or discount, depending on your needs**
- **Considered by other producers to be outstanding**
- **A broker with experience in your commodity**
- **A broker you find compatible**

Opening an Account

You will need to open an account with a brokerage firm.

After choosing a broker, your next step will be to open an account with the brokerage firm. Because money is involved in hedging – performance bonds when you are trading futures – you may need to check with your lender first.

Obtaining Hedging Funds

As a producer, you may choose to use your *own money* to support your hedging activities. If you are hedging with futures, you will want to be sure that you have enough money to deposit the required performance bonds and be able to meet performance bond calls.

Some producers may be required by their lender to set up a separate line of credit for hedging. Your lender may be concerned about how well you will handle the hedges and want to have some control over the situation. In this case, an agreement with the lender will have to be signed. Sometimes, the broker has to sign the agreement as well. The agreement includes clauses such as:

- The lender agrees to supply funds for hedging only, but not for speculation.
- The lender can liquidate your account without your consent and can prohibit you from further trading.
- Hedging profits are applied against your loan balance.

If you set up a hedging line of credit, be sure that your lender understands hedging and how performance bond calls work. There have been examples of lenders getting nervous when the market moves against a producer's position and pulling the producer out of the futures market without understanding how a futures loss can be offset by a gain in the cash markets. Then, if cash prices fall before marketing, the producer, without the protection of the hedge, ends up with losses in both the futures and cash markets.

Signing the Broker Forms

You will be required to fill in and sign a number of forms when you open your account with the broker. The forms can be scary, but familiarity should take the anxiety out of this step.

- *Personal information* will be required when you open your account. The broker will require name, address, date of birth, social security number, tax identification number for the IRS W-9 form, occupation, annual income, net worth, liquid assets and number of years experience as a commodities trader. This information is held confidential.

- The CFTC requires that the broker provide you with *risk disclosure information.* You sign to indicate that you have read the information. For futures, you are made aware that you might lose your entire performance bond deposit and performance bond calls. You are warned that if you cannot meet a performance bond call, the broker may liquidate your position as a loss to you.

  In a multi-page options document, you as an options buyer are warned that you might lose the premium and that, under certain circumstances, you may not be able to offset the option – for example, if no buyers are interested in the option. This document also discloses the risk to the sellers of options and describes the mechanics of options trading.

- You will need to sign the *brokerage firm's agreement* that states what you each agree to. Basically, you give the firm permission to trade according to your instructions. You agree to deposit the required performance bonds, meet performance bond calls and pay premiums and commissions. There are several clauses relating to how you deposit money and what happens if you do not provide funds when they are required.

    The brokerage firm agrees to place orders according to your instructions and that all transactions will be made subject to the rules of the exchanges and CFTC regulations. The firm declares that is it not to be held responsible if it cannot place your order due to transmission delay or communications breakdown.

    You sign an authorization for the firm to transfer any excess funds you may have in one of your accounts to another of your accounts in order to satisfy a deficit. This is included in the brokerage firm's agreement form.

- You also sign a hedge account designation that says all of your transactions will be hedges according to CFTC regulations. The form will list all the commodities for which you may be considered a hedger.

Broker Forms and Information Required
• **Personal information**
• **Risk disclosure forms**
• **Brokerage firm agreement**
• **Hedge account designation**

Placing an Order

You must know how to place an order correctly so you get what you want.

In either pit or electronic trading, there are several kinds of orders that can be placed with your broker. These are four of the most common:

- **Market order:** You instruct your broker to place your order as soon as possible at the best possible price. For example, you say, "*Sell four July CME Lean Hog futures at the market.*" The trade is executed at the best price that can be obtained.

- **Price order:** You instruct your broker to place your order at a certain price or better. For example, you say, "*Sell four July CME Lean Hog futures contracts at $70.00.*" The market has to trade at $70.00 or better (higher) before he or she can execute the trade. (Also called a limit order.)

- **Stop order:** You instruct your broker to place your order at a certain price level. A sell stop must be below the market; a buy stop must be above the market. For example, the futures price is at $70.00 and you say, "*Sell four July CME Lean Hog futures contracts at a stop of $69.50.*" When the market falls to $69.50 or below, the stop order becomes a market order and is executed.

Why would you use a stop order?

Let's say that Jul CME Lean Hog futures are at $70.00/cwt. If you placed a price order, you would sell at $70.00/cwt. If you placed a stop at $69.50/cwt, the order would not be filled. If the market rises to $72.00/cwt, you can replace your stop order with one at $71.50/cwt. Then, if the market rises to $74.00/cwt, you replace the stop with one at $73.50/cwt. When the market turns down again, your order is filled at $73.50/cwt or below, better than the $70.00/cwt price order.

- **Stop close only:** This is a stop order that is executed only within the last minute of trading, during the close. You say, "*Sell four July CME Lean Hog futures at a stop close only of $69.50*" where this price is under the futures price at the time you place the order. You want the order to be filled only if the market is going to close at or below $69.50. The order will be placed during the closing period.

  Note: CME allows stop close only orders; the CBOT does not.

Trading Language

When you place an order with your broker, be very careful with the language you use. Saying it wrong can result in situations that are totally unexpected. It is best to place the order in simple language. Just to be sure, repeat the order to the broker and have the order read back to you. It is not unheard of for a producer who wants to offset a short position to say sell when he means buy and end up with twice as many contracts.

- First, be sure that you and your broker know how many contracts you are talking about. With grains, some brokers interpret "*five December corn*" to mean 5,000 bushels, or one contract, instead of five contracts; "*ten December corn*" may mean 10,000 bushels or two contracts. So, say it both ways – five contracts or 25,000 bushels. With livestock, five Oct CME Live Cattle means five contracts, so there is less confusion.

	RIGHT WAY	WRONG WAY
Sell futures	Sell three Jun CME Live Cattle futures.	Buy three Jun CME Live Cattle futures.
	Go short three Jun CME Live Cattle futures.	Go long three Jun CME Live Cattle futures.
Buy futures	Buy 15,000 bushels of December corn.	Sell 15,000 bushels of December corn.
	Go long three December corn contracts.	Go short three December corn contracts.

The Hedging Account

Your account is calculated on a daily basis.

When you sell or buy futures contracts, you are required to place a *performance bond deposit* with your broker. The deposit is a small percentage of the value of each contract traded, representing the loss you could incur in the next day's market. While you hold a position in the market, the broker calculates the value of your position day by day. When the value of your position falls and, thus, your account balance falls below a certain amount, the broker will issue a *performance bond call,* asking you to put more money in your account.

For example, the initial performance bond deposit may be $405.00 for one CME Live Cattle futures contract. The maintenance balance may be $300.00 – that is, you will not get a performance bond call until the balance falls below $300.00. Then you will be asked to deposit money to bring the balance back up to the initial $405.00.

Example: You sell one Dec CME Live Cattle futures contract at $87.00/cwt. The total value of the contract is $34,800 (400 cwt x $87.00/cwt). You will realize a gain if you buy back a Dec CME Live Cattle futures contract for less than you sold it. As the futures price falls below the selling price, your position improves. But, if the futures price rises above the selling price, your position worsens.

Your Position
For a gain, the selling price must be higher than the buying price.
When you sell futures, you gain when the price falls below your selling price. Sell high, buy low.
When you buy futures, you gain when the price rises above your buying price. Buy low, sell high.

Take a look at the table that follows for the progress on your account.

Day	Market Action	Contract Value	Debit/Credit Account	Account Balance	Performance Bond Call
1	Deposit $405			$405	
2	Sell One Dec CME Live Cattle at $0.87/lb Value of Cash Settle	$34,800			
	Close $0.8620	$34,480	+$320	$725	
3	Close $0.8565	$34,260	+$220	$945	
4	Close $0.8415	$33,660	+$600	$1,545	
5	Close $0.8500	$34,000	-$340	$1,205	
10	Close $0.8650	$34,600	-$600	$605	
15	Close $0.8780	$35,120	-$520	$85	$320
20	Close $0.8825	$35,300	-$180	$225	$180
25	Close $0.8915	$35,660	-$360	$45	$360
60	Close $0.8175	$32,700	+$2,960	$6,325	
61	Buy Dec Live Cattle at $0.8195	$32,780	-$80	$6,245	

```
   $ 87.00   Selling price
 − $ 81.95   Buying price                            $ 4,225   Performance bond deposits
   $  5.05   Futures gain, or  ───────────────▶    + $ 2,020   Total gain
                                                     $ 6,245   Account balance
```

You start with a performance bond deposit of $405.00. By the end of the second day, the contract decreases in value by $320.00; that is, you would realize a gain if you bought it back for $320.00 less than you paid for it. The $320.00 is credited to your account. Not until the fifth day does the futures price begin to rise again. This time the contract value has increased by $340.00 which is subtracted from your account balance.

On the fifteenth day, your account balance falls below the $300.00 maintenance balance. You get a performance bond call and are asked to deposit another $320.00. By the 60th day, the contract value has fallen considerably, and you realize a gain by offsetting the contract at this lower price. You decide to buy a Dec CME Live Cattle futures contract the next day at $81.95/cwt.

Your futures gain is $5.05/cwt – or a total of $5,385 for the contract. The account balance of $6,245 includes the $5,385 plus your performance bond deposits totaling $860.00. Commission would then be deducted from this amount.

Broker's Statement

Every time you place an order with your broker, you receive *written confirmation* of that order after it is been filled. Also, at the end of each month, you will receive a *monthly statement* from the broker. This statement shows the activity in your account during that month.

- Each trade made
- Futures gains or losses to date
- Market value of options you hold
- Cash deposits and withdrawals
- Account balance, profit and loss

Most brokers should also be able to provide you with this information on a daily basis. Be sure to keep this statement. Check it against the order confirmations you received during the month. Check it against your own records to be sure that everything is accurate.

Your Own Records

It is important that you keep your own trading journal, both to keep track of your marketing plan and for tax purposes. A small notebook will do. Be sure to record each trade and write the reasons for making the trade. Then record offsetting each trade and the gain or loss you incurred.

Your journal will be necessary for tax purposes in case you are audited. There is a limitation on net capital losses and the IRS allows hedging activities generally to be reflected as ordinary income loss. If you are a producer, you want to be able to prove that your trading activity was done for hedging purposes and not for speculating.

Chapter Three Exercise

Situation: You have 200 head of cattle that you are planning on selling. That is the equivalent of five CME Live Cattle futures contracts. You are going to place your orders for selling those five CME Live Cattle futures contracts this week.

1. You pick which CME Live Cattle contract you want (February, April, June, and so on) and place all of your orders for the contract month you pick.

2. You must place five orders over the next few days (just pretend, of course). Place at least one of each of the following orders:

    •   A market order
    •   A price order (limit order)
    •   A stop order
    •   A stop close only order

    NOTE: You can replace an order that would not be filled. For example, if you place a price order and your price is not met that day, you can place another order the next day. Or, if you place a sell stop and the price rises, you can place another order at a higher price.

3. Check the actual prices each day before placing your order. After placing your order, check prices the next day to see if your order would have been filled. Go to the CME Web site (www.cme.com) to check live cattle futures prices.

4. Keep track of each order as you place it. Record at what price you placed a price, stop or stop close only order. Record at what price each order would have been filled or if it would not have been filled.

Contract	Type of Order	Price Placed	Price Filled	Not Filled
1				
2				
3				
4				
5				

Chapter 4

Supply and Demand

Chapter Four Objectives

- To understand how fundamental analysis is used to project prices for commodities
- To learn how supply and demand determine the market price
- To learn about supply and demand factors affecting crop prices
- To learn about supply and demand factors affecting livestock prices

Price Prediction

You need to be able to reasonably estimate which way prices will move.

If you are going to be trading futures contracts, it is essential that you know how to make a reasonable estimate of what will happen to prices in the future. Of course, no one can know for certain what prices will be, but it pays to have an educated opinion as to whether prices will rise or fall.

Price expectation can be derived from two different approaches to analyzing the markets:

- *Fundamental analysis* uses supply and demand information to determine its anticipated impact on prices.
- *Technical analysis* interprets historical price movements to predict prices in the future.

While some speculators and hedgers may use only one of these approaches, others use a combination of fundamental and technical analysis to project prices.

NOTE: There are people – both hedgers and speculators – who weigh the validity of fundamental and technical analysis differently. Some advocate one technique, while others advocate both. This chapter presents fundamental analysis from the viewpoint of those who believe it to be valid.

A *fundamentalist* (a person who engages in fundamental analysis) looks at causes external to the trading markets that affect the prices in the markets. Of course, a fundamentalist has to know what to look for and how to interpret the information available.

Supply and Demand

Both supply and demand determine the market price for a commodity.

External factors affect the supply and demand for any commodity. The price of a commodity is determined by how much of the commodity there is (supply), how much of it people want (demand) and what they are willing to pay for it.

Supply can be defined as the *quantity* of a commodity that producers are *willing to provide* to the market at a given price. If grain prices are too low, producers may decide to keep the grain in storage, reducing the supply of the grain to the market. If the price of dairy products is too low, farmers may decide to send milk cows to slaughter, reducing the quantity of dairy goods brought to market. If prices are high, producers will release greater quantities of the commodity to the market.

Weather is one of the primary factors influencing commodity supply. Clearly, conditions during the growing season and harvest will impact the short-run supply of a commodity. Weather in foreign producer countries will also affect expected global supply, and hence U.S. prices. If China's weather conditions are good, the quantity of an export commodity will be much larger, shifting world supply and moving prices down. Weather can also affect supply indirectly, but affecting the cost of inputs into another commodity market: if feed prices are high, over the long-run fewer livestock will be supplied to the market. But weather's effect on prices can be difficult to predict. For instance, an increase in feed corn prices due to bad growing conditions may induce livestock producers to shift to wheat feed rather than reduce output altogether.

Government efforts to promote domestic agriculture through subsidies, protective tariffs, support prices, preferential access to export markets, marketing boards, and so on, have two principal effects on commodity prices. Because such policies tend to lead to over-production of a protected commodity, prices will be lower overall. In addition, protecting the domestic market generally results in a smaller free-market supply. Relatively small shifts in world supply can then lead to large price changes, making world commodity prices more volatile than they would otherwise be. Also, changes in government policy, which are difficult to predict, can affect commodity prices in unexpected ways. For instance, the 1996 U.S. farm legislation encouraged increased soybean production, with an overall decrease in oilseed prices that affected canola and cottonseed prices (both soybean substitutes) as well.

Finally, many commodities, like corn and soybeans, exhibit seasonal price patterns related to their yearly production cycle. Since prices after harvest must adjust in order to apportion the available supply over time until the next harvest, seasonal price patterns – the differences between current year prices and long-run averages – are one of the primary fundamental price forecasting tools.

Supply Factors

- **Weather**
- **Yields**
- **Carryover stocks**
- **Exports and imports**
- **Cost of production**
- **Market price**
- **Government programs**

Crop supply can be influenced by the weather, yields, how much is in storage, government programs, exports and imports, technology, the cost of production and the market price. The projected grain supply for the season is made up of carryover stocks, current production and expected production.

Livestock supply can vary due to weather, feed and feeder animal costs, government programs, exports and imports and the price. Because livestock cannot be stored, the projected supply of live cattle and hogs is based on current production only.

Demand

Demand is defined as the *quantity* of a commodity that buyers are *willing to purchase* from the market at a given price.

Demand Factors

- **Consumer tastes**
- **Disposable income**
- **Population size**
- **Cost of substitute good**

The projected season's demand for an agricultural commodity depends on factors such as consumer tastes, the level of disposable income and population size. Another factor influencing demand is the price of substitute goods. For example, people will substitute other meats if beef prices go too high, so an increase in beef prices will stimulate an increased demand for pork and chicken. A rise in soybean meal prices will stimulate an increased demand for other sources of protein in animal feeds.

The Market Price

Supply and demand together influence the market price of a commodity. When the supply of a commodity increases and demand decreases or stays the same, the price falls. When the supply decreases and demand increases or stays the same, the price of that commodity rises. Likewise, if the supply stays the same, changes in the demand will cause prices to rise or fall.

Because the fundamentalist's objective is to predict which way prices are likely to move, those factors indicating changes in the supply and demand are going to be of interest. The fundamentalist studies how events change the value of the commodity – whether it becomes more valuable or less and whether prices can be expected to go up or down accordingly.

Supply	+	Demand	>	Price
Up		Same		Falls
Down		Same		Rises
Same		Up		Rises
Same		Down		Falls

Crop Fundamentals

Carryover stocks are important in studying crop supply.

The key to fundamental analysis is looking at the supply and demand number projections for the year and comparing them to last year and previous years. A corn, wheat or soybean fundamentalist adds up last year's carryover and this year's production and then subtracts usage to find ending stocks. Ending stocks, which become the next year's carryover, are a cushion. Fundamentalists study this number carefully.

Carryover + Production - Usage = Ending Stocks

Example 1:
Carryover = Projection usage

If corn usage is projected at 7 billion bushels and carryover stocks are 7 billion, that means there is enough corn without producing any in that year. But producers would grow more, ending stocks would be very high, and prices would fall.

Prices would fall if carryover stocks would supply the needs for the year

Example 2:
Carryover + Projection – Usage = 0

If carryover is 2 billion bushels, production is 7 billion, and usage is projected at 9 billion, then the ending stocks would be 0. that means there would not be a bushel of corn left in the country. Prices would rise dramatically.

Prices would rise if ending stocks were projected at 0.

These are two extreme examples of the relationship of the numbers in the formula above. Obviously, something between the two extremes will happen each year. Fundamentalists watch for the relationship of these numbers.

One method of analysis is to look at this year's carryover and compare it to the carryover and related prices in other years. For example, if carryover is two billion bushels of corn and total usage is projected at eight billion, than carryover is 25 percent of usage. You can go back over previous years where carryover was 25 percent of usage to study the prices in those years. Also look at years where carryover was in the 20 percent to 30 percent range to see how high and low prices went. From that information, you can make a good estimate for this year.

Numbers for corn production such as those in the following sample report (carryover, projected production and usage) are released regularly from the U.S. Department of Agriculture (USDA). This corn report was released in a recent November. (This information is available at the Web site of the USDA Economic Research Service: http://usda.mannlib.cornell.edu/MannUsda/viewDocumentInfo.do?documentID=1273).

U.S. CORN SUPPLY/DEMAND
(Crop year begins Sept. 1; numbers in million bushels; price in dollars/bushel.)

	2 Yrs.	1 Yr.	Current Projections
	Previous	Previous	June 2006
Supply			
Carryover stocks	985	2,114	2,176
Production	11,807	11,112	10,550
Imports	11	10	10
Total Supply	12,776	13,236	11,061
Usage			
Food/seed	2,686	2,985	3,545
Feed/residual	6,162	6,000	5,950
Exports	1,814	2,075	2,150
Total Usage	10,662	11,060	11,645
Ending stocks	2,114	2,176	1,091
Average price	2.06	1.95 – 2.05	2.25 – 2.65
Acreage (million)			
Planted	80.9	81.7	79.3
Harvested	73.6	75.0	72.0
Yield in bu/acre	160.4	147.9	N/A

Fundamentalists watch the USDA numbers to project the overall trend in the market and translate that information into a realistic price projection. Some go beyond USDA information to watch exports, weather and other economic factors to fine-tune their own supply and demand estimates.

Corn, Wheat and Soybeans

Fundamentalists study specific supply and demand factors for each crop.

Important fundamentals relating to corn supply are *acreage* and *yields.* Yields are dependent on moisture and temperature, especially during the critical months of July and August. Higher-than-normal rainfall causes higher yields. A combination of below-normal rainfall and above-normal temperatures can cause lower yields. The number of acres planted depends a lot on price. Low prices can encourage producers to plant other crops or participate in government production control programs.

A factor of corn demand is the number of *livestock* on *feed.* If the price of meat falls, fewer livestock will be produced, and when livestock numbers are lower, less corn is needed. If the price of corn rises too high, livestock producers will reduce their use of corn by reducing the number of animals on feed or the length of time livestock are on feed.

Another demand factor is exports. A world bumper corn crop can reduce the demand for U.S. exports. Also, the U.S. dollar exchange rate affects exports – if the dollar is weak, foreigners can purchase more dollars for a given amount of their own currency and can buy more U.S. corn.

Wheat
As with corn, wheat supply is largely dependent on *growing conditions.* Because there are basically two types of wheat – winter and spring – growing conditions should be watched during winter and summer. For example, a lack of adequate snow cover during the winter months can damage the winter wheat crop and reduce yields. On the demand side, exports play a large role. One half to two thirds of U.S. wheat production is exported to other countries such as Japan and Russia each year.

Soybeans
Most of the soybean crop is used for soybean meal and oil. Consequently, the demand for soybeans depends on the *demand for meal,* used for animal feed and in people food, and oil, used in edible oil products and in industry. A number to watch is called the *crush margin,* a relationship of the cost of soybeans to be crushed and the value of the resulting soybean oil and meal. If soybean prices are too high, the crush margin may decrease and cause a decline in processing. Then the demand for soybeans also decreases.

About a third of the U.S. soybean crop is exported to countries such as Germany, the Netherlands and Japan. A fundamentalist would watch growing conditions in competing exporting nations such as Argentina and Brazil.

Livestock Fundamentals

When studying livestock, fundamentalists focus on projected supply.

Fundamental analysis for livestock is different from analysis of grains because there are no carryover stocks. Livestock cannot be stored as grains can. Basically, the livestock that are raised are marketed. Fundamental analysis for livestock is a matter of studying supply and demand to predict prices.

Fundamentalists project the cattle and hog supply based on number in the USDA reports. This example is taken from a USDA: National Agricultural Statistics Service Cattle on Feed Report from a typical recent June, which relates activity during May. This report shows that the number of cattle on feed on June 1 in the seven major cattle feeding states is up 4 percent from a year earlier. The current year percentage is 104 percent of what it was on June 1 of the previous year. Marketing for May is up 9 percent from the previous year, while placement of more cattle on feed is down 14 percent. (This information is available online at: http://www.ers.usda.gov/Publications/LDP/LDPTables.htm).

CATTLE ON FEED
(From seven states; numbers in million head)

	Number			as Percentage of:	
	2 Yrs. Previous	1 Yr. Previous	Current Year	2 Yrs. Previous	1 Yr. Previous
On Feed May 1	10,375	10,641	11,559	111%	109%
Placed on Feed During May	2,370	2,223	1,913	81%	86%
Feed Cattle Marketed During May	2,026	1,997	2,170	107%	109%
Other Disappearance During May	79	96	115	146%	120%
On Feed June 1	10,640	10,771	11,187	105%	104%

Fundamental analysts will see if livestock numbers are projected to be higher or lower than last year. They look at consumption patterns and decide if demand appears to be better or worse than before. Based on supply and demand patterns over several years, many fundamentalists have developed their own formulas to calculate what effect a percentage increase or decrease in supply has on prices, given that other factors are equal. For example, a hog analyst may have determined that a 1 percent decrease in supply causes a 1 percent increase in prices. So, if supply is 98 percent of a year ago and the hog price was $50/cwt, then prices would be projected at $51/cwt.

Livestock analysis is more difficult than crop analysis. On the supply side, cattle and hog producers are greatly influenced by the *cost of feed* and the current or expected livestock *market price.* If feed prices are too high or livestock prices fall, producers will take steps to raise *fewer* animals. Their first response to low prices is to bring more animals to slaughter, which actually increases current supply. This causes prices to fall even lower. Over a period of time, fewer offspring are produced and supplies decrease.

Then prices rise again. The producers' response is to hold back breeding animals from slaughter. This causes supplies to decrease more and prices to rise higher. When the offspring are brought to slaughter, supplies increase. This is a repeating cycle with livestock supplies and prices.

To estimate livestock demand, the fundamentalist will also study factors such as consumer tastes, the level of disposable income, population size and the cost of competitive goods.
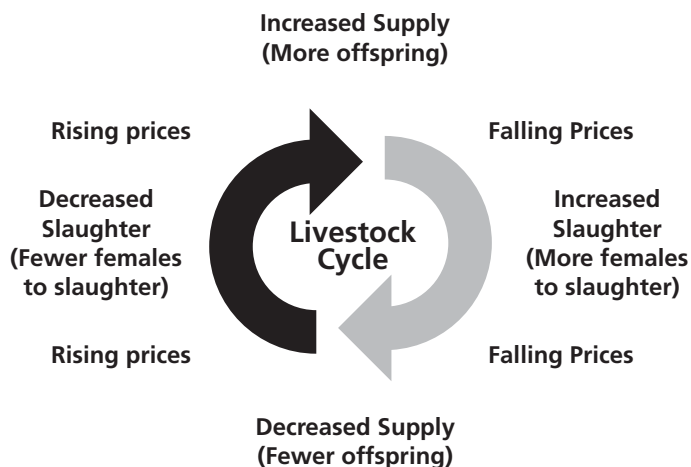
Cattle

The average cattle cycle is twelve years.

The production of cattle is a three-step process. Cattle are bred (nine month gestation), and the calves are raised for six to ten months in a *cow-calf operation*. Next, they are fed roughage in a *stocker operation* for another six to ten months. Finally, they are sent to a *feedlot* to be brought to market weight which takes another four to six months. Breeding cattle, of course, are held back by the cow-calf operation to produce more calves.

Because the production cycle is so long, it takes a while for producers to respond to changing prices. The *cattle cycle* of increasing and decreasing supply takes from nine to sixteen years to complete. The average cattle cycle is twelve years.

A fundamentalist is also aware of an annual *seasonal pattern* of cattle supply. The number of cattle available for slaughter is generally lower in the spring and rises in late summer and fall. Prices tend to rise and fall within the season to reflect this pattern, but in the opposite direction.

The consumer demand for beef cannot be assumed to be constant, so the fundamentalist watches for changes in demand, the American public's perception of beef and other sources of protein changes. Total consumption is a factor of both population and per capita use. While population has increased over the last ten years, per capita consumption of beef has fallen. At times, higher beef prices have caused a greater consumption of lower-price products such as pork, poultry and fish.

**Increased Supply
(More offspring)**

Rising prices   **Falling Prices**

**Decreased
Slaughter
(Fewer females
to slaughter)**   **Livestock
Cycle**   **Increased
Slaughter
(More females
to slaughter)**

Rising prices   **Falling Prices**

**Decreased Supply
(Fewer offspring)**

Hogs

The average hog cycle is four years.

The typical hog farm is a farrow-to-finish operation, that is, a birth-to-final-marketing operation. Hogs are bred (four month gestation) and brought to market in five to seven months. Sows can be bred at about six months of age and generally once or twice before being sent to slaughter.

Although the production cycle for hogs is not as long as for cattle, it still takes time for producers to react to market prices. The average hog supply cycle is about four years. Supplies will follow a pattern of increase and decrease over a period of every four years.

A fundamentalist is familiar with an annual *seasonal pattern* of hog supply as well. Hog supply is greatest from August through December and lowest during June and July. Prices tend to rise and fall opposite to the supply trend. They are highest when the supply is low and lowest when the supply is high.

The demand for pork is strongly affected by the price relative to income and the price of competitive meat products. If beef or poultry prices are low, the demand for pork will fall. If beef or poultry prices are high, pork demand will increase. Demand for certain pork products – such as ribs, bacon, and ham – display distinctly seasonal patterns, which influence the seasonal demand for the live animals.

Livestock Statistics		
	Cattle	**Hogs**
Supply cycle	12 yr.	4 mo.
Gestation	9 mo.	4 mo.
To slaughter	18 mo.	6 mo.
Age bred	15 mo.	6 mo.
Offspring/yr.	1	16-20

The following sample Hogs and Pigs Report was released by the USDA at the end of a recent June. (This information is available online at: http://www.nass.usda.gov).

HOGS AND PIGS REPORT (Numbers in million head)					
	2 Yrs. Previous	1 Yr. Previous	Current Year	Current as Percentage of 2 yrs. Previous	Current as Percentage of 1 Yr. Previous
June 1 Inventory					
All Hogs and Pigs	60,698	60,732	60,927	100	100
Kept for Breeding	5,937	5,977	6,060	102	101
Market	54,760	54,754	54,867	100	100
Market Hogs and Pigs by Weight Groups					
Under 60 Pounds	20,292	20,423	20,598	102	101
60 – 119 Pounds	13,500	13,376	13,442	100	100
120 – 179 Pounds	11,256	11,143	11,195	99	100
Sows Farrowing					
Dec – Feb	2,836	2,835	2,840	100	100
Mar – May	2,870	2,882	2,897	101	101
Dec – May	5,706	5,716	5,737	101	100
Jun – Aug	2,905	2,918	2,922	101	100
Sep – Nov	2,888	2,900	2,924	101	101
Jun – Nov	5,793	5,818	5,846	101	100
Pig Crop					
Dec – Feb	25,105	25,343	25,656	102	101
Mar – May	25,633	25,986	26,301	103	101
Dec – May	50,737	51,330	51,956	102	101
Jun – Aug	26,162	26,449			
Sep – Nov	25,881	26,187			
Jun – Nov	52,043	52,635			
Pigs per Litter					
Dec – Feb	8.85	8.94	9.03	102	101
Mar – May	8.93	9.02	9.08	102	101
Dec – May	8.89	8.98	9.06	102	101
Jun – Aug	9.01	9.06			
Sep – Nov	8.96	9.03			
Jun – Nov	8.98	9.05			

The Bottom of the Hog Cycle

In 1998, there was a record supply of hogs produced and the prices began falling. The end of the year saw the biggest hog kill in U.S. history because of falling prices. Consequently, cash hog prices plummeted even further, reaching a 50-year low.

Chapter Four Exercise

Reading: Take a look at the latest Cattle on Feed Report from the USDA at
http://usda.mannlib.cornell.edu/MannUsda/viewDocumentInfo.do?documentID=1020.
Select the latest year and then select the latest report.

Reading: You can also see the USDA Hogs and Pigs Report at
http://usda.mannlib.cornell.edu/MannUsda/viewDocumentInfo.do?documentID=1086.
Select the latest year and then select the latest report.

Reading: Explore the resources that offer news and information on agricultural commodities.
Go to www.cme.com to see a list of resources. Select news organizations and read some articles for
fundamental information. What effect does this information have on the current price of the
commodity?

Chapter 5

Analytical Tools

Chapter Five Objectives

- To understand how technical analysis is used to project prices for commodities
- To learn how to read the bar charts that analysts use
- To learn some of the signals used to project price trends and price reversals
- To understand that point and figure and moving average charts are forecasting tools too

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Price Prediction

Technical analysis uses historical price patterns to help predict futures prices.

Technical analysts take a different approach to studying the markets. They believe that everything that can affect the market – including all the fundamental, psychological, and political factors – must ultimately be reflected in the price of the commodity. Instead of concerning themselves with the actual reasons why market prices are moving up or down, technical analysts study the market action itself. In this sense, they use a shortcut form of fundamental analysis.

Prices move because of changes in supply and demand, which includes what traders hope or fear might happen. Day-by-day market action is the result of both the fundamental factors we have studied and the reaction of traders.

From the technical analyst's point of view, it is all reflected in the price. The analyst has studied historical price patterns, and he or she charts current market activity. Based on patterns in the current activity, the analyst tries to predict where prices are going.

As seen, technical analysis approaches price forecasting in a very different way than fundamental analysis. Technical analysis tools can be applied to many different markets, while a fundamental approach requires detailed knowledge about supply and demand factors and how those factors influence prices. Fundamental analysis assumes that it is new information about those supply and demand factors that will determine future prices. This kind of market behavior is described as efficient: current prices reflect all of the information available to the market (as well as expectations about the future based on that information). Only new, unexpected information will change prices, and past

price movements and patterns will not be useful at all in predicting what prices will do. There is a continuing debate about whether prices are truly efficient, as the fundamental analyst believes, or whether price patterns and trading rules can consistently predict prices profitably.
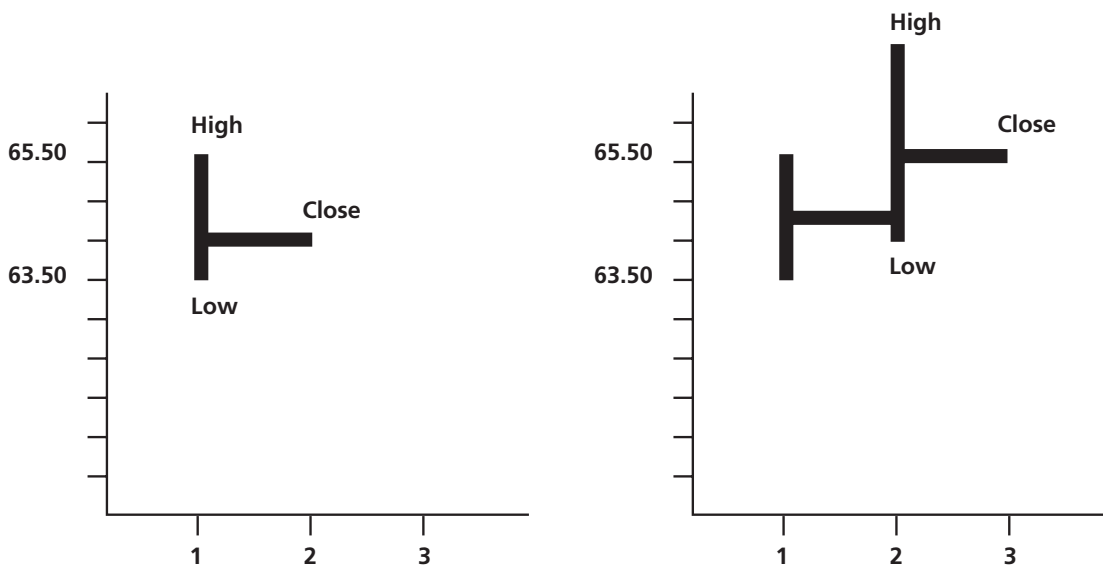
Bar Charts

A bar chart shows a picture of what is happening in the market.

A technical analyst uses these three important sources of market information in the process of predicting prices:

- *Price* (the high, low, and close for the day)
- *Volume* (the number of contracts traded that day)
- *Open interest* (the number of outstanding contracts – that is, the number that have not been offset)

An analyst creates a picture of what is happening in the market by recording this information on a *bar chart*. It is important to realize that the analyst is recording history, or what has already happened. The bar chart does not show what is going to happen. The analyst is educated to read the visual patterns of price movement and is able to draw conclusions about the likely future direction of the market.

A bar chart of price movement is made for a specific futures contract for a specific commodity. The vertical axis represents the *price* of the commodity; the horizontal axis represents *time,* but trading days only. The *high, low,* and *closing prices* are recorded each day. A vertical line is drawn to show the range of prices for the day. A sideways tic shows where the market closed. The example here shows how to record hog prices. On the first of the month, prices ranged from $63.50 to $65.50 per cwt. and closed at $64.00. On the second, prices ranged from $64.00 to $67.50 and closed at $65.50.

The following bar chart shows several months of day-by-day prices for a Nov CME Feeder Cattle futures contract. This type of chart is the main tool of the technical analyst. Notice that from February to August there is a downtrend in prices, then an uptrend and another downtrend, and finally an uptrend in September.
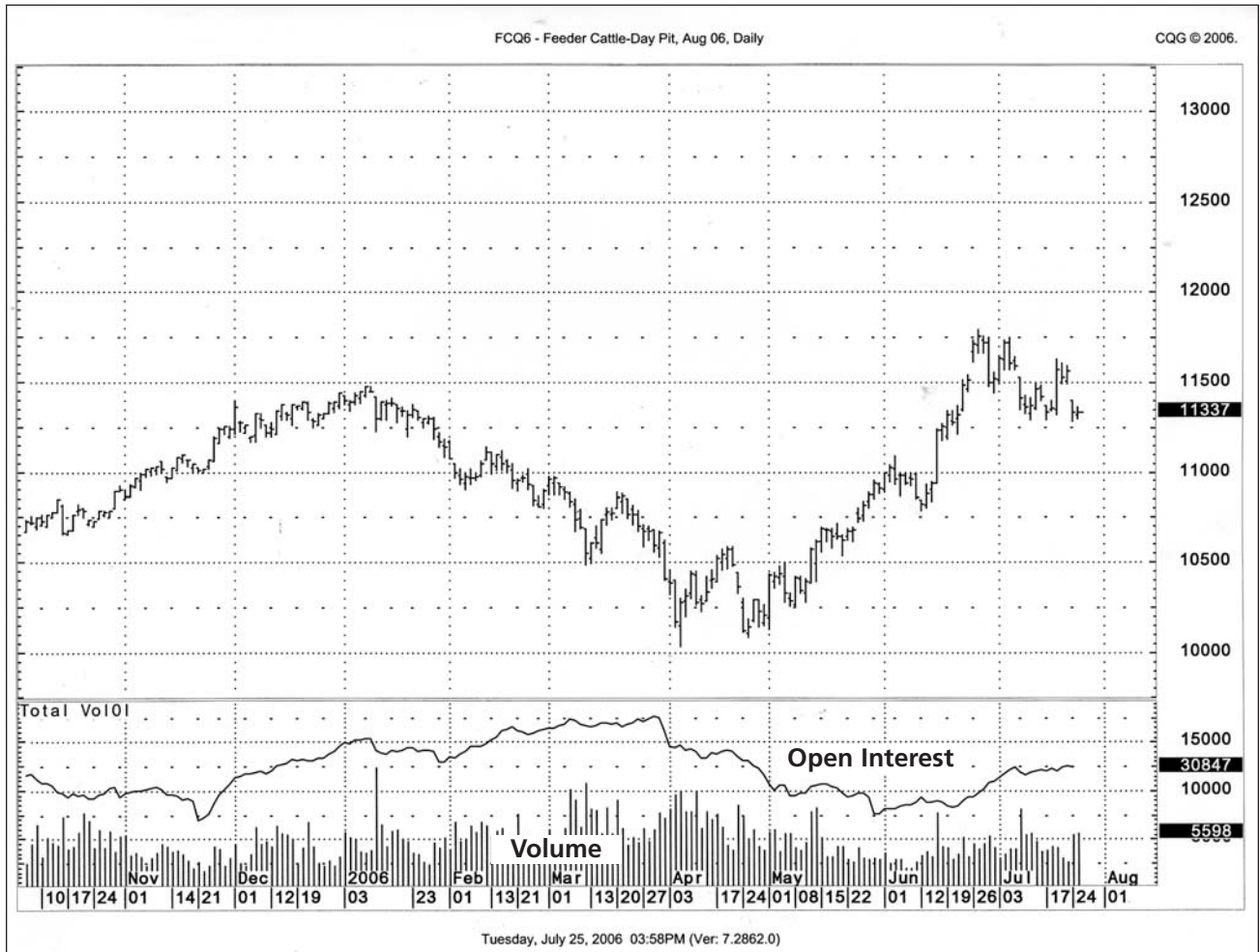
Another chart is a point and figure chart. This kind of chart lets the analyst focus on the direction of price trends by ignoring time. Because of this, a point and figure chart can give a clearer signal to buy or sell than the bar chart, and many analysts use both.

A *point and figure* chart is plotted on graph paper. The vertical axis represents price. The point and figure chart does not have time on the horizontal axis.

Point and Figure

								X
X				X				X
X	O			X	O	X		X
X	O	X		X	O	X	O	X
X	O	X	O	X	O	X	O	X
X	O			O	X	O		O
X			O					

The analyst uses an X to indicate the day's price when prices are rising. When the prices reverse and fall, the analyst goes to the next column and records O's. When another reversal occurs, the analyst switches back to X's and so on. (While this explanation is simplified, the process is actually very complex.)
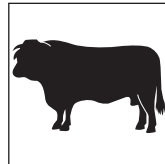
Volume and Open Interest

The vertical lines at the bottom of the bar chart are a record of *volume,* or the number of contracts traded each day. If you study the prices in the previous chart from November through April, you will see that the volume rises and falls too. When buying or selling pressure is felt by the traders, more contracts are traded. The volume, or trading pressure, on this chart increases when prices are changing trends. Look at the price lows in April and notice the increase in volume.

The horizontal curve in the middle of the bar chart is a record of *open interest,* or the number of contracts outstanding at the end of each day. This number changes from day to day. Open interest is a measure of the commitment of money in the market. When open interest is rising, new money is flowing into the market, indicating that the current price trend will probably continue. When open interest is falling, money and commitment are leaving the market.
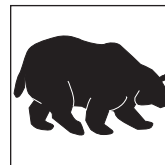
The relationship of prices, volume and open interest tells the analyst quite a bit about what can happen next. When prices are rising, rising volume and open interest indicate that the uptrend in prices may continue. When prices are rising, and volume and open interest are falling, the current uptrend in prices may be coming to an end. When prices are falling, rising volume and open interest tend to confirm the downtrend. When prices are falling and volume and open interest are falling, the analyst is alerted that prices may soon reach bottom and begin to rise again. This table summarizes the relationship:

Prices	Volume	Open Interest	Market Direction
Rising	Rising	Rising	Bullish
Rising	Falling	Falling	Bearish
Falling	Rising	Rising	Bearish
Falling	Falling	Falling	Bullish

Bull
- One who expects prices to rise
- A rising market

Bear
- One who expects prices to fall
- A falling market

*The movement of prices, volume and open interest can indicate market direction.*

Price Patterns

Technical analysts use certain price patterns to signal a change in the trend, or a price reversal. Some price patterns are named because of their shape.

The *head and shoulders formation* is one of the most reliable patterns that indicate a major reversal in the market. The pattern is named because of its shape. It can occur at the top of an uptrending market or in inverted form at the bottom of a downtrend (as shown in the Live Cattle chart). It takes a skilled technical analyst to see the patterns as they are developing.

The head and shoulders formation at the top of an uptrend shows a period during which the market changes from up to sideways and then from sideways to down. A line drawn under the two shoulders is called the *neckline.* The reversal of the trend is complete when prices pass the neckline on the right side.

At the bottom of a downtrend, the head and shoulders formation shows a period when the market changes from down to sideways and then from sideways to up. The neckline is drawn above the two shoulders. The reversal of the trend is said to be complete when prices pass the neckline on the right side.
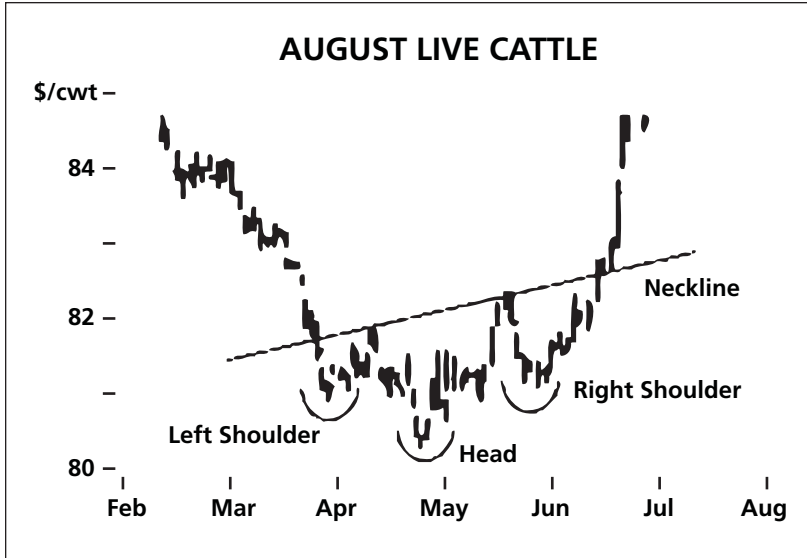
This head and shoulders formation indicates a downtrend is turning into an uptrend.

Another common reversal pattern that occurs is the *double top* or *double bottom.* Double tops and bottoms signal a trend reversal just as the head and shoulders formation, but usually take less time. At the top of the market, they are noted by two equal price peaks as prices hit the resistance level, dip and hit the resistance level again before turning down.

Just as with bar charts, there are formations in the point and figure chart that have meaning to the technical analyst. One type of formation is the *double bottom.* This formation is characterized by falling prices that try but fail to set new lows, after which prices begin moving up. The analyst considers it a buy signal when prices set a new high.

With a *double top,* prices fail to set new highs and then begin moving down. In this case, the analyst would see the setting of a new low as a signal to sell.

Another common pattern is a triangle. Triangles generally interrupt a trend, and occur when supply and demand are temporarily balanced. Upward price movement is balanced by selling, downward price movement is countered by buying, and tops and bottoms become shallower. After this pause, prices tend to break out, generally continuing in the direction of the original trend.

Symmetrical triangle in an uptrend (bullish)

Symmetrical triangle in a downtrend (bearish)
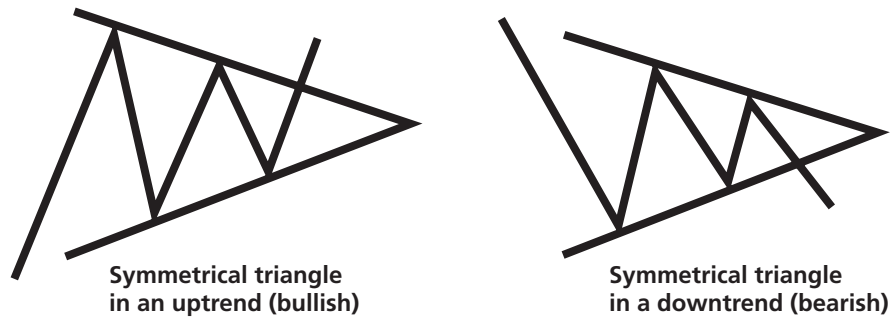
Price Trends

Everyone who is active in the commodity markets wants to know which way prices are headed. Buyers want to buy when prices are low, and sellers want to sell when prices are high. The technical analyst studies price movement to find price trends. When using the word *trend,* the analyst simply means the general direction in which prices are moving. The analyst believes two things:

- Prices do follow trends
- Once trends are established, they persist

Identifying trends – and trend reversals – is essential to successful technical analysis.

Sideways Trends

In a *sideways trend,* prices tend to stay within a certain range.

Prices can move in only three directions – up, down and sideways. The sideways trend occurs during a relatively flat market. Although prices in a sideways trend fluctuate, they occur within a certain range. Prices tend not to go above a particular level or fall below a particular level.

In the following sideways trend chart, you can see that prices do not rise above a *resistance line.* This is where prices are turned back by selling pressure that stops a market advance. Prices do not fall below the *support line* where buying pressure stops a market decline. Once the sideways trend is established, prices tend to stay within these boundaries.
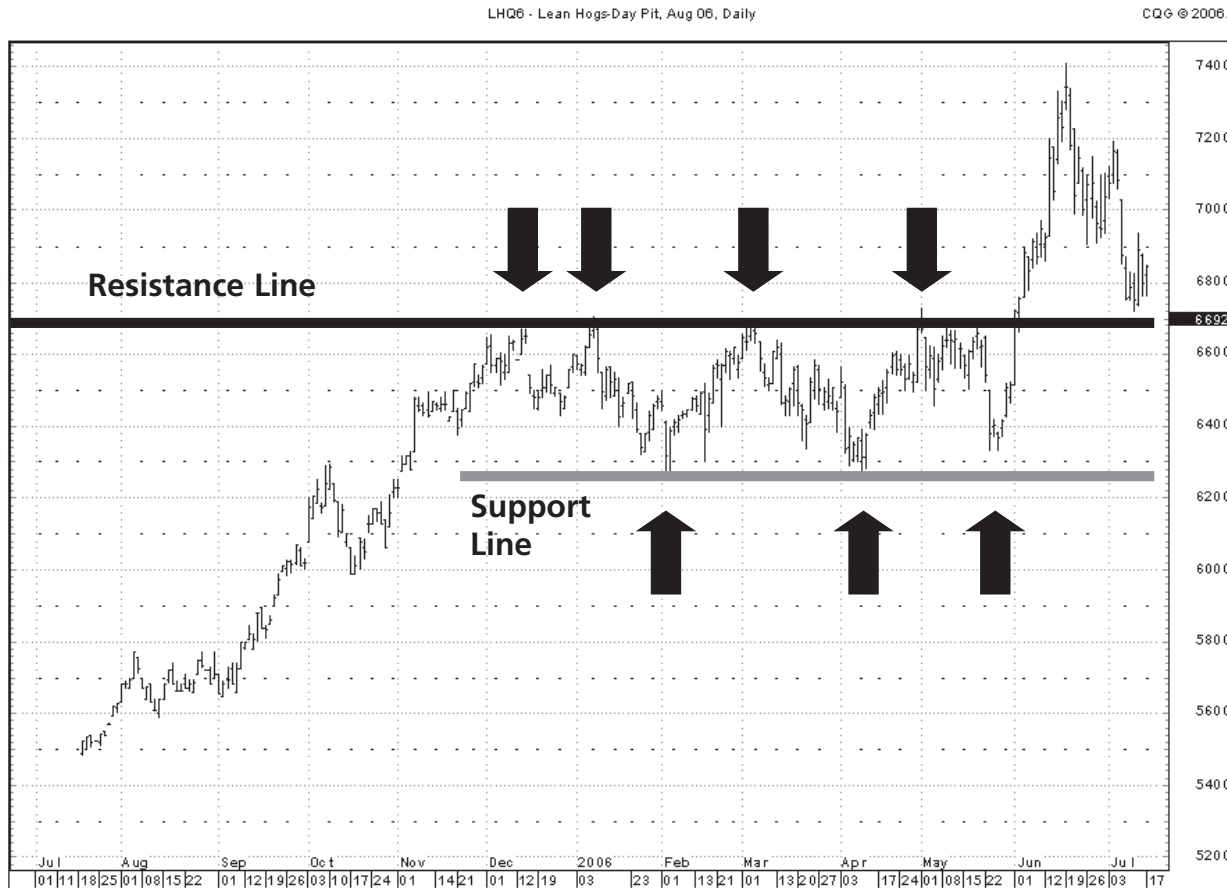
Uptrends

- **Higher highs**
- **Higher lows**

An *uptrend* is characterized by a series of *higher highs* and *higher lows.* The analyst watches carefully to see if the upward price movement will become a valid uptrend. A line is drawn under the rising bottoms in the fluctuating uptrend. It takes two rising bottoms to define an uptrend line and three to confirm it. A line above the rising tops in the uptrend helps the analyst to determine the range of fluctuation within the uptrend. The range, or *channel,* defines the support (line of lowest lows) and resistance (line of highest highs) for the uptrend. The analyst believes that, generally, prices will stay within this channel until the uptrend is reversed.

Downtrends

- **Lower highs**
- **Lower lows**

A *downtrend* is characterized by a series of *lower highs* and *lower lows.* The analyst watches the declining tops in the fluctuating downtrend. A line defining the downtrend connects the declining tops. It takes two declining tops to define a downtrend line and three to confirm it. A downtrend channel will define the range of prices within the downtrend.

**Some Rules for Bar Charts**

- A **sideways trend** exists until the market closes above the resistance line or below the support line.
- An **uptrend** exists until the market closes below the uptrend line.
- A **downtrend** exists until the market closes above the downtrend line.

Price Reversals

Some signals happen in a single day, while others take more time to develop.

Technical analysts want to know when an uptrending market is going to start going down and when a downtrending market is going to start going up. They watch for several signals.

The analyst watches the high, low and close of each day for a key reversal signal that warns of a coming market turn. The bullish key reversal happens in a downtrending market. It is characterized by a high that is higher than the previous day's high, a low lower than the previous day's low and a close above the previous day's close. The larger trading range for the day and the higher close may signal a coming uptrend in prices. If the trading volume is unusually high, the signal is stronger.

Bullish Key Reversal

Higher high

Close above

Lower low

Bearlish Key Reversal

Higher high

Close below

Lower low
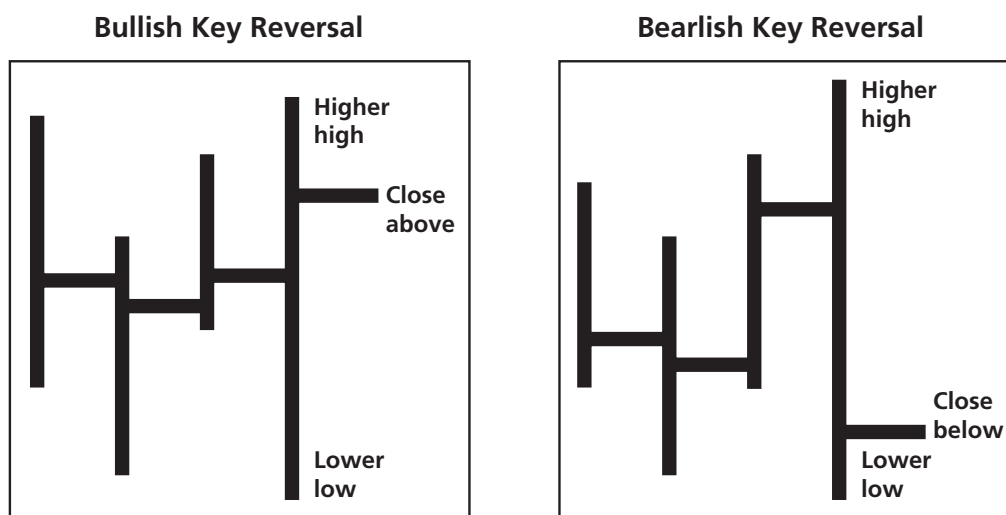
A bearish key reversal occurs in an uptrending market. It is characterized by a high that is higher than the previous day's high, a low lower than the previous day's low and a close below the previous day's close. The bearish key reversal seen in an uptrending market can be a warning for a coming downtrend in prices.
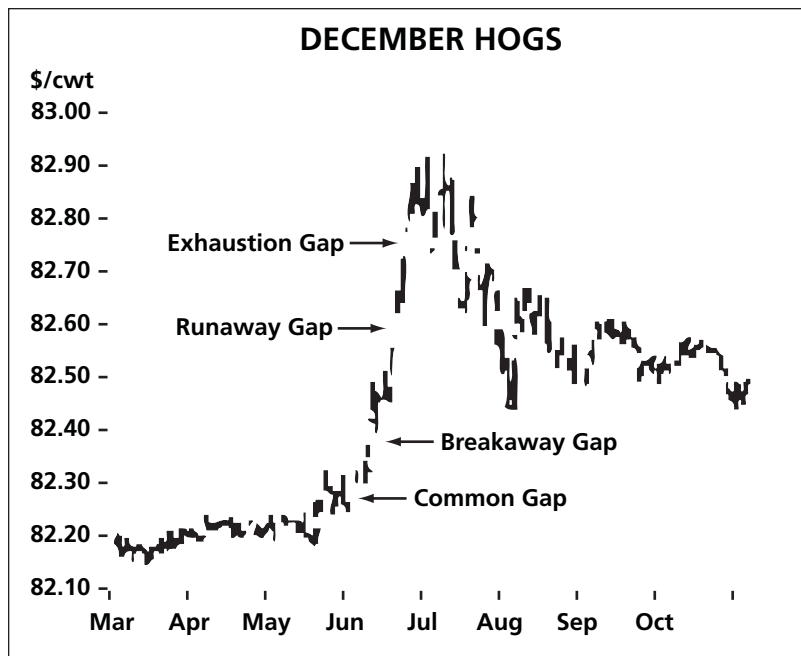
Gaps

Gaps in prices from one day to the next can provide the analyst information.

The study of gaps – price areas at which the market did not trade from one day to the next – can help the analyst in three ways:

- To spot the beginning of a price move.
- To measure how far the move is going to go.
- To confirm the end of a move.

The following bar chart shows four different kinds of gaps that occur in an uptrending market when the low for the day is higher than the previous day's high. In a downtrending market, a gap occurs when the high for the day is lower than the previous day's low. The *common gap* is of no significance and is usually filled in during later trading.

The *breakaway gap* signals the end of a price pattern and the beginning of an important market move. In the December Hog chart, prices leaped upward at the breakaway gap. Prices do not retrace their steps and fill in this gap.

A *breakaway gap* occurs when prices do not retrace their steps and fill in this gap.

A *runaway gap* occurs after the trend has begun. In the December Hog chart, prices again leaped up suddenly. The runaway gap is called the *measuring gap* because it often marks the halfway point of the market move. It shows that prices will probably move again as much as they already have.

An *exhaustion gap* occurs near the top (or bottom) of a move and warns that the top (or bottom) of the market will be reached soon. It foretells an abrupt turn in the market.

Gaps

- **Breakaway gap:**
  Signals the beginning of a price move.

- **Runaway gap:**
  Measures how far prices can be expected to move.

- **Exhaustion gap:**
  Warns that the move will soon end.
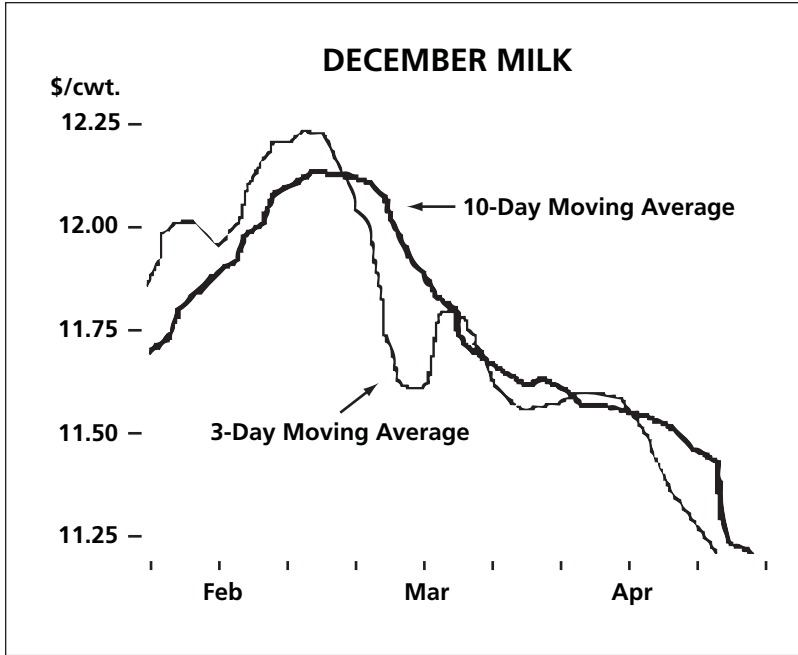

Moving Average Charts

Average prices provide a tool for identifying buy and sell signals.

A *moving average* is the arithmetic average of prices over a period of time. For example, a three-day moving average of Milk prices would be the average of the closing prices of the past three days. To find the average, you add the closing prices from the last three days and divide by three. The next day, you calculate a new average and so on. The moving averages can then be plotted on a graph.

Analysts can use three-day, five-day, ten-day or twenty-day moving averages - whatever suits them – to watch price moves. The analyst interested in short-term moves would use shorter-term moving averages.

The moving average chart below records both three-day and ten-day moving averages of wheat prices. Some of the typical rules the analyst will follow are:

- *Buy* when the short-term (three-day) moving average moves above the long-term (ten-day moving average).
- *Sell* when the short-term (three-day) moving average moves below the long-term moving average.

DECEMBER MILK

$/cwt.

12.25 –

12.00 –   ← 10-Day Moving Average

11.75 –

11.50 –   3-Day Moving Average

11.25 –

Feb   Mar   Apr

The moving average can also be considered one of a number of technical indicators (basically, a number calculated from a formula rather than a chart figure) whose *quantitative* value tells the analyst something about the character of the market. Some indicators, like relative strength or MACD (Moving Average Convergence/Divergence) can signal when a market is overbought or oversold, and are useful when markets are in a horizontal, or non-trending, trading range. You should be aware that there are a wide variety of quantitative indicators used by technical analysts, but discussing specific indicators is beyond the scope of this chapter.

Chapter Five Exercise

Try your hand at bar charting. Give the assignment a full week to complete.

1. Watch CME Lean Hog futures prices and create a bar chart.

2. Choose two different CME Lean Hog futures contract months. Pick the nearby contract month and one that is further away.

3. Check the actual prices for these contracts each day for five market days. Go to the CME Web site (www.cme.com) to check CME Lean Hog futures prices.

4. Use the bar charts below. Write the contract month at the top. Write the prices on the vertical axis and the dates on the horizontal axis.

5. Record the high, low and close for each day for both of your contracts.

LEAN HOGS

Contract Month

LEAN HOGS

Contract Month
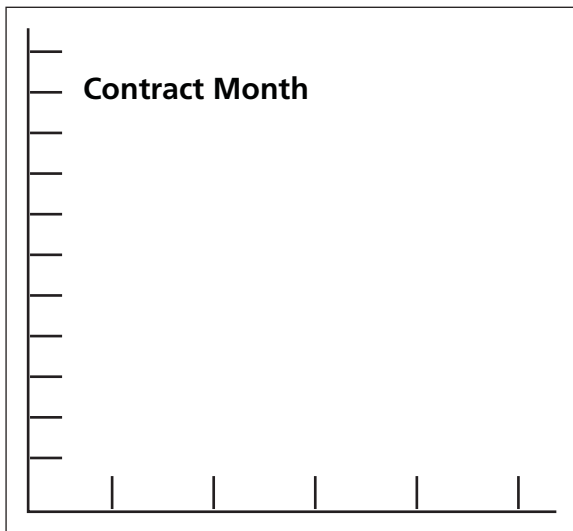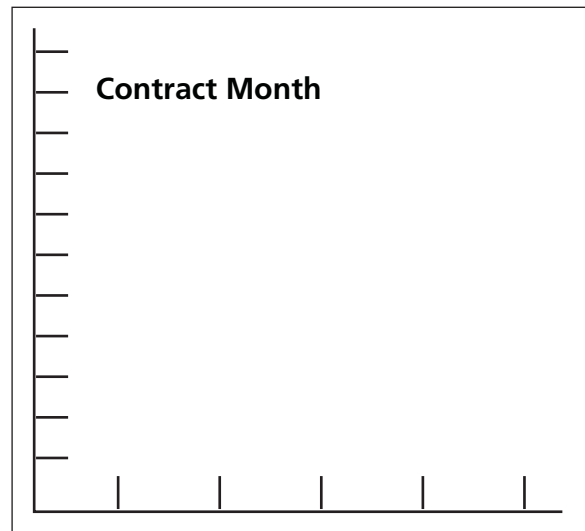
Chapter 6

Options Terms

Chapter Six Objectives

- To learn what options on futures contracts are and the terms associated with them
- To understand how producers can use options to lock in prices and benefit from price changes
- To understand how the option premium is determined
- To learn the mechanics of using puts and calls

Options on Futures

Like futures, producers can use options on futures to lock in prices and benefit from price changes. Hedging with futures is a risk-management technique that provides protection against falling prices for those producers who have a commodity to sell and against rising prices for those who plan to buy a commodity. In both cases, producers can use futures to lock in a price.

The hedger who plans to sell will be pleased with the locked-in price if prices fall, but on the other hand, may wish he or she had not hedged if those prices rise. The same is true about the hedger who plans to buy – happy with the locked-in price if prices rise, but not if prices fall.

Buying options on futures is another market alternative. Options provide the producer with price protection just as futures do, but they also provide the opportunity to benefit from favorable price changes. And option buyers do not have to worry about performance bonds.

An *option on a futures contract* is an agreement that grants the right, but not the obligation, to buy or sell an underlying futures contract at a specified price before a specified time. When you own an option, you have the right to buy or sell the underlying futures contract, but you do not have to. You can instead let the option expire. The ability to choose to use the option, or not, means that the option hedge will give producers the locked-in price they need, but, unlike a futures contract, will also allow them to take advantage of price movements in their favor.

Options

- Producers use options to lock in a price and also take advantage of prices moving to their benefit.
- Speculators trade options to make a profit on price movements and on the premiums.

Options Terms

Each option specifies:

- The *type of option*

There are two kinds of options. A *put option* grants you the right, but not the obligation, to *sell* a futures contract at the strike price specified. A *call option* grants you the right, but not the obligation, to *buy* a futures contract at the strike price specified.

- The *commodity* and the *contract month* of the underlying futures contract

For instance, the February call option on CME Lean Hog futures gives the owner the right to a long position in the February CME Lean Hog futures contract.

- The *maturity* of the option

The life of an option is determined by the futures contract month it covers. For example, a December option in a deliverable contract may expire one to two weeks before the first delivery of the December futures contract.

- The *price* at which the futures will be bought or sold

An option on a futures contract states the price at which you may buy or sell the underlying futures contract. This price is called the *strike price.* The strike price of the option does not change. If the strike price is $70.00/cwt., that price stays the same throughout the life of the option.

Since the option is a valuable asset in its own right, when you buy an option, you pay a price for it:

- The *premium* of the option

The premium for each option is determined on the exchange floor by open outcry as the traders make bids and offers to buy and sell the options. Depending on the comparison of the strike price to the current futures price and other factors, a premium can be high or low. The seller of the option <u>receives</u> the premium.

Sample options contract:

CME Lean Hogs Options Contract Highlights	
Ticker Symbol	Clearing Calls/Puts = LN Ticker Calls = CH Ticker Puts = PH
Trade Unit	One CME Lean Hog futures contract
Strike Prices	Cents per pound. Exercise prices at intervals of $0.02; e.g., $0.60, $0.62, $0.64, and so on. The first two contract months at intervals of $0.01; e.g., $0.60, $0.61, $0.62, and so on.
Point Descriptions	1 point = $.0001 per hundred pounds = $4.00
Minimum Price Fluctuation (Tick)	Regular 0.00025/lb = $10.00 Cab 0.000125/lb = $5.00
Daily Price Limit	None
Contract Months	Eight months of Feb, Apr, May, Jun, Jul, Aug, Oct, Dec
Floor Trading Hours (Chicago Time)	9:10 a.m. – 1:02 p.m. LTD (12:00 p.m. close on last day of trading).
Last Day of Trading	Trading shall terminate on the tenth business day of the contract month.
New Contract Listing Rule	The day after the front month expires.
Exercise Procedure	An option may be exercised by the buyer up to and including the last day of trading.

Note that a put and a call are two entirely different agreements, not the opposite sides of the same agreement. If you buy a put, you can offset your position by selling a put at the same strike price. If you buy a call, you can offset your position by selling a call at the same strike price. Also, the seller of a put option must take the other side of the transaction, and is obligated to buy the asset that the put owner is selling. Similarly, the seller of a call option must sell the asset to the call owner, who has the right to buy.

BUY a put	Offset it by →	SELLING a put at the same strike price
BUY a call	Offset it by →	SELLING a call at the same strike price
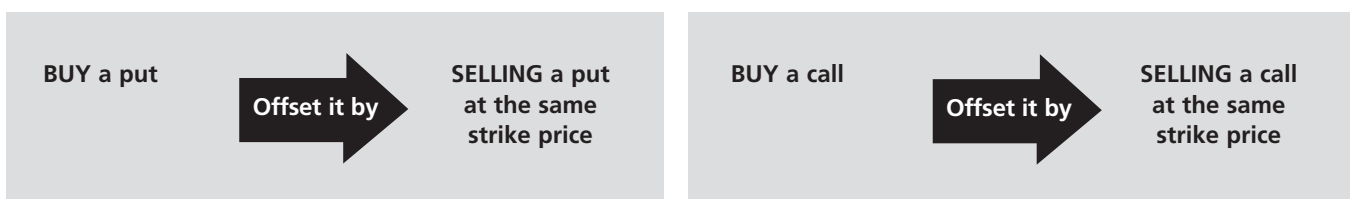
Options on Futures versus Options on Actuals

As discussed above, exercising a commodity option involves taking a position in an underlying futures contract. On the other hand, most financial options, like options on shares or currencies, involve delivery of the underlying asset itself. For instance, the owner of a call option on company stock will receive delivery of 100 shares of the underlying stock at exercise. The advantage of an option on a futures contract is that it is generally cheaper to exercise, since it involves posting the performance bond for a futures contract rather than paying the full price of the underlying asset. Also, while the market supply of an asset can be limited, which may make delivery of the asset difficult upon exercise, there is a potentially unlimited supply of futures contracts available to fulfill the exercise of an option on a futures contract.

	Options on Futures	**Options on Actuals**
Delivery/Exercise	Buyer receives long (call) or short (put) futures position; seller takes short (call) or long (put) futures	Buyer receives asset from seller
Timing	Underlying futures position expires approximately when option matures	Underlying asset does not expire
Cash Flows	Option owner and seller post performance bond; both positions marked to market	Option owner pays (call) or receives (put) full value of strike price
Supply of Underlying	Supply of futures contracts virtually unlimited	Limited supply of asset available for delivery

Using Put and Call Options

Once you buy a put or a call, you have three choices of action.

A put option grants you the right to sell a futures contract at a specific price. For example, a Dec CME Milk Class III 11.25 put is an option that grants you the right to sell a Dec CME Milk Class III futures contract at $11.25 (the strike price). Several puts are offered for the same futures contract, differing only by the strike price. Another put available may be a Dec CME Milk Class III 11.00 put, which gives you the right to sell a Dec CME Milk Class III futures contract at $11.00. The 11.00 put would have a lower premium than the 11.25 put.

You buy put options to lock in a *minimum floor price for the sale of your commodity.* Unlike hedging with futures, you can benefit if prices rise. This is how it works. As the buyer of an option, you have three choices:

- You can *exercise* the option (exchange it through your broker for the underlying futures contract).
- You can *offset* the option (sell a put with the same strike price and receive the current market value of the premium).
- You can let the option *expire* without any obligation (and lose the premium, of course).

Suppose you bought a Dec CME Lean Hog 74 put (strike price of $74/cwt). If the futures price falls below $74.00, you can offset your Dec CME Lean Hog 74 put and receive the premium. Or you can exercise the option and get a short futures position at the lock-in futures price of $74.00. If the December futures rise above $74.00, you can let the option expire and take advantage of the higher prices in the cash market. As we will see below, few producers ever exercise the option; most of them will either offset the option or let the option expire.
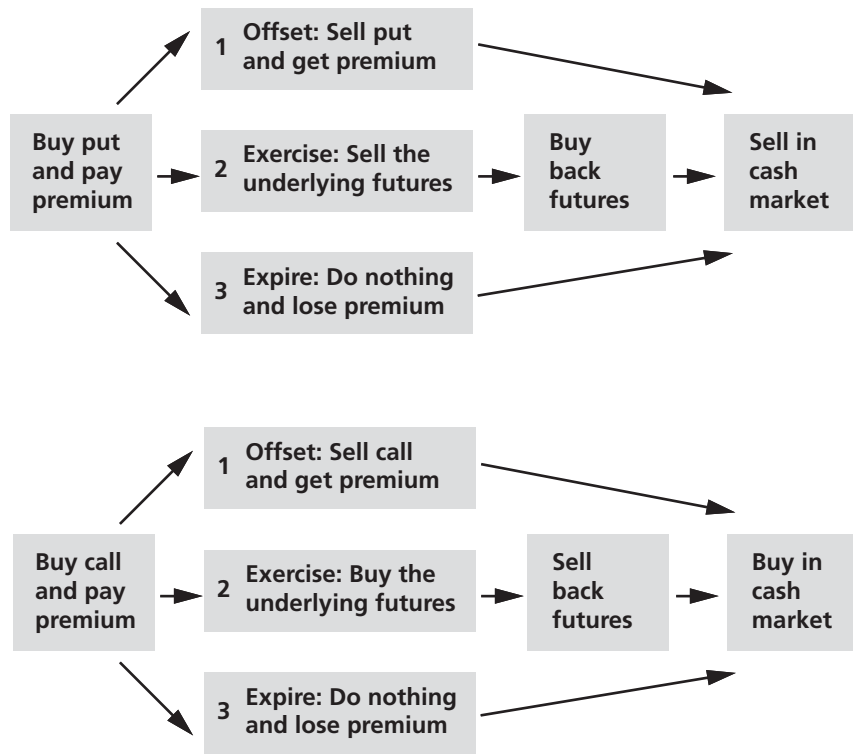
Call Option

A call option grants you the right, but not the obligation, to buy a futures contract at a specific price. For example, a Dec CME Milk Class III 11.50 call is an option that grants you the right to buy a Dec CME Milk Class III futures contract at the strike price of $11.50.

Call options allow you to lock in a *maximum price for the purchase of a commodity.* Again, you can exercise the option, offset it by selling a call with the same strike price or let the option expire. If the futures price rises above your strike price, you can sell a call with the same strike price and receive the premium. If the futures price falls below, you can let the option expire and take advantage of the lower prices in the cash market.

	Put Option	Call Option
What is it?	Right, but not the obligation, to sell a futures contract at the strike price	Right, but not the obligation, to buy a futures contract at the strike price
For whom?	Someone who PUTS the commodity on the market; sells	Someone who CALLS the commodity from the market; buys
Why use it?	Set minimum price; benefit from price increase	Set maximum price; benefit from price decrease
What happens?	Can offset, exercise or let the option expire	Can offset, exercise or let the option expire
1. Offset	Sell a put with the same strike price	Sell a call with the same strike price
2. Exercise	Exchange for short futures contract at the strike price	Exchange for long futures contract at the strike price
3. Expire	If the put is worthless, do nothing and sell in the cash market	If the call is worthless, do nothing and buy in the cash market

These flowcharts show the three choices a producer has who buys a put or a call. In each case, the sale or purchase of a commodity is eventually carried out in the cash markets.

```
                    ┌─────────────────────┐
                    │ 1 Offset: Sell put  │ ──────────┐
                    │   and get premium   │           │
                    └─────────────────────┘           ↓
┌──────────┐       ┌─────────────────────┐  ┌────────┐  ┌─────────┐
│ Buy put  │       │ 2 Exercise: Sell the│  │ Buy    │  │ Sell in │
│ and pay  │ ────→ │   underlying futures│→ │ back   │→ │ cash    │
│ premium  │       └─────────────────────┘  │ futures│  │ market  │
└──────────┘       ┌─────────────────────┐  └────────┘  └─────────┘
                   │ 3 Expire: Do nothing│ ──────────┐
                   │   and lose premium  │           ↑
                   └─────────────────────┘
```

```
                    ┌─────────────────────┐
                    │ 1 Offset: Sell call │ ──────────┐
                    │   and get premium   │           │
                    └─────────────────────┘           ↓
┌──────────┐       ┌─────────────────────┐  ┌────────┐  ┌─────────┐
│ Buy call │       │ 2 Exercise: Buy the │  │ Sell   │  │ Buy in  │
│ and pay  │ ────→ │   underlying futures│→ │ back   │→ │ cash    │
│ premium  │       └─────────────────────┘  │ futures│  │ market  │
└──────────┘       ┌─────────────────────┐  └────────┘  └─────────┘
                   │ 3 Expire: Do nothing│ ──────────┐
                   │   and lose premium  │           ↑
                   └─────────────────────┘
```

Options Premium

Option premiums are determined during trading, reflecting supply and demand for the options.

Premium Prices (Examples)			
CME LIVE CATTLE OPTIONS			
Strike	**Puts – Settle**		
Price	**Aug**	**Oct**	**Dec**
78	0.35	0.50	0.57
80	0.50	0.65	0.70
82	0.72	0.77	1.10
84	1.30	1.25	1.60
86	1.75	1.65	2.10
Strike	**Calls – Settle**		
Price	**Aug**	**Oct**	**Dec**
84	3.50	7.00	7.50
86	2.20	5.40	6.00
88	1.05	4.10	4.60
90	0.60	2.90	3.50
92	0.30	1.70	2.50

The premium for each option traded on the exchange is determined as the traders bid and offer to buy and sell options. The premium amount at which buyers are willing to pay and sellers are willing to sell depends on two factors:

Premium = Intrinsic Value + Time Value

Intrinsic Value

When you buy an option, you pay a *premium.* The amount you pay depends in part on the value of the option if you exercised it now. For example, if the current futures price for CME Live Cattle is $80.00/cwt, you would pay a higher premium for a put option with a strike price of 84/cwt than one for 82/cwt. The 84 put would be worth $4.00 if exercised (you have a short futures position entered at $84.00 when prices have fallen to $80.00), but the 82 put would be worth only $2.00 if exercised. The relationship of the strike price to the current futures price is called the intrinsic value, or built-in value, of the option. You can find the intrinsic value easily by comparing the strike price to the futures price. The intrinsic value of a put is the *strike price minus the futures price.*

There will be several options available for the same futures contract month, differing only in strike price. Some will be above the current futures price and some below. For example, February CME Live Cattle options may be available for 86, 88, 89, and so on.

For example, if the strike price of a CME Milk Class III put option is 11.25 and the futures price is $11.20, then the intrinsic value of the put is $0.05. That is because you could exchange the put for a futures contract sold at $0.05 above the current price. If the futures price is equal to or greater than the strike price, the intrinsic value would be 0 – *it cannot be negative.*

PUT	Strike price	11.25	11.25	11.25
	– Futures price	– 11.20	– 11.25	– 11.40
	Intrinsic value	0.05	0	0

The intrinsic value of a call option is the futures price minus the strike price. For example, if the strike price of a CME Milk Class III call option is 11.25 and the futures price is $11.60, then the intrinsic value of the call is $0.35. You could exchange the call for a futures contract bought at $0.35 below the current price. If the strike price is equal to or greater than the futures price, the intrinsic value is 0 – never negative.

CALL	Futures price	11.60	11.35	11.25
	– Strike price	– 11.25	– 11.25	– 11.25
	Intrinsic value	0.35	0	0

Time Value

The other part of the value of the option premium is the *time value.* This is the amount that buyers are willing to pay for the option in anticipation that, over time, a change in the futures price will cause the option to increase in value. It also represents the amount of risk the seller of the option is willing to take. The time value depends on two things: how long before the option expires, and how much futures prices are expected to move before the expiration date. The longer the option owner has to decide about exercising, the more valuable the option is. If there are wide swings in the futures price, the chance for the option buyer to benefit increases while the risk to the seller increases.

Generally, time value is greatest at the beginning of the option period. That is when the buyer has the highest expectations and the seller is facing the greatest risk. The time value approaches zero as the option period draws to an end and always ends at zero.

An option premium depends on the option's strike price compared to the current futures price (its intrinsic value), the time until maturity, and the volatility of the futures price. Since the option premium includes both time value and intrinsic value, it is usually better to sell, or offset, the option in the market rather than exercise it before expiration. That is why few producers exercise an option: they usually prefer to offset (getting both the intrinsic value and the time value in the premium they receive), or let the option expire (when the time value becomes zero).

At-the-Money

Traders have their own way of describing option value.

When the strike price equals the futures price, the option is *at-the-money* and the intrinsic value of the premium is zero. However, time value is high at-the-money because the buyer has a high chance of prices moving to her benefit, and the seller has a high risk. As the option moves *in-the-money,* its intrinsic value increases. An *out-of-the-money* option has an intrinsic value of zero. In both of these cases, the time value decreases. The chance is less that an out-of-the-money option will end up in-the-money and that an in-the-money option will end up out-of-the-money.

	Call Option	Put Option
In-the-money	Strike price < futures price	Strike price > futures price
At-the-money	Strike price = futures price	Strike price = futures price
Out-of-the-money	Strike price > futures price	Strike price < futures price

You can see that the premium is based on the option's intrinsic value plus what the participants feel their opportunities and risks are. Knowing this can help you evaluate premiums at various strike prices and decide which to buy. Because time value always decays to zero when the option expires, you want to pay as little time value as possible.

	Call Options Strike Prices	CME Live Cattle Futures Price	Put Options Strike Prices	
Out-of-the-money ◄———		88	88 ———►	In-the-money
At-the-money ◄———		86 — 86 — 86	———►	At-the-money
In-the-money ◄———		84	84 ———►	Out-of-the-money

Premiums

- A put or a call that is the most in-the-money demands the highest premium.

- A put or a call that is the most out-of-the-money demands the lowest premium.

Buying a Put

Use a put to lock in a minimum sales price and take advantage of prices if they rise.

When you have a commodity to sell, you can buy a put option to lock in a minimum selling price and take advantage of prices if they rise.

Buying a put example:	Suppose it is March and you are raising feeder cattle. The November futures price is trading at $112.00. You want to protect yourself against falling prices, so you buy a Nov CME Feeder Cattle put with the right to sell a Nov CME Feeder Cattle futures contract at $112.00. You pay a premium of $3.00 for the option. With the option, you are effectively setting a floor protector price of $109.00 and expecting a -$2.00 basis in November. Your hedged net price is $107.00 ($109.00 − $2.00).

Action	Buy November put	112.00
	Premium cost	3.00
	Basis Est.	− 2.00
		107.00
Result	Prices fall	

Basis	Futures Price	Options	Cash Price	Options Gain/Loss	Net Price Received
-2.00	104.00	Sell 112 put, 8.00	Sell 102	+ 8.00 − 3.00 = $5.00	= 107.00

When you are ready to sell your feeder cattle in November, the results are shown above. The futures price is now $104.00. You hold an option that grants you the right to sell a futures contract at $112.00, and this option now has a premium of $8.00. You sell a Nov CME Feeder Cattle put option at $112.00 and collect the $8.00 premium. Because you bought the put at $3.00, you receive a gain of $5.00 ($8.00 – $3.00). Then you sell the feeder cattle in the cash market at $102.00. The total price you receive is the cash price of $102.00 plus the $5.00 options gain, or $107.00.

What happens if the November futures price goes up? Suppose the futures price goes up to $120.00 and the cash price is $118.00. Your November put has lost any value it had. You let the option expire and lose the $3.00/lb you paid out as a premium for the put. You sell your calves in the cash market at $118.00. The price you received for your calves is the cash price of $118.00 plus -$3.00, the loss on the option, for a total of $115.00.

Action	Buy Nov put	112.00
	Premium cost	- 3.00
	Basis Est.	− 2.00
		107.00
Result	Prices fall	

Expected Basis	Futures	Options	Cash Price		Options Gain/Loss	Net Price Received
-2.00	120.00	Let expire	Sell 118.00	+	-3.00	= 115.00

Very few producers will actually exercise the put option. If the value of the put increases, producers will offset the put by selling a put with the same strike price and receive a premium. They will let a worthless put expire.

Here are more examples using a 112 feeder cattle put, a negative $2.00 basis and varying futures prices. You can see how $107.00 is established as a minimum price and how the put option allows you to benefit from rising prices.

Basis	Futures	Options	Cash Price	Options Gain/Loss	Net Price Received
-2	110	Sell put	Sell 108	+ 2.00 – 3.00	=107.00
-2	106	Sell put	Sell 104	+ 6.00 – 3.00	=107.00
-2	100	Sell put	Sell 98	+12.00 – 3.00	=107.00
-2	118	Let expire	Sell 116	+ 0 – 3.00	=113.00
-2	122	Let expire	Sell 120	+ 0 – 3.00	=117.00
-2	126	Let expire	Sell 124	+ 0 – 3.00	=121.00

Buying a Call

Use a call to lock in a maximum purchase price and take advantage of prices if they fall.

When you plan to *buy* a commodity, you can *buy a call option* to lock in a maximum purchase price and take advantage of prices if they rise.

Buying a call example:	Suppose it is December and you are planning on buying corn for your hog operation in July. The July futures price is $2.40/bushel, and the local cash price for July corn is $2.19. You want to protect yourself against rising prices, so you buy a July corn 230 call – the right to buy a July corn futures contract at $2.30. You pay a premium of $0.26/bushel.

Action	Buy July put	2.30
	Premium cost	+ 0.26
	Basis Est.	- 0.21
		2.35
Result	Prices rise	

Expected Basis	Futures	Options	Cash Price	Options Gain/Loss	Net Price Received
-.21	2.75	Sell 230 call	Buy 2.54	+0.45 – 0.26 =$0.19	= 2.35

When you need the corn in July, the results are shown above. The futures price has risen to $2.75. Your 230 call that grants you the right to buy a futures contract at $2.30/bushel has increased in value. The option now has a premium of $0.45. You sell a July corn 230 call and collect the call premium of $0.45/bushel. Because you bought it at $0.26, you receive a gain of $0.19/bushel ($0.45 – $0.26). Then you buy the corn in the cash market at $2.54. The total price you paid for the corn is the cash price of $2.54 minus the $0.19 option gain, or a total of $2.35.

What happens if prices fall? In July, the futures price has fallen to $2.10, and the cash price is at $1.89. Your July corn 230 call is out-of-the-money. You let the option expire and lose the $0.26/bushel premium you paid for the call. You buy corn in the cash market at $1.89. The price you paid for the corn is the cash price of $1.89 with a $0.26 loss of the option premium, for a total of $2.15.

Action	Buy July call	2.30
	Premium cost	+ 0.26
Result	Prices fall	

Date	Futures	Options	Cash Price	Options Gain/Loss	Net Price Paid
July	2.10	Let expire	Buy 1.89	0.00 – 0.26	= 2.15

As with put options, very few producers would exercise a call option. Depending on the option's value, they would either offset the option or let it expire.

Here are more examples using a 230 corn call option, a negative $0.21 basis and varying futures prices. You can see how $2.35 is established as a maximum price and how the call option allows you to benefit from falling prices.

Results: Options provide excellent opportunities for taking advantage of price decreases.

Basis	Futures	Option	Cash Price	Options Gain/Loss		Net Price Paid
-0.21	2.40	Sell 230 call	Buy 2.19	0.10 + 0.26	=	2.35
-0.21	2.80	Sell 230 call	Buy 2.59	0.50 + 0.26	=	2.35
-0.21	3.00	Sell 230 call	Buy 2.79	0.70 + 0.26	=	2.35
-0.21	2.15	Let expire	Buy 1.94	0 – 0.26	=	2.20
-0.21	2.00	Let expire	Buy 1.79	0 – 0.26	=	2.05
-0.21	1.90	Let expire	Buy 1.69	0 – 0.26	=	1.95

Chapter Six Exercise

Take a look at CME Lean Hog options prices:

1. Choose two different lean hog options contract months (February, April, June, etc.). Pick one that is near to expiration and one that is not.

2. First, check where the current futures price is for your contracts. Go to the CME Web site (www.cme.com) to check CME Lean Hog prices. Record the prices.

3. Now, check the lean hog options prices for your contracts. Go to the CME Web site (www.cme.com) to check CME Lean Hog options prices. Record the strike prices and premiums.

4. For each strike price listed, determine which puts and calls are in-the-money, at-the-money and out-of-the-money.

Additional Exercise

1. You buy a June CME Live Cattle put option at a premium of $2.50/cwt. What is the total amount of the premium you pay for the put?

2. You buy a May corn call option at a premium of $0.25/bushel. What is the total premium you pay for the call?

3. You buy five August CME Feeder Cattle calls at $2.25/cwt. What is the total premium you pay for the calls?

4. If the strike price of a corn put option is $3.00 and the futures price is at $2.65, what is the intrinsic value of the put?

5. If the strike price of a CME Feeder Cattle call option is $70.00 and the futures price is $68.50, what is the intrinsic value of the call?

6. You buy an October CME Live Cattle 86 put for a premium of $2.50/cwt. Later, you sell an October CME Live Cattle 86 put for a premium of $3.50/cwt. What is the gain or loss on the transaction?

7. You buy a March CME Feeder Cattle 112 call for a premium of $3.00/cwt. Later, you sell a March CME Feeder Cattle 112 call for a premium of $1.50/cwt. What is the gain or loss on the transaction?

8. You bought a May corn 230 call for a premium of $0.16. Now the futures price is at $2.35. What will you do?
    a. Sell a May corn 230 call
    b. Buy a May corn 230 call
    c. Let the option expire

Chapter 7

Options Strategies

Options Costs and Hedging

There are costs associated with buying options.

The options strategies presented in this chapter include the practical financial aspects of using options such as:

- Premium costs
- Broker commissions

As a buyer of a put option or a call option, a producer will pay a *premium* for an option up front; the seller of the option receives the premium. For example, a premium for a current live cattle put option may be $0.80/cwt, or a total of $320.00 per option ($0.80 x 400 cwt per option). A producer buying this live cattle put pays the premium of $320.00 at the time of purchase. The seller of the put is credited with $320.00.

Buyers of the live cattle put know their risk. They paid $320 for protecting a minimum sales price. If the option is worthless at the time they are ready to sell their live cattle, they will let the option expire and lose the premium. If the value of the option is above zero, they can offset their position by selling a put with the same strike price and perhaps earn a profit on the premium. Unlike with a futures contract, put buyers do not have to make a performance bond deposit or face performance bond calls while they hold the option.

Sellers or writers take the greater risk. They are subject to receiving an exercise notice initiated by an option buyer. Sellers can offset their positions by buying a put with the same strike price at any time before receiving an *exercise notice.* But it may not be to their benefit to offset at a particular time. Once an exercise notice is received, the seller of the put must take a long position in the underlying futures contract. Also, the seller has to deposit a performance bond and face performance bond calls to guarantee any loss he or she may incur.

Exercise Notice	When an option buyer wants to exercise an option (and take the underlying futures position), an exercise notice is issued by the broker to the exchange clearing house, and the option is exchanged for the futures contract. An option seller will be assigned to take the opposite futures position.

A cost to producers is the *commission* charged by the broker. This cost is negotiable and depends on the level of service, quantity traded and sometimes level of premium. There are many approaches used in charging commissions on options.

Financial Aspects of Owning an Option

- **Pay the premium up front when you buy the option.**

- **Receive a premium when you offset the option.**

- **Lose the premium if you let the option expire.**

- **Pay a commission for each option traded.**

- **Make no performance bond deposit or calls.**

Hedging with Options Compared to Hedging with Futures

Producers and purchasers can choose to manage risk using options or futures, so it is helpful to summarize the key differences between the two approaches. Fundamentally, a futures contract involves a promise by both participants to buy and sell. An options contract, on the other hand, gives the owner the right to buy or sell if he chooses to do so.

This difference in contract terms leads to one important difference in the price fixed by the two contracts. A futures contract locks in one price (subject to basis risk). The option, on the other hand, establishes a floor price (through a put) or a ceiling price (through a call). Because the option owner can choose not to exercise, the option hedge allows the hedger to take advantage of price movements in his favor. For instance, a producer can fix a minimum floor price to sell his output by exercising his put option, yet take advantage of rising prices when they are available by choosing not to exercise.

The other key difference relates to the payment for these two contracts. The option buyer must pay the total option price, or premium, up front at the beginning of the hedge, whereas the futures hedger does not pay a premium but only posts a performance bond. Note, however, that a futures position can be subject to a performance bond call if prices move against the hedger, while the purchase price of the option is the maximum cash flow the hedger needs to make to hedge with an options contract.

Finally, as will be seen, an options hedger can choose the level of protection he wants because he has available a *series* of options with different strike prices. For a futures hedger, there is only *one* futures price available (per futures delivery month) in the market at any one time.

	Hedging with Futures	Hedging with Options
Hedged price	One locked-in price	Floor or ceiling, with ability to improve if prices move in hedger's favor
Hedged price	One locked-in price	Choice of strike prices
Initial cash flow	Deposit performance bond	Pay (non-returnable) premium
Hedge cash flow	Subject to performance bond calls	Payment of premium only

Delivery Price Strategy

A hog producer uses put options to establish a minimum floor price.

It is June and you expect to have 675 hogs ready for market in November. You are having trouble reading the market and are not sure whether prices are headed up or down. If prices go down, you want some protection with a minimum floor price for December delivery of the hogs. If prices go up, you would like to be able to benefit. You decide to look at buying CME Lean Hog put options.

What price can you expect to get for your hogs? Your first step is to set a *target price.* You calculate a target price as follows:

Target price for put option: *Strike Price – Premium +/- Expected Basis*

There are Dec CME Lean Hog put options available at various strike prices, so you can calculate a few target prices. You expect the basis in December to be $2.00 under. The current December futures price is $60.00.

Strike price	$60.00	$58.00	$56.00
– Premium cost	– $3.00	– $2.50	– $2.00
+ Expected basis	+ -$2.00	+ -$2.00	+ -$2.00
Target price	$55.00	$53.50	$52.00

You want to establish your minimum price at $55.00/cwt, so you buy the Dec CME Lean Hog 60 put. You will need to buy three options to protect your hogs. The put with a strike price of 60 has a premium of $3.00/cwt, so the amount you have to pay up front is $1,200 per option ($3.00 x 400 cwt per option), or a total of $3,600 for three options. You have the $3,600 available to buy the puts and establish a minimum price of $55.00, so that is what you decide to do.

You call your broker and ask to buy three Dec CME Lean Hog 60 puts at a premium of $3.00/cwt. You pay the premium total of $3,600 and the commission at this time.

Action:	Buy Dec Puts	60.00
	Premium Cost	– 3.00
	Expected Basis	+ -2.00
	Target Price	$55.00
Result	(prices fall)	

Expected Basis	Futures Price	Options	Cash Price	Options Gain/Loss	Net Price Received
-2.00	55.00	Sell 60 put, 5.00	Sell 53.00	+ 5.00 – 3.00, $2.00	= 55.00

In November, futures prices have fallen to $55.00, and the local cash price is $53.00. The basis is $2.00 under, just as you expected. The Dec CME Lean Hog 60 puts now have a premium of $5.00. You sell three Dec CME 60 puts and receive the premium (the premium you paid originally was $3.00). You have earned $2.00/cwt on each of the options transactions ($5.00 – $3.00). You sell your hogs locally at $53.00/cwt. The total price you received is the cash price of $53.00 plus the $2.00 options gain, or a total of $55.00.

Looking at the overall picture, you have done $2,400 ($2.00 gain x 400 cwt x three options) better with options. You paid $3,600 up front when you bought put options, and earned $2,400 back when you sold put options. You pay the broker a commission of $50.00 for each option traded, totaling $150.00 for three options bought and sold. Your actual gain is $2,350 ($2,400 – $150).

A Real Example

Hog prices plummeted at the end of 1998. In early December, the Dec CME Lean Hog futures contract was trading in the low $20.00 range after experiencing a contract high of $58.50 during the lifetime of the contract.

Hog producers who had not used the futures market as protection against price risk would have sold their hogs at a great loss.

What if prices rise? With futures at $61.00, the Dec CME Lean Hog 60 puts expire worthless, and you realize a loss on the premium of $3.00; you receive a total of $56.00 for the hogs.

Action:	Buy Dec Puts	60.00
	Premium Cost	– 3.00
	Expected Basis	+ -2.00
	Target Price	$55.00
Result	(prices rise)	

Expected Basis	Futures Price	Options	Cash Price	Options Gain/Loss	Net Price Received
-2.00	61.00	Let expire	Sell 59.00	+ 0 – 3.00	= 56.00

A Storage Strategy

A producer uses put options to store corn and lock in a minimum selling price.

Storage Gain	• The selling price received after storage minus the previous harvest selling price.
	• Should be greater than the cost of storing the crop.

It is November, and you have a corn crop of 35,000 bushels that could be sold. The local cash price now is $2.30/bushel, but you want to explore storing for July delivery. The local cash forward bid for July corn is $2.50, which would give you a $0.20 storage gain but not cover your expected $0.28/bushel storage cost. You want to protect your downside risk and improve on the storage gain. And you would like to benefit if prices rise.

What can you expect to get for your corn? First, calculate target prices based on some of the available put options for July corn. The current July futures price is $2.70. You expect the basis to be $0.05

Strike price	$2.90	$2.80	$2.70
– Premium cost	– $0.25	– $0.17	– $0.10
+ Expected basis	+ -$0.05	+ -$0.05	+ -$0.05
Target price	$2.60	$2.58	$2.55

You could also look at the storage gain for each strike price. You want to lower your storage costs, so you rule out buying 270 puts. However, in terms of storage gain, both the 290 puts and the 280 puts are satisfactory.

Strike price	$2.90	$2.80	$2.70
– Premium cost	– $0.25	– $0.17	– $0.10
+ Expected basis	+ -$0.05	+ -$0.05	+ -$0.05
Target price	$2.60	$2.58	$2.55
– Current cash price	– $2.30	– $2.30	– $2.30
Storage gain	$0.30	$0.28	$0.25

You will need to buy seven put options to protect your 35,000 bushels of corn. You would have to pay $8,750 total premium on seven July corn 290 puts ($0.25 x 35,000 bushels) or $5,950 on seven July corn 280 puts ($0.17 x 35,000 bushels). With your present cash flow, the $5,950 is better for you. The 280 puts will lock in a minimum price of $2.58/bushel.

You call your broker and ask to buy seven July corn 280 puts at a premium of $0.17/bushel. You pay the premium total of $5,950 and commission at this time. Let's see what happens.

Action:	Buy July Puts	2.80
	Premium Cost	– 0.17
	Expected Basis	+ -0.05
	Target Price	$2.58
Result	Prices rise	

Expected Basis	Futures Price	Options	Cash Price	Options Gain/Loss	Net Price Received
-.05	3.10	Let expire	Sell 3.05	+ 0 – .17	= 2.88

In July, futures prices have risen considerably. The futures price stands at $3.10, and the local cash price is now $3.05. The basis is $0.05 under as you expected. The July corn 280 puts are out-of-the-money, so you let them expire and lose the $0.17/bushel premium you paid. You sell your corn in the cash market at $3.05/bushel. The total price you receive is the cash price plus the loss on the options, or a total of $2.88/bushel ($3.05+ -$0.17).

If you had not placed this storage hedge, you would have sold your corn in November at $2.30/bushel. By buying put options, you have made a storage gain of $0.58/bushel ($2.88-$2.30). Overall, you have earned $20,300 ($0.58 x 35,000 bushels) more by storing the corn and buying options. Subtracting your premium cost of $5,950, commission cost of $350.00 ($50.00 per option x seven options), storage costs of $9,800 ($0.28/bushel storage cost x 35,000 bushels), the net gain is $4,200.

Calculating an Options Hedge Ratio

In the prior example, the producer needed seven options to hedge his 35,000 bushel corn crop (7 contracts x 5,000 bu/contract = 35,000 bushels). The hedge position is based on the size, or units, of the position to be hedged. A different approach that is used, particularly in short-term hedges (ones that will be lifted before contract maturity), is to consider price changes rather than physical units. Ultimately, it is the dollar value of the purchase or sale that the hedger is trying to protect.

If the hedger plans to close out his or her hedge before contract maturity and is looking for equal option protection and a futures hedge, he or she may want to adjust the number of option contracts used as a hedge. Futures prices tend to move uniformly with the underlying cash position price: if the live hog cash price changes by $0.10/cwt, the futures price will tend to change by $0.10 as well. Options prices, on the other hand, do not usually change as much as the underlying cash price. If the hog cash price changes by $0.10, generally the options price will change by roughly half that, or $0.05/cwt. The technical term for this relative price change is called the option's delta. Here, the change in the options price compared to the change in the cash price was one-half, or 0.50, so the option's delta is 0.50. The hedge in this case would need two options contracts (2 contracts x $0.05/cwt change = $0.10) to hedge the loss in his cash position of ten cents. An option delta gives the short-term hedge ratio: the number of contracts is 2 (1/option delta, or 1/0.50).

The delta of an option, and thus the size of the options position needed to hedge dollar value, can change over the option's life. For instance, an at-the-money option will have a delta close to 0.50, but as the option moves into the money, the delta rises towards a value of one. The reason behind this increase is that, as the option becomes more likely to be exercised, its price movements will mimic the underlying cash. Similarly, if the option moves very far out-of-the money, it is extremely unlikely that it will be exercised, and its delta moves toward zero.

A Purchase Strategy

A feedlot operator uses call options to lock in a maximum purchase price.

As a purchaser of feeder cattle, you can buy call options to protect yourself against price increases while leaving yourself open to profit from price decreases.

Suppose it is July and you are planning a purchase of 270 head of feeder cattle to place in the feedlot in December. Indications are that prices are going up, and you want to lock in a maximum purchase price. But prices have been fluctuating lately. You think there is a chance that prices may fall. In that case, you want to take advantage of falling prices. Because options provide both protection and opportunity, you take a look at buying January call options.

What can you expect to pay for the feeder cattle? Your first step is to set a *target price* for the feeder cattle purchase. You can calculate the target as follows:

Target price for a call: *Strike Price + Premium +/- Expected Basis*

There are Jan CME Feeder Cattle call options available at various strike prices, so you can calculate a few target prices. You expect the basis in January to be $2.00 under. The current January futures price is $111.50/cwt.

Strike price	$112.00	$114.00	$116.00
+ Premium cost	+ $3.90	+ $2.80	+ $1.60
+ Expected basis	-$2.00	-$2.00	-$2.00
Target price	$113.90	$114.80	$115.60

You decide to establish your maximum purchase price at around $114.00/cwt., so you purchase the Jan CME Feeder Cattle 112 call option. For the feeder cattle you would pay a total of $7,800 ($3.90 x 500 cwt per option x four options) for the 112 calls. Your lender agrees to lend the $7,800 up front premium payment, so you decide to purchase four Jan CME Feeder Cattle 112 calls.

You call your broker and place an order to buy four Jan CME Feeder Cattle 112 calls at a premium of $3.90/cwt. You pay the premium and commission at this time. Let's see what happens.

Action:	**Buy January Calls**	112.00
	Premium Cost	+ 3.90
	Expected Basis	– 2.00
	Target Price	$113.90

Expected Basis	Futures Price	Options	Cash Price	Options Gain/Loss	Net Price Paid
-2.00	90.00	Let expire	Buy 88.00	– 0 – 3.90	= 91.90

In January, when you are ready to purchase feeder cattle, futures prices have fallen to $90.00. The basis is $2.00 under as you predicted, and the local cash price is $88.00. Your January CME Feeder Cattle 112 calls are out-of-the-money, so you let them expire and lose the $3.90/cwt premium you paid. You buy the feeder cattle in the cash market at $88.00/cwt. The total price you paid is the cash price of $88.00 plus the options loss of $3.90, or a total of $91.90 – a good improvement on your target price.

Reviewing the overall transaction, if you had not hedged with call options, you could have bought feeder cattle at even less in the cash market. The total difference was the $7,800 premium loss plus $200.00 in commission, or $8,000. That is the price you paid for insurance for a price you could live with – your target of $113.90 or less.

What if prices rise? The insurance options provide covers you if prices rise. Suppose instead of falling, the futures price rose to $120.00 and the cash price to $118.00. Then hedging with call options would have held your purchase price at 113.90.

Action:	Buy January Calls	112.00
	Premium Cost	+ 3.90
	Expected Basis	− 2.00
	Target Price	$113.90

Expected Basis	Futures Price	Options	Cash Price	Options Gain/Loss	Net Price Paid
-2.00	120.00	Sell 112 call, 8.00	Buy 118.00	− 8.00 + 3.90 = $4.10	= 113.90

Hedging a Cattle Sale

A cattle producer and a wheat farmer use options to hedge the sale of their commodity.

It is November and you expect to have 140 steers ready for market in April. You suspect that prices are headed down, but it is hard to be sure. If prices go down, you want to protect a minimum sales price of $83.00 for the April delivery of cattle. If prices go up, you want to take advantage of it. You decide to buy Apr CME Live Cattle put options to hedge the sale. Here are the facts:

- April futures at $88.00 in November
- Basis expected to be $2.00 under in April
- An Apr CME Live Cattle 88 put at a premium cost of $3.00 will lock in a floor price of $83.00

You call your broker and ask to buy four Apr CME Live Cattle 88 puts at the $3.00/cwt premium. You pay the $4,800 total premium ($3.00 x 400 cwt x 4 puts) and the commission $200 at this time.

Action:	Buy April puts	88.00
	Premium Cost	– 3.00
	Expected Basis	-2.00
	Target Price	$83.00

Expected Basis	Futures Price	Options	Cash Price	Options Gain/Loss	Net Price Paid
-2.00	80.00	Sell 88 put, 8.00	Sell 78.00	+8.00 – 3.00	= 83.00

In April, futures prices have fallen to $80.00, and the local cash price is $78.00. The basis is $2.00 under as you expected. The April CME Live Cattle 88 puts now have a premium of $8.00. You sell four April CME Live Cattle 88 puts at the $8.00/cwt premium. You have gained $5.00/cwt on the transaction, because you bought the puts for $3.00. You sell the cattle locally at $78.00/cwt. The total price you receive is $83.00 ($78.00 cash price + $8.00 options gain – $3.00 loss on premium) – the same as your target.

Hedging a Wheat Sale

It is March and you expect to have 25,000 bushels of wheat to sell in July. Prices have been volatile. There is a good chance they are going to fall. A local bid is offering a $3.74/bushel selling price, but you want flexibility in having downside protection and capitalizing on higher prices if markets go up. If prices go down, you want to protect a minimum price of $3.80 for the July delivery of wheat. If prices go up, you want to be able to take advantage of it. You make a decision to buy wheat put options to hedge the sale. Here are the facts:

- July futures at $4.10 in March
- Basis expected to be $0.10 under in July
- A wheat 410 put at a premium cost of $0.20/bushel will lock in a floor price of $3.80

You call your broker and ask to buy five July wheat 410 puts at $0.20/bushel premium. You pay $5,000 total premium ($0.20 x 5,000 bushels x 5 puts) and the commission at this time.

Action:	Buy March puts	4.10
	Premium Cost	– 0.20
	Expected Basis	-0.10
	Target Price	$3.80
Result	Prices rise	

Expected Basis	Futures Price	Options	Cash Price	Options Gain/Loss	Net Price Received
-10	4.40	Let expire	Sell 4.30	+ 0 – .20	= 4.10

To your surprise, in July futures prices have jumped to $4.40 and the local cash price is $4.30. The basis is $0.10 under, just as you expected. The July wheat 410 puts you bought are now worthless, and you let them expire. You have lost the $0.20/bushel premium you paid when you bought the puts. However, because the market has risen, the local cash market price is also very good. The total price you receive for the wheat is $4.10/bushel ($4.30 cash price + -$0.20 options loss), which exceeds your target price.

You might say that you would have been better off not to buy options in the first place. But you were buying insurance against the risk of falling prices. Because prices rose instead, the options allowed you to take advantage of it.

Hedging a Hog Sale

A meat packer hedges the purchase of hogs.

A meat packer can use call options to hedge a planned purchase of hogs. Suppose it is November and the packer needs 1,200 hogs for slaughter in February. If prices go up, the packer wants insurance against the higher price. If prices go down, he or she wants to take advantage of it. The packer decides to buy CME Lean Hog call options to hedge the purchase. Here are the facts:

- February futures at $64 in November
- Basis expected to be $2.00 under in February
- A Feb CME Lean Hog 64 call at a premium cost of $3.00 will lock in a ceiling price of $65.00

The packer calls a broker and asks to buy eight Feb CME Lean Hog 64 calls at $3.00/cwt premium. He or she pays the $9,600 total premium ($3.00 x 400 cwt x 8 calls) and the commission at this time.

Action:	Buy February calls	64.00
	Premium Cost	+ 3.00
	Expected Basis	− 2.00
	Target Price	$65.00

Expected Basis	Futures Price	Options	Cash Price	Options Gain/Loss	Net Price Paid
-2.00	70.00	Sell 64 call, 6.80	Buy 68.00	-6.00 + 3.00	= 65.00

In February, futures prices have gone up to $70.00, and the local cash price is $68.00. The basis is $2.00 under, as had been expected. The Feb CME Lean Hog 64 calls now have a premium of $6.00, and the eight February calls are sold at the $6.00/cwt premium. The packer's gain is $3.00/cwt on the transaction, because the calls were bought for $3.00. The hogs are purchased locally at $65.00/cwt. The total price paid is $65.00 ($68.00 cash price − $3.00 options gain). That is the same as the packer's target price.

Chapter Seven Exercise

Part 1:

You have some cattle to sell and want to buy CME Live Cattle put options to hedge the sale.

1. You pick which CME Live Cattle contract you want (February, April, June, etc.).

2. Check the current futures price for the contract you chose. Go to the CME Web site (ww.cme.com) to check CME Live Cattle futures prices now. Record the price.

3. Next, check the CME Live Cattle put options prices for your contract. Go to the CME Web site (www.cme.com) to check CME Live Cattle options prices now. Record the strike prices and premiums.

4. Suppose your production costs are $62.00/cwt and you expect the basis to be $2.00 under when you sell the cattle. For each strike price, calculate the target selling price and determine which put option would allow you to break even.

Part 2:

1. You buy a May corn 300 put at a premium of $0.30/bushel. You expect the basis to be $0.15 under. What is your target selling price?

2. You buy a September CME Feeder Cattle 112 call at a premium of $2.75/cwt. You expect the basis to be $2.00 over. What is your target purchase price?

3. You buy a June CME Lean Hog 60 put at $1.75. You expect the basis to be $1.50 under. What is your target selling price?

4. You bought a wheat 380 put at a premium of $0.25/bushel. Now the futures price is $3.90. What will you do?
   a. Sell a 380 put
   b. Sell a 380 call
   c. Let the option expire

5. What is the formula for calculating the options gain or loss?
   a. Options selling price - options buying price
   b. Options buying price - options selling price

6. You bought July corn puts at a premium of $0.25/bushel and sold them back at a premium of $0.20/bushel. Then you sold the corn in the cash market at $2.80/bushel. What was the total price you received for your corn?

7. You bought July corn calls at a premium of $0.10/bushel and sold them back at a premium of $0.20/bushel. Then you bought the corn in the cash market at $2.65/bushel. What was the total price you paid for the corn?

8. You bought April Live Cattle 74 puts at a premium of $2.50/cwt. Now the 74 puts are worthless. You sell your cattle in the cash market for $78.50/cwt. What was the total price you received for the cattle?

9. You are planning to sell feeder cattle. Your target price is $75.00/cwt or more. You expect the basis to be $1.00 over. You can afford to spend $2,000 total premium. Which put should you buy?
   a. 74 put at a premium of 82¢/cwt
   b. 76 put at a premium of $2.02/cwt
   c. 78 put at a premium of $3.82/cwt
   d. 80 put at a premium of $5.77/cwt

Chapter 8

Marketing Math

Cash Marketing Math

When you sell crops or livestock in the cash markets, you need to be concerned primarily with figuring total sales price and dealing with the basis (the relationship of the cash price to the futures price). If you are storing a crop, you also have to be able to calculate storage cost and be sure that a later sales price will cover this cost.

- Figuring Total Price
- Working with Basis
- Calculating Storage Costs

Figuring Total Price

Finding the total selling or purchasing price of a commodity is fairly straightforward for crops, but more complex for livestock. Here are some examples.

Example 1: Total crop price
You sell 10,000 bushels of corn in the cash markets at a price of $2.40 per bushel. What is the total value of the sale of the corn?

Multiply the number of bushels by the price per bushel $24,000.

10,000	bushels
x $2.95	dollars/bushel
24,000	dollars
Answer: $24,000	

Example 2: Total livestock
You sell five 190-pound hogs at 43.20 per cwt. What is the total value of the sale?

1. You need to know how many pounds you have to sell. Multiply the number of hogs by the weight per hog.

```
190   pounds/hogs
x 5   hogs
950   total pounds
```

2. The price is expressed in dollars per hundredweight (cwt), so you need to find how many cwt. Divide total weight by 100.

Tip: Cwt is 100 pounds. When dividing by 100, move the decimal point two places to the left.

```
        9.5 cwt
100 | 950.0 pounds
```

3. Multiply total cwt by the sales price.

```
 43.20   dollars/cwt
x 9.5    cwt
410.40   dollars
Answer: $410.40
```

Working with Basis

People talk about basis as a shortcut to talking about the local cash price and futures price. They may say that the basis is 10¢ under. That means the local cash price is 10¢ less than the futures price.

Cash price	Cash price	Futures price
– Futures price	– Basis	+ Basis
Basis	Futures price	Cash price

When working with basis, you have to deal with negative numbers. A basis that is 10¢ under is shown as -10¢. A basis that is $1.00 under is expressed as -$1.00. You will need to be able to add and subtract negative numbers. If you learn these principles of operating with negative numbers, you will be in good shape.

Getting a negative answer	1	–	2	=	-1
Adding a negative number	2	+	-1	=	1
Subtracting a negative number	2	–	-1	=	3

Example 3: Finding the cash price
The futures price is 3.70, and the bases is 36¢ under. What is the cash price?
Add the futures price and the basis.

Remember that 36¢ under is -$.36. Adding a negative number is like subtracting.

```
  3.70   futures
+ -.36   basis
  3.34   cash price
Answer: $3.34
```

Calculating Storage Costs

It's important to know your storage costs if you plan to store your crop and sell later. The storage cost is necessary when you set a target price for the crop.

Example 4: Storage cost
You want to store soybeans for four months at a cost of 5¢ per bushel per month. What will the storage cost be?

Multiply the cost of storage per month times the number of months.

```
   5   cents/bushel/month
 x 4   months
  20   cents/bushel
Answer: 20¢/bushel
```

Example 5: Storage selling price
Today's cash price for corn is $2.50. You can store your corn for three months at a cost of 4¢/bushel per month. What selling price do you need to have three months later?

1. Find the storage cost. Multiply the cost per month by the number of months.

```
   4   cents/bushel/month
 x 3   months
  12   cents/bushel
```

2. Now, compare selling at harvest to selling later. Add the current cash price and the storage cost.

```
  2.50   current cash price
+ .12    storage cost
  2.62   breakeven price
Answer: Sell above $2.62/bushel
```

Futures Math Tutorial

When you work with futures, you will be determining how many futures contracts to buy or sell and calculating target prices, net prices received or paid and the hedging results.

- Setting A Target Price
- Determining How Many Futures Contracts
- Figuring Out the Total Price
- Calculating Hedging Results

Setting a Target Price

You do not hedge without first estimating what the results of the hedge will be. You have to be familiar with your local basis so you can estimate what the basis will be when you offset the hedge. With the expected basis and the futures price you can determine what your target is.

Futures price
+ Expected basis
Target price

Example 1: Target purchase price
You buy corn futures contracts at $2.25 to hedge a purchase of feed. You expect the basis to be 10¢ under. What is your target purchasing price for the corn?

Add the futures price you paid and the expect basis. Remember that 10¢ under is -$.10.

```
  2.25   futures
+ -.10   expected basis
  2.15   target purchasing price
Answer: $2.15/bushels
```

Determining How Many Futures Contracts

If you are going to hedge a sale or a purchase, you will need to know how many futures contracts to sell or to buy. You will need to know the size of the futures contracts.

Divide total crop or livestock weight by contract size.

Example 2: Selling soybean futures
You expect a soybean crop of 25,000 bushels at harvest. How many CBOT soybean futures contracts will you sell to hedge the crop?

The CBOT soybean contract is for 5,000 bushels.

Divide the number of bushels by 5,000.

$$\begin{array}{r} \underline{\textbf{5 contracts}} \\ \textbf{5,000} \, \overline{\rvert\;\textbf{25,000 bushels}} \\ \textbf{Answer: 5 contracts} \end{array}$$

Example 3: Buying Feeder Cattle futures
You plan to by 130 head of feeder cattle, or about 100,000 pounds. How many CME Feeder Cattle futures contracts will you buy to hedge the feeder cattle purchase?

A CME Feeder Cattle futures contract is for 50,000 pounds.

$$\begin{array}{r} \underline{\textbf{2 contracts}} \\ \textbf{50,000} \, \overline{\rvert\;\textbf{100,000 bushels}} \\ \textbf{Answer: 2 contracts} \end{array}$$

Divide the number of pounds by 50,000.

Figuring Out the Total Price

Finding the price you received or paid for a commodity is a two-step calculation.

First, you have to calculate the gain or loss on the futures transaction. For example, if you sold futures at a higher price than you offset them, you realize a gain. If you sold for less, you experience a loss.

> **Futures selling price**
> **– Futures buying price**
> **Futures gain or loss**

The next step in finding the price you received for the sale of a commodity is to add the cash price you received and the futures gain or loss. The price you paid for the commodity is found by subtracting the futures gain or loss from the cash price you paid. You subtract a gain from the cash price because the total price paid would be lower.

Short Hedge	Long Hedge
Cash price received	**Cash price paid**
+ Futures gain/loss	**– Futures gain/loss**
Net Price received	**Net Price paid**

Gain or Loss

Remember, with futures you can sell before you buy. Figuring the gain or loss does not depend on the order of the purchase and sale of futures.

Example 4: Total sales price
You sold Live Cattle futures at $65/cwt and bought them back at $62/cwt. Then you sold your cattle in the cash market at $61.00. What was the total price you received for the cattle?

1. Determine the gain or loss on the futures contracts.
    Subtract the buying price from the selling price.

        65.00   **futures selling price**
   − 62.00   **futures buying price**
     3.00   **futures gain**

2. Add the cash sales price and the futures gain.

      61.00   **cash price**
   + 3.00   **futures gain**
    64.00   **net price received**
  Answer: $64.00/cwt

Example 5: Total purchase price
You bought corn futures at $2.30, sold them back at $2.20, and bought corn in the cash market at $2.05. What was the total price you paid for the corn?

1. Determine the gain or loss on the futures contracts. Subtract the buying price from the selling price.

     2.20   **futures selling price**
  − 2.30   **futures buying price**
   −.10   **futures loss**

2. Subtract the futures loss from the cash price paid. Subtracting a negative number is like adding.

     2.05   **cash price**
  − .10   **futures loss**
   2.15   **net price paid**
  Answer: $2.15/bushel

Calculating Hedging Results

You can compare your hedging results (the price you paid or received after hedging) to the cash price you would have received without hedging. And you can calculate the difference.

Example 6: Short hedge results
You hedge your cattle by selling and then offsetting three futures contracts. The price you received was $2.50/cwt above the cash price. Your broker charged you a commission of $225.

What is your net gain over the cash price?

1. The CME Live Cattle contract is for 40,000 pounds, or 400 cwt. So, multiply the number of contracts by 400.

> | | |
> |---:|---|
> | 400 | cwt/contract |
> | x 3 | contracts |
> | 1,200 | total cwt |

2. Find the total amount of gain. Multiply the total cwt by the gain over the cash price.

> | | |
> |---:|---|
> | 1,200 | cwt |
> | x 2.50 | dollars/cwt |
> | 3,000 | dollars total gain |

3. Subtract the commission from the total.

> | | |
> |---:|---|
> | 3,000 | total gain |
> | − 225 | commission |
> | 2,775 | net gain |
> | **Answer: $2,775 better results** | |

Options Math Tutorial

When you work with options, you have to calculate target prices, premiums and options gain and losses.

- Setting a Target Price
- Finding the Total Premium Value
- Finding the Total Price
- Calculating Hedging Results

Setting a Target Price

When calculating a target price for a put, subtract the premium from the strike price and add the basis. For a call, add the premium and basis to the strike price.

Put Target Price	Call Target Price
Strike price	**Strike price**
– Premium	**+ Premium**
+ Basis	**+ Basis**
Target floor price	**Target ceiling price**

Example 1: Target floor price
You want to sell your hogs at $45/cwt or better. You expect the basis to be $2.00 under. Will a December hog 50 put option at a premium of $2.75 lock in an acceptable price?

1. The December Lean Hog 50 put has a strike price of $50. Subtract the premium from the strike price.

50.00	strike price
– 2.75	basis
47.25	

2. Add the expected basis to the difference (47.25). Remember that $2 under is -$2.00.

47.25	
+ - 2.00	basis
45.25	target price
Answer: Yes, $45.25 is acceptable	

Example 2: Target ceiling price for a call
You plan to buy feeder cattle at a maximum price of $67/cwt. You expect the basis to be $1 over. Will a January Feeder Cattle 64 call at a premium of $2.55 lock in an acceptable price?

1. The January Feeder Cattle 64 call has a strike price of $64. Add the premium to the strike price.

```
 64.00   strike price
+ 2.55   premium
 66.55
```

2. Add the expected basis to the sum (66.55). The basis at $1 over is $1.00.

```
 66.55
+ 1.00   basis
 67.55   target price
Answer: No, $67.55/cwt is not acceptable
```

Finding the Total Premium Value

Option premiums are quoted as dollars per bushel or cwt. To find the total premium for an option, you have to know the number of bushels or hundredweight in the underlying futures contract.

Example 3: Premium for a corn call
You buy a March corn 200 call at a premium of 26¢/bushel. What is the total amount you pay for the call?

The underlying CBOT corn futures contract is for 5,000 bushels. Multiply the premium by 5,000.

```
5,000   bushels
 x .26   dollars/bushel
1,300   dollars
Answer: $1,300 total premium
```

Example 4: Premium for a Live Cattle put
You buy an April Live Cattle 70 put at a premium of $4.50/cwt. What is the total amount you pay for the put?

The underlying CME Live Cattle futures contract is for 40,000 pounds or 400 cwt. Multiply the premium by 400.

```
 4.50   dollars/bushel
x 400   cwt
1,800   dollars
Answer: $1,800 total premium
```

Example 5: Premium for several puts
You buy four July wheat 390 puts at a premium of 25¢/bushel. What is the total amount you pay for the puts?

1. Multiply the number of put options by 5,000 bushels per contract.

```
 5,000   bushels/option
   x 4   options
20,000   bushels
```

2. Multiply the total number of bushels by the premium.

```
20,000   bushels
 x .25   dollars/bushel
 5,000   dollars
Answer: $5,000 total premium
```

Finding the Total Price

Finding the price you received or paid for a commodity is a two-step calculation.

First, you have to calculate the gain or loss on the options transaction. For example, if you bought a call at a lower price than you later sold it, you would realize a gain.

```
  Options selling price
– Options buying price
  Options gain or loss
```

The next step in finding the price you received for the sale of a commodity is to add the cash price you received and the options gain or loss. The price you paid for the commodity is found by subtracting the options gain or loss from the cash price you paid. You subtract a gain from the cash price because the total price paid would be lower.

Short Hedge	Long Hedge
Cash price received	**Cash price paid**
+ Options gain/loss	**– Options gain/loss**
Net price received	**Net price paid**

Example 6: Total sales price
You bought soybean puts at a premium of 20¢/bushel and sold them back for 18¢/bushel. Then, you sold the soybean crop in the cash market at $6.85/bushel. What was the total price you received for the soybeans?

1. Determine the gain or loss on the put options. Subtract the buying price from the selling price.

.18	**options selling price**
– .20	**options buying price**
- .02	**options loss**

2. Add the cash sales price and the options loss.

6.85	**cash price**
+ -.02	**options loss**
6.83	**total price received**

Example 7: Total purchase price
You bought feeder cattle calls at a premium of $2.75/cwt and offset the calls at $4.25/cwt. Then you bought the feeder cattle in the cash market at $58/cwt. What was the total price you paid for the feeder cattle?

1. Determine the gain or loss on the call options. Subtract the buying price from the selling price.

> 4.25   **options selling price**
> − 2.75   **options buying price**
> 1.50   **options gain**

2. Subtract the options gain from the cash purchase price.

> 58.00   **cash price**
> − 1.50   **options gain**
> 56.50   **total price paid**
> **Answer: $56.50/bushel**

Example 8: Total sales price (out-of-the-money)
You bought July wheat 360 puts at a premium of 30¢/bushel. Now the 360 puts are worthless. You sell your wheat crop in the cash market at $3.65/bushel. What is the total price you received for the wheat?

1. You let the option expire and lose the 30¢/bushel premium.

> - .30   **options loss**

2. Add the cash price and the options loss.

> 3.65   **cash price**
> + -.30   **options loss**
> 3.35   **total price received**
> **Answer: $3.35/bushel**

Note: If you let an option expire, the loss is the original premium you paid.

Calculating Hedging Results

As with futures, you can compare your options hedging result to the cash price you would have received or paid.

Example 9: Long hedge results
You hedged your corn purchase by buying and then selling two corn calls. The total price you paid was 15¢/bushel below the current cash price. The commission is $100 for the calls traded. What are your net savings compared to the cash price?

1. The CBOT corn call option is for 5,000 bushels. Multiply the number of calls by 5,000.

> 5,000   **bushels/options**
> **x 2**   **options**
> 10,000   **bushels**

2. Find the total amount of savings. Multiply the total bushels by the saving under the cash price.

> 10,000   **bushels**
> **x .15**   **dollars/bushel**
> 1,500   **dollar savings**

3. Subtract the commission from the total savings.

> 1,500   **total savings**
> **– 100**   **commission**
> 1,400   **net savings**
> **Answer: $1,400 better results**

Answer Keys for Chapter Exercises

Chapter One Exercise Answers
1. $23,200
2. $25,000
3. $440.00
4. $1,406.25
5. $5.25/bushel
6. $1.50 over
7. 15¢ under
8. $53.00/cwt
9. $3.05/bushel
10. $2.86/bushel

Chapter Two Exercise Answers
1. 8 contracts
2. 3 contracts
3. $54.50/cwt
4. $2.35/bushel
5. $31,250
6. $71.00/cwt
7. $2.35/bushel
8. $4,600

Chapter Six Exercise Answers
1. $1,000
2. $1,250
3. $5,625
4. $0.35
5. 0
6. $1.00/cwt gain ($400)
7. $1.50/cwt loss ($750)
8. A, Sell a May corn 230 call

Chapter Seven Exercise Answers
1. $2.55/bushel
2. $116.75/cwt
3. $56.75/cwt
4. C, Let the option expire
5. A, Options selling price - options buying price
6. $2.75/bushel
7. $2.55/bushel
8. $76.00/cwt
9. C, 78 put at a premium of $3.82

Glossary

At-the-money   An option with a strike price equal to the underlying futures price.

Bar chart   A graph of prices, volume and open interest for a specified time period used by the chartist to forecast market trends. For example, a daily bar chart plots each trading session's high, low and settlement prices.

Basis   The difference between the spot or cash price and the futures price of the same or a related commodity. Basis is usually computed to the near future, and may represent different time periods, product forms, qualities and locations. The local cash market price minus the price of the nearby futures contract.

Basis contract   A forward contract in which the cash price is based on the basis relating to a specified futures contract.

Breakaway gap   A gap in prices that signals the end of a price pattern and the beginning of an important market move.

Broker   A person paid a fee or commission for executing the buy or sell orders of a customer. In futures trading, the term may refer to one of several entities: Floor broker - a person who actually executes the trade in the trading pit or electronically; Account executive (AE), Associated Person (AP), or Registered Commodity representative (RCR) - the person who deals with customers in Futures Commission Merchant (FCM) offices; and FCM - a firm or person engaged in executing orders to buy or sell futures contracts for customers. A full-service broker offers market information and advice to assist the customer in trading. A discount broker simply executes orders for customers.

Brokerage house   A firm that handles orders to buy and sell futures and options contracts for customers.

Call option   A contract between a buyer and seller in which the buyer pays a premium and acquires the right, but not the obligation, to purchase a specified futures contract at the strike price on or prior to expiration. The seller receives a premium and is obligated to deliver, or sell, the futures contract at the specified strike price should a buyer elect to exercise the option. Also see American Style Option and European Style Option.

Carryover   Last year's ending stocks of a storable commodity.

Cash sales   The sale of commodities in local cash markets such as elevators, terminals, packing houses and auction markets.

Clearing house   An agency or separate corporation of a futures exchange that is responsible for settling trading accounts, collecting and maintaining margin monies, regulating delivery and reporting trade data (i.e., CME Clearing is the clearing house for CME).

Commission   For futures contracts, the one-time fee charged by a broker to cover the trades a client makes to open and close each position. It is payable when the client exits the position. Also called a round-turn. Commissions on options are usually half on initiation and paid half on liquidation.

Commodity   The underlying instrument upon which a futures contract is based.

Commodity exchange   An exchange that lists designated futures contracts for the trading of various types of derivative products and allows use of its facilities by traders. Must comply with rules set forth by the Commodity Futures Trading Commission (CFTC).

Commodity Futures Trading Commission   The independent body that oversees all futures trading in the United States.

Deferred pricing agreement   A cash sale in which the seller delivers a commodity and agrees with the buyer to price it at a later time.

Delivery day   The calendar date on which a delivery transaction is to be completed.

Delivery point   Those locations designated by the exchange at which actual commodities may be delivered in fulfillment of a futures contract.

Demand   The quantity of a commodity that buyers are willing to purchase in the market at a given price.

Discount broker   See Broker.

Double top, bottom   A bar chart formation that signals a possible price trend reversal. In a point and figure chart, double tops and bottoms are used for buy and sell signals.

Downtrend   A price trend characterized by a series of lower highs and lower lows.

E-trader   Traders no longer need to be physically present on the floor but use electronic trading platforms such as CME Globex.

Exhaustion gap   A gap in prices near the top or bottom of a price move that signals an abrupt turn in the market.

Floor broker   An individual who is registered with the CFTC to execute orders on the floor of an exchange for the account of another. He/she receives a fee for doing so by clearing members or their customers.

Forward contract   A private, cash-market agreement between a buyer and seller for the future delivery of a commodity at an agreed price. In contrast to futures contracts, forward contracts are not standardized and not transferable.

Full-service broker   Broker that provides general brokerage services, trade execution, as well as strategic planning for each trader individually. Also is availability for trade discussions, advising during order placement, and provide suggestions for "next move" post trade. See Broker.

Fundamental analysis   The study of supply and demand information to aid in anticipating futures price trends.

Futures contract   An obligation to deliver or to receive a specified quantity and grade of a commodity during a designated month at the designated price. Each futures contract is standardized and specifies commodity, quality, quantity, delivery date and settlement.

Head and shoulders   A sideways price formation at the top or bottom of the market that indicates a major market reversal.

Hedger   An individual or firm who uses the futures market to offset price risk when intending to sell or buy the actual commodity. See Pure Hedger, Selective Hedger.

Hedging   1 - Taking a position in a futures market opposite to a position held in the cash market to minimize the risk of financial loss from an adverse price change. 2 - A purchase or sale of futures as a temporary substitute for a cash transaction which will occur later. See Long Hedge and Short Hedge.

In-the-money   A call option with a strike price lower (or a put option with a strike price higher) than the current market value of the underlying futures commodity.

Intrinsic value   The relationship of an option's in-the-money strike price to the current futures price. For a put: strike price minus futures price. For a call: futures price minus strike price.

Line of credit   Signed agreement between the producer and the lender to supply funds for hedging only, but not for speculation and to liquidate one's account without the producer's consent and to prohibit from further trading.

Long hedge   The purchase of a futures contract in anticipation of an actual purchase in the cash commodity market. Used by processors or exporters as protection against an advance in the cash price. See Hedge.

Margin   See Performance Bond.

Margin call   See Performance Bond Call.

Market order (MO)   An order submitted at any time within a trading session, executable immediately at the current market price.

Maturity   Period within which a futures contract can be settled by delivery of the actual commodity; the period between the first notice day and the last trading day of a commodity futures contract.

Maximum price fluctuation   The maximum amount the contract price can change up or down during one trading session, as stipulated by exchange rules. Consult CME Clearing contract specifications for specific price limit information.

Moving averages   A type of technical analysis using the averages of settlement prices.

National Futures Association (NFA)   The self regulatory organization of the futures industry. Chartered by Congress in 1981, the NFA regulates the activities of its member brokerage firms and their employees. Overseen by the Commodity Futures Trading Commission (CFTC).

Offset   1 - To remove a position from an account by establishing a position opposite an existing position, making or taking delivery, or exercising an option (i.e., selling if one has bought, or buying if one has sold). 2 - To report reductions of a firm's inventory of open long purchase dates to CME Clearing.

Open interest   The total number of futures contracts long or short in a delivery month or market that has been entered into and not yet liquidated by an offsetting transaction or fulfilled by delivery Also known as Open Contracts or Open Commitments. Each open transaction has a buyer and a seller, but for calculation of open interest, only one side of the contract is counted.

Open outcry   The method of trading that the CFTC requires in the exchange trading pits whereby all trades are made with verbal bids and offers. In open outcry, only the highest Bid and lowest Offer prices can compete (that is, be shouted, accompanied by hand signals, by the floor brokers and floor traders) on the trading floor at any given moment.

Option   The right, but not the obligation, to sell or buy the underlying (in this case, a futures contract) at a specified price on or before a certain expiration date. There are two types of options: call options and put options. Each offers an opportunity to take advantage of futures price moves without actually having a futures position.

Out-of-the-money   A term used to describe an option that has no intrinsic value. A call option with a strike price higher (or a put with a strike price lower) than the current market value of the underlying futures commodity. Since it depends on current prices, an option can vary from in the money to out of the money with market price movements during the life of the options contract.

Performance bond   The amount of money or collateral deposited by a client with his broker, or by a clearing firm with CME Clearing on open futures or options contracts before a customer can trade. The performance bond is not a part payment on a purchase. 1 - Initial performance bond is the total amount of margin per contract required by the broker when an account is opened, or when the equity in the account falls below CME Clearing minimum maintenance requirements. 2 - Maintenance performance bond is a sum which must be maintained on deposit at all times. If a customer's equity in any futures position falls below the maintenance level because of adverse price movement, the broker must issue a margin call to the minimum CME Clearing initial margin requirement to restore the customer's equity. Consult the Contract Specifications for margin requirements of specific contracts.

Performance bond call   1 - A request from a brokerage firm to a customer to bring performance bond deposits up to minimum levels. 2 - A request by CME Clearing to a clearing firm to bring clearing performance bonds back to levels required by the Exchange Rules. Most exchanges refer to this as a "margin call."

Premium   1 - The price paid by the purchaser of an option to the grantor (seller). 2 - The amount by which a cash commodity price trades over a futures price or another cash commodity price.

Price   Price to which the given instrument should be traded in an order or a trade. Also called limit.

Price order   An order to sell or buy at a certain price or better.

Pure hedger   A person who places a hedge to lock in a price for a commodity. He or she offsets the hedge and transacts in the cash market simultaneously.

Put option   A contract that provides the purchaser the right (but not the obligation) to sell a futures contract at an agreed price (the strike price) at any time during the life of the option. A put option is purchased in the expectation of a decline in price.

Runaway gap   A gap in prices after a trend has begun that signals the halfway point of a market move.

Short hedge   The sale of a futures contract in anticipation of a later cash market sale. Used to eliminate or minimize the possible decline in value of ownership of an approximately equal amount of the cash financial instrument or physical commodity. See Hedge.

Sideways trend   Seen in a bar chart when prices tend not to go above or below a certain range of levels.

Speculator   An individual who does not hedge, but who trades in commodity futures or options with the objective of achieving profits through the successful anticipation of price movements. The speculator has no interest in taking delivery.

Stop order   An order specifying a price at which it is activated and becomes a limit order. A buy stop is entered above the current market and becomes a limit order when the commodity trades at or above the specified stop trigger price. A sell stop is entered below the current market. It becomes a limit order when the commodity trades at the stop price or below. The stop can immediately execute up to the limit price.

Strike (price)   The price at which the option buyer may purchase or sell the underlying futures contract upon exercise. See Exercise Price.

Strike price   The price at which the option may be exercised (price at which the option buyer may purchase or sell the underlying futures contract). Strike prices on options are at exchange designated intervals. See Exercise Price.

Substitution   The principle by which CME Clearing becomes the buyer to every seller and the seller to every buyer upon the successful matching of two trade records or upon the successful completion of initial settlement for ex-pit transactions.

Supply   The quantity of a commodity that producers are willing to provide to the market at a given price.

Target price   An expected selling or buying price. For long and short hedges with futures: futures price + expected basis. For puts: futures price – premium + expected basis. For calls: futures price + premium + expected basis.

Technical analysis   The study of historical price patterns to help forecast futures prices.

Time value   The amount by which an option's premium exceeds its intrinsic value. Usually relative to the time remaining before the option expires.

Trader   1 - A person who takes positions in the futures market, usually without the intention of making or taking delivery. 2 - A member of the exchange who buys and sells futures and options through the floor of the exchange. See Day Trader, Floor Broker, Position Trader, and Scalper.

Uptrend   A price trend characterized by a series of higher highs and higher lows.

Volatility   An annualized measure of the fluctuation in the price of a futures contract. Historical volatility is the actual measure of futures price movement from the past. Implied volatility is a measure of what the market implies it is, as reflected in the option's price.

Volume   The number of contracts in futures or options on futures made during a specified period of time. At CME, it refers to "aggregated quantity" (i.e., total traded volume of the day). The published exchange volume figure consists of all trades executed on the trading floor, CME Globex and by Exchange-For-Physical (EFP).