



A joint project of the Cooperative
Extension Service, Farm Credit and
Chicago Mercantile Exchange

Using futures markets

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Futures markets

Using futures markets



Carl O'Connor



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This is one module of the *Business Management in Agriculture* series and is intended to be used with its corresponding videotape. The script may vary from the actual videotape text.

Carl O'Connor is a professor of agricultural and resource economics and Extension marketing specialist at Oregon State University. He is a consultant of educational programs to the Chicago Board of Trade, the Chicago Mercantile Exchange, and Farm Credit Services, St. Paul, Minn.

O'Connor has authored more than 200 articles published in the popular press dealing with livestock marketing, including hedging and the use of options, and appears regularly on radio and television. He is a former assistant professor at Iowa State University, and holds a Ph.D. in agricultural economics from Oregon State University.

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Purpose

The purpose of this module is to help you:

1. understand why and how commodity futures markets came to be,
2. examine whether or not you should use hedging in your farm or ranch operation,
3. explore long and short hedging as ways to manage price risk,
4. understand the key role of basis in effective hedging,
5. explore the role of speculators in the marketplace, and
6. review trading procedures, rules, and safeguards that have been built into the market.

Videotape script

By Carl O'Connor and Kim Anderson

Fred— The commodity futures markets: markets that are an intricate part of agriculture; markets that have come under public scrutiny; markets that offer agricultural producers of commodities traded on exchanges an alternative pricing system for the commodities they grow. Cattle, wheat, hogs, corn, soybeans, and cotton are important commodities traded on major agricultural exchanges in the United States.

This educational module is designed to explain how commodity marketing exchanges came to be. We will explore long and short hedges as ways to manage price risk and even examine whether or not to hedge. You will come to understand the importance of basis as a key to effective hedging. We'll explore the importance of speculators in the marketplace and review some of the safeguards that have been built into the market to protect you as a producer.

Perhaps like many, you are just beginning to explore this important marketing and pricing alternative. To explore this topic of futures markets more closely and to hopefully answer some of these concerns, we will now turn to Carl O'Connor, a professor at Oregon State University, and Kim Anderson, a professor at Oklahoma State University. Let's get started, shall we?

Managing price risk

Carl— Hi, I'm Carl O'Connor and this is Kim Anderson. We want to explore with you a topic that is very important to agriculture. I speak of managing price risk, which has to be one of the most important management tasks agricultural producers face today.

Kim— I agree. Farmers face several different kinds of risk. For some, such as hail or drought, farmers can buy crop insurance. But, you're right, Carl, one risk most farmers need to control is price risk. And this is also of concern to agricultural lenders because improving a producer's control over price risk means improving their ability to repay loans.

Carl— The good news is that there are various management tools available to help producers manage price risk. Probably the most commonly used pricing tool is forward cash contracting.

PURPOSE

To help you understand:

- Commodity exchanges
- Long and short hedging
- Hedging guidelines
- Basis
- Speculation
- Market rules and safeguards

Forward cash contracts

Kim— That's true, Carl, because they are so easy to understand and use. We see forward contracts offered every day at local elevators across this country. It is estimated that seventy percent of the slaughter cattle are forward contracted. And the number of feeder cattle contracted off the farm has been increasing steadily.

Carl— But aren't there some problems with forward contracts, especially when contracting feed and feeder cattle off of the farm?

Kim— Yes, there are some. Remember, the producer who forward contracts is obligated to deliver that commodity as specified in the contract. What happens if a grain farmer's crop is wiped out by hail? If it was forward contracted, he may have to go into the open market and buy grain to fulfill that contract.

Another problem with forward contracting is that you limit the timing and range of prices available to you. Pricing flexibility is very important. We'll come back to this point a little later.

Carl— Where forward contracting is less formalized, like for feeder cattle contracted at the farm level, there is typically no formal mechanism for settling disputes. If a producer finds the market price falling substantially below the contract price, he may not be able to locate the buyer.

Kim— In those cases, the producer can go to court—but litigation is extremely expensive. So forward contracting is important to agriculture, but it does have some problems. This suggests that producers should examine contracts carefully, or better yet, have their attorney look them over. Finally, deal only with known, reputable buyers and sellers.

Start of commodity exchanges

Carl— Historically, Kim, it was these kinds of problems that led traders of grain to first start commodity exchanges in the 1800s.

Kim— You're right, Carl. Those first exchanges were simply gathering places for people to get together and trade grain and other agricultural commodities. One of the first things that these exchanges did was to establish quality standards for commodities. Shortly after that, people at the exchange started trading what they called "to arrive contracts"—what we today call forward cash contracts.

Carl— As you said earlier, Kim, these forward contracts were simply agreements between two parties to purchase and sell a commodity at some future time. The price was established at the time the contract was made. But even then we would see disputes arise, particularly if supply and demand changed significantly after the price was established.

Kim— Yes, and initially it was not uncommon for either the seller or the buyer to simply not show up if the price had shifted against him.

Carl— This group of businessmen dealt with this problem by deciding to tighten the trading requirements. In order to trade a forward contract at the exchange, both the buyer and the seller had to deposit a sum of money with a neutral third party. This money eventually became known as margin money.

Kim— To make a long story short, it took another 25 years of refinement, but these forward cash contracts evolved, in the late 1800s, into the commodity futures markets as we know them today.

Contract specifications

Kim— Each commodity futures contract specifies, at a minimum, the product to be traded, the quantity to be represented by each contract, the quality deliverable under the contract, the acceptable delivery point or points, and finally, the delivery date on which the contract expires. Each contract has a limited life, usually less than one year.

Carl— Actually, these are exactly the same specifications you would like to see in a good forward cash contract, aren't they?

Kim— Yes, they are exactly the same, the difference being that futures contracts are standardized. The only negotiable item is the price.

Carl— Specifications of futures contracts are established at each exchange by committees made up of exchange members and other users of these commodities. Each contract specification has been set to represent what this user group feels are the standard terms of trade in the industry.

Live hog contract example

Kim— Let's look at a couple of actual contracts as examples. The first is the Chicago Mercantile Exchange live hog contract. It's traded in seven separate delivery months: February, April, June, July, August, October, and

CONTRACT SPECIFICATIONS

- Product
- Quantity
- Quality
- Delivery point
- Delivery date

CME LIVE HOG CONTRACT

Feb	Size: 30,000 lbs
Apr	(about 130 hd)
June	Quality: No. 1, 2, 3
July	barrows/gilts
Aug	210-240 lbs
Oct	
Dec	Peoria, IL

CBOT WHEAT CONTRACT

July	Size: 5,000 bu.
Sept	Quality: No. 2 soft
Dec	red or No. 2
Mar	dark northern
May	spring
	Chicago, IL

December. The size of each contract is 30,000 pounds—about 130 head. Par delivery is barrows and gilts grading U.S. No. 1, No. 2, and No. 3 weighing from 210 to 240 pounds delivered to an Exchange-approved public livestock yard in Peoria, Illinois.

Carl— Kim, aren't there some additional delivery points which have a price discount?

Kim— Yes, there are. But as major trends in the industry change, these locations and discounts change. CME's live hog committee—made up of hog producers, processors, and Exchange members—tries to reflect needed changes through these contracts.

Carl— How about an example of a major grain contract?

Wheat contract example

Kim— Okay. The Chicago Board of Trade wheat contracts provide trading in five separate delivery months: July, September, December, March, and May. These correspond to the crop year for winter wheat which runs from June 1 to May 31 of the following year. The May contract is the last pricing opportunity of the old crop, while the July contract is the first pricing of the new crop. Each contract is 5,000 bushels and the par delivery units call for U.S. grade No. 2 soft red winter or No. 2 dark northern spring in designated Chicago elevators. Substitutions and differentials can be established by the Exchange.

Carl— What we have is a contract with almost everything that is normally negotiable, now specified—everything except *price*.

Kim— That's right. Futures contracts are used to transfer price risk to someone willing to accept that risk. This seems like a good place to stop the videotape and have you examine in more detail some of the futures market contracts.



(pause)

Hedging as a concept

Fred— In this segment, Dr. Carl O'Connor has joined me to explore the concept of hedging. Welcome, Carl.

Carl— Thanks. It's great to be here.

Fred— Earlier, you suggested we could deal with the idea of hedging in several ways. I favor your idea of jumping right into an example—let's say hogs. Even though we're going to use hogs, Carl would be the first to say that the

steps he will take you through are the same for grain, cotton, or cattle. Let's get on with it, Carl. You seem excited about hedging today.

Carl— It is an exciting concept because it can be so important to people who sell and buy livestock, grain, or cotton. Hedging is the use of two different but related markets to attempt to gain some protection against price risk.

Hedging definition

It may be best to begin by looking at the formal definition of hedging. Hedging is defined as the buying or selling of a futures contract as a temporary substitute for a merchandising transaction (buying or selling) which will be made at a later time.

Fred— Now, Carl, that's a lot of words. What are you saying?

Carl— Let's begin with this first phrase, "the buying or selling of a futures contract." If you go to a local brokerage house and open an account, you can then trade commodity contracts—you can either buy or sell a contract.

Fred— Don't you have to buy a contract before you sell one?

Carl— No, you don't. Remember, the futures contract is a promise to exchange a commodity sometime in the future. In fact, that delivery period is specified in the contract. So, if you're raising hogs and you normally sell hogs, then you would want to promise to deliver those hogs when they're finished. You do this by *selling* a futures contract.

Fred— I see. And, conversely, if the packer wants to *buy* some hogs using the futures contracts, then they would probably *buy* a futures contract.

Carl— Exactly.

Fred— That makes sense.

Carl— That leads us right into the rest of this hedging definition—"as a temporary substitute for a merchandising transaction which will be made at a later date." So just as you said, the producer normally *sells* hogs as his merchandising transaction, so the producer will *sell* futures contracts now and deliver the hogs later. Or, the packer will *buy* futures now and take delivery of the hogs later.

Fred— But, isn't this just like a forward cash contract?

Carl— That's a hard question, but an awfully good one. They are similar in that the seller has promised to deliver

HEDGING

Buying or selling a futures contract as a temporary substitute for buying or selling a commodity at some later time

PRODUCER CHOICES

Sell hog contract now

and

Sell hogs later

PACKER CHOICES

Buy hog contract now

and

Buy hogs later

STEPS IN HEDGING

1. Establish price objective
2. Select contract month
3. Estimate local hedge price

hogs to a buyer at any one of several locations at the negotiated price. The buyer has promised to take delivery of the hogs at any one of the several locations that the seller chooses at the negotiated price. So that part of the transaction is exactly the same as a forward cash contract.

But when a producer sells a forward contract, they know exactly who buys it. don't they?

Fred— Sure they do. In fact, there are probably some people with whom they would rather not do business.

Futures vs. forward contracts

Carl— Exactly. Here's where a futures contract differs. When you trade futures contracts, you don't know who's on the opposite side of your contract. If you sell, you don't know who bought your contract.

Fred— How do they know that the person is okay?

Carl— Producers sell their contracts through a local brokerage house which guarantees performance on their side of the contract. Likewise, the buyer trades through his broker, and the broker guarantees the buyer's performance. We'll go into this in more detail a little later.

Fred— So you're saying that since the futures markets are more formalized, with rules and financial regulations, it doesn't really make any difference who's on the other side.

Carl— That's right. The futures market is designed to be impersonal so that just one thing is negotiated—price.

When you sell a contract you are transferring the price risk to the person who buys the contract.



Fred— Carl, I now have a bigger question. How do you decide if you should hedge or not?

Carl— Kim Anderson and I have often been asked that question. So we developed a videotape on this subject this past year. Let's turn to that videotape and see what steps *we need to go through to answer that question.*

Hedging

Carl— In this segment, Dr. Anderson and I will explore the steps involved in trying to decide whether or not you should hedge. There are three important considerations. First, you should establish a price objective. Second, you need to select the best futures contract month in which to trade. And last, you have to estimate what your local price

will be as a result of using the futures market and the local cash market together.

Kim, let's start with the most important first—establishing a price objective.

Establishing a price objective

Kim— Carl, without a doubt this is the most important step. If you don't have a price objective, it is very difficult to determine whether you're accomplishing your goal.

Carl— What are some of the most common price objectives you see producers using?

Kim— I see all kinds. But the most common is usually the break-even price plus some fixed amount of profit—say, \$25 per head for hogs or \$50 per head for cattle. We also see folks looking at their cash flow requirements. They want enough income to repay their loans and carry on the rest of their business and personal lives.

Carl— A short-run objective that I occasionally see, Kim, is producers dividing up their enterprise costs between fixed and variable. The variable costs are the most important in the short run because if you can't obtain a price objective that is at least covering your variable costs, then you probably shouldn't be producing that commodity.

Kim— That's a good point.

Selecting futures delivery month

Carl— The second consideration is selecting the best futures delivery month.

Kim— That's easier said than done. But for right now, the rule of thumb is to select the contract month that corresponds to your intended cash marketing decision. If you intend to sell feeder cattle in late August, you would most likely choose the September futures contract.

Carl— That brings up another important point. I strongly suggest to users of futures in our area of the country that they should not be trading in a contract in the last two or three weeks of that contract.

Kim— Oh, I agree.

Carl— The volume of persons trading these contracts normally decreases substantially during the last month that the contract can be traded.

Kim— A reduction in traders can make it difficult for producers who want to trade their futures contracts to do so.

PRICE OBJECTIVE

Break-even price

+

Fixed level of profit

BASIS
Cash price – Futures contract price <hr/> = Basis
For 600-700 lb. feeders
Okla. City cash price – CME Futures contract price <hr/> = Localized basis

Local expected hedge price

Carl— The last factor in considering to hedge or not is to estimate your local expected hedge price using the cash and the futures markets together. And now, Kim, we need to introduce a term that may not be familiar to our audience—*basis*.

Kim— Basis is defined as the cash price minus the futures price. For example, the basis for 600- to 700-pound March feeder cattle for Oklahoma City on a specific date in January is the Oklahoma City cash price for 600- to 700-pound feeder steers minus the Chicago Mercantile's March feeder cattle contract price on that same day.



Carl— Kim, let's jump ahead a little with an example of an actual hedge using the same three steps we've just discussed. Perhaps the example will show how we use this concept of basis and how it can help us to establish a local expected cash price.

Short hedging using hogs

Kim— Okay. Let's use a hog operation as our example. The first step is to establish a target, something to shoot at.

Carl— Let's use the producer's break-even price plus a reasonable return to management. His production and cost records show that this would be \$44.70 per hundredweight (cwt.).

Kim— It's March when this decision is being made. He places the hogs on feed and they'll be available for sale in late June. He can price these hogs anytime before they reach a sale weight of 210 to 240 pounds. The important thing is that he does not have to wait until they are ready for slaughter before he prices them.

Carl— Next is the selection of the proper futures contract that corresponds to this producer's expected marketing date. For a June sale of hogs, the appropriate contract is the Chicago Mercantile Exchange July live hog contract.

Kim— Once the producer selects the July contract month, he can use his local newspaper or his broker to establish the current price that the July contract is trading. Let's say he calls his local broker in March and finds out that July live hog contracts are selling for \$49.30/cwt. He now has two important pieces of information—his price objective and the July live hog futures price.

Estimating basis

Carl— The third piece of information he needs is an estimate of the basis—the relationship between the cash and the futures market in July. He will have to forecast this—it is not a given.

Let's say for this example that the producer forecasts the basis to be minus sixty cents ($-\$0.60$). That is, he thinks the cash market is going to be $\$0.60/\text{cwt.}$ less than the futures market next July.

Kim— The important point is that he does not know if prices are going to go up or down, and he doesn't care. He is counting on both the futures and the cash markets to move together and that the cash will be $\$0.60/\text{cwt.}$ less than the futures when he sells his hogs in July.

Carl— That's right. Now, the third and final step is for the producer to establish his expected hedge price and compare it to his price objective. By simply looking at the difference between the July contract price and the basis, his expected hedge price is going to be $\$48.70/\text{cwt.}$, or $\$49.30/\text{cwt.}$ adjusted for the $-\$0.60$ basis.

Kim— Remember, it's still March when he has collected all this information. He can then compare the $\$48.70/\text{cwt.}$, his expected hedge price, to his price objective of $\$44.70/\text{cwt.}$ If he hedges, he is expecting to get a price that is $\$4/\text{cwt.}$ above his objective.



Carl— That's correct, Kim. But before he sells that July live hog contract, he has to ask himself: "What am I afraid of?" He's afraid that the price is going to go down. If he can't accept any downward price risk and the odds of increasing prices are not high, then he's a candidate to consider hedging.

Kim— Indeed. And if a hedge is considered, then he needs to also ask himself, "Is this $\$4$ return over my objective adequate?"

Carl— If he feels there is downward price risk that he would like to pass on to someone else and if the $\$4/\text{cwt.}$ return is adequate, then he should call his broker and sell the July live hog contract.

Kim— I agree, and let's say that's exactly what he did.

Carl— Now assume he sold that contract for $\$49.30/\text{cwt.}$, as quoted. Time goes by and we've run around into July. During this period of time, both the cash and the futures prices go down.

Kim— This is exactly what he was worried about. Show us the final results.

STEPS IN HEDGING

1. Establish price objective $\$44.70$
2. Select contract month—July
contract price $\$49.30$
Basis $-\$0.60$
3. Estimated local hedge price $\$48.70$

Establishing a hedge

Carl— First, Kim, this producer would ask his hog buyer to make a bid or offer on the market hogs that would be good for 3 or 4 hours. This would give him time to also make an offsetting trade in the futures market. We want to stress here that he will deliver those hogs to the same place he has always been selling the hogs.

Kim— That's right. He's not going to change his cash operation simply because he is hedging. He continues to do his cash business with the same people he has done business with all along. The only new thing he will do is he must buy a July hog futures contract the same day the cash hogs are sold.

Carl— Let's say that he gets a bid of \$42.70/cwt. in the cash market. He calls up the commodity broker and asks, "What is the July live hog futures contract trading for right now?" The broker tells him that it is trading at \$43.30/cwt.

Forecasting basis accurately

Kim— The important point here is the basis. The basis—the difference between the cash and the futures—is $-\$0.60$, just exactly what he had forecast the basis to be last March.

Carl— Exactly, and let's look at the net result. He's going to get \$42.70/cwt. in cash for his hogs. He sold July live hog futures for \$49.30/cwt. He can buy back the contract for \$43.30/cwt. and make \$6/cwt. in the futures market. He takes that revenue and puts it together with the \$42.70/cwt. he receives from selling the hogs in the cash market. His net or realized price is, therefore, \$48.70/cwt.

Kim— Exactly what he had expected it to be last March when he did his initial plan.

Carl— And the reason he received exactly what he expected, is that the basis turned out to be exactly what he had forecast.

Kim— Now obviously, it doesn't always turn out this way. But your rate of success will always depend on how well you forecast basis. Basis is the key to effective hedging.

Fred— It seems pretty straightforward. But will it always work like this example?

Carl— The basic mechanics will always be the same. You will need to go through the same steps outlined; but, I admit this was a textbook example. The important point to

ESTABLISHED PRICE OBJECTIVE—\$44.70			
Mo.	Cash	Futures	Basis
M A R	Expected hedge price \$48.70	Sell July LH \$49.30	-0.60
J U L	Local cash price \$42.70	Buy July LH \$43.30	-0.60
			+\$6.00
	Cash	\$42.70	
	Futures	6.00	
	Realized price	\$48.70	

remember is that the actual basis will probably be different from your basis prediction.

Fred— I see. Isn't it true that the difference between your basis forecast and the actual basis when you sell the hogs will be the same as the difference between your expected hedge price and the actual net price that you realize?

Carl— That's absolutely true. In fact, that brings up an interesting point. If you can forecast the basis with more accuracy than you can predict the cash price, which is usually the case, then you should seriously consider hedging as a marketing tool as part of your marketing and business plan.

Fred— Please stop the tape now. Review some of the hedging concepts we have introduced. Practice using some example cases with the help of your facilitator. We'll be back in a few minutes.



(pause)

Examining basis risk

Fred— Welcome back. In the previous section you worked through the three basic steps in deciding to hedge or not to hedge. In addition, you examined the relationship between the cash market transaction and those in the futures market as well as the net result and the transfer of price risk for the hedger. Carl, are there some additional aspects of hedging we should be aware of?

Carl— There are more. One of the most important, and the one that Kim and I explore on this next section, is basis risk. You may recall that you must estimate your basis relative to the time that you plan to, in our example, sell your hogs. You are not always going to be able to forecast the basis perfectly. Let's return to the tape again and examine basis risk.

Carl— So much for the textbook example, Kim. Let's go through this example again and see how things can vary.

Kim— Okay.

Carl— Same start as before, Kim. Price objective of \$44.70, July live hogs trading for \$49.30/cwt., and the estimate of basis at -\$0.60.

Kim— Adjusting the futures price for the negative basis, our producer gets an expected hedge price of \$48.70/cwt. (\$49.30 adjusted for the negative \$0.60 basis). And, just as

ESTABLISHED PRICE OBJECTIVE—\$44.70

Mo.	Cash	Futures	Basis	
M A R	Expected hedge price \$48.70	Sell July LH \$49.30	-0.60	
	J U L	Local cash price \$44.00	Buy July LH \$44.30	-0.30
				+\$5.00
	Cash		\$44.00	
	Futures		5.00	
	Realized price		\$49.00	

before, comparing this expected hedge price to his price objective, he gets a \$4/cwt. return (\$48.70 minus the \$44.70 break even).

Carl— If that return is adequate and if he fears that prices may go down, he would sell the July live hog contract.

Coping with basis risk

Kim— Now this is exactly where he was in the first example we showed you.

Carl— Right. Now let's look at what happens in July this time. The local cash price has come down to \$44/cwt., just as he feared. And the July live hog futures contract is now \$44.30/cwt.

Kim— The difference is -\$0.30 (\$44 minus \$44.30).

Carl— And the net result is that he sells his hogs in the cash market for \$44/cwt. plus he gets \$5/cwt. profit in the futures market (\$49.30 minus \$44.30) for a net price of \$49/cwt. He had hoped for \$48.70/cwt., but he got a windfall gain of \$0.30.

Kim— Sure. The windfall gain came from the \$0.30 difference between the forecast \$0.60 basis and the actual \$0.30 basis.

Carl— At the risk of wearing out this example, I would like to go through it one more time.

Kim— I'm game.

ESTABLISHED PRICE OBJECTIVE—\$44.70			
Mo.	Cash	Futures	Basis
M A R	Expected hedge price \$48.70	Sell July LH \$49.30	-0.60
J U L	Local cash price \$52.70	Buy July LH \$53.30	-0.60
			(\$4.00)
	Cash	\$52.70	
	Futures	(4.00)	
	Realized price	\$48.70	

Impact of increasing cash prices

Carl— The price objective is \$44.70/cwt. July live hog futures are trading at \$49.30/cwt. The basis estimate is -\$0.60. Expected hedge price is \$48.70/cwt. The producer is still afraid the price is going to go down, and the \$4/cwt. return is adequate.

Kim— Everything is the same as before.

Carl— Right. Except this time, when July rolls around, the price goes up. The cash bid is up to \$52.70/cwt. When the producer calls the broker, he or she finds out that the July live hog contracts on the Chicago Mercantile Exchange are trading for \$53.30/cwt.

Kim— Notice that this time he sold the futures contract for \$49.30/cwt. He now has to buy it back for \$53.30/cwt. This time he loses \$4/cwt. in the futures market.

Carl— The basis turns out to be $-\$0.60$ (the $\$52.70$ cash price minus the $\$53.30$ futures price), just as he had predicted. And the net result is that he gets $\$52.70/\text{cwt.}$ in the cash market, he pays $\$4/\text{cwt.}$ into the futures market, and ends up with a realized net price of $\$48.70/\text{cwt.}$

Kim— Which is exactly what he had hoped to get when he made his hedging decision last March.

Carl— That's right. The hedge worked perfectly. The producer transferred his price risk to someone else. He transferred both the downward price risk *and* any upward price gains.

Kim— Your point is a good one. Not only did he transfer price risk, he also gave up any potential price gains.

Criticism of hedging

Kim— It is this last example that is raised as a concern by many producers I've worked with. They look at this example and conclude that hedging in the futures didn't really work. They don't like the idea that they've passed up the opportunity to take advantage of this price increase.

Carl— My experience has been just the same as Kim's in regard to producers concluding that hedging didn't work. But, as they say, "there is no free lunch." If you want price protection on the downside, you need to either use the futures markets and hedge or use the option markets where you pay a premium and purchase price insurance.

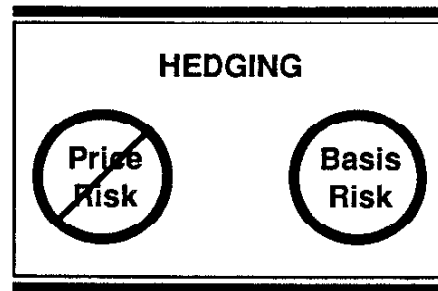
Fred— You mentioned options—will you get into them?

Carl— No. We have a separate videotape on options, but they are another price risk management tool you can use.

Fred— This is a good place to join your facilitator in exploring short hedging and basis in more detail with the use of some exercises. We'll be back in a little while.

(pause)

Fred— Welcome back. In the previous two sections of this videotape we have explored hedging from the sell (short) side of the market. We looked at a hog producer gaining price protection for the hogs he produced and sold. In this section, we want to turn the table and explore the use of futures markets to gain price protection on the buying side.



Carl— That's right, Fred. In this next section, Kim Anderson and I use the futures market to forward price corn into a hog operation. Let's turn to our tape and see how this can be done.

Long hedging using corn

Carl— Kim, let's switch gears here and look at a buy, or what is commonly referred to as a long hedge.

Kim— Okay.

Carl— Let's keep our same hog producer who had used the futures to price his hogs. This time, we're going to push him back in time so that we can explore how he might have priced the corn he needed for feed.

Kim— I like that idea.

Carl— He plans on buying the corn around the first of the year. Let's go back to the previous August.

Kim— So now it's August and he needs to decide whether or not to hedge his corn purchase. He will go through the same steps he went through in deciding whether to hedge his hogs.

He needs to first, establish a price objective, then select the proper futures delivery month in which to trade, and then establish a localized expected hedge price.

A complete hedge

Carl— Ideally, one price objective could be the price that he could afford to pay for the corn if he already had the hogs priced and he simply subtracts all his other costs.

Kim— That is what we call a complete hedge. You have the output priced and the input priced, and, if you've done it right, you've locked in a margin of profit for yourself.

Carl— Unfortunately, you can't always do this. The market may not be offering the right set of prices to allow you to complete all the legs of the transaction. But astute producers are constantly monitoring the markets looking for this opportunity.

Kim— So, when you can't make a complete hedge, you have to set a price that you think is reasonable. You do that now if you are not hedging. When you go to buy corn in the cash market, you have to decide whether or not it's too high.

<p>PRICE OBJECTIVE</p>

<p>Price of hogs minus all production costs except cost of corn</p>

<p>PRICE OBJECTIVE</p>

<p>Price for corn that you think is reasonable</p>
--

Carl— For our illustration, let's set our objective at \$2.95/bu. We want to buy corn at this price or lower. Second, you need to select the contract month in which to trade.

Kim— In this case, the producer plans on purchasing the corn around the first of the year. So he's going to pick the Chicago Board of Trade March corn futures contract.

Carl— To establish his expected hedge price, he needs to estimate the local basis for the time period that he anticipates buying the corn.

Kim— Let's say that historically the local March corn basis in January is -\$0.20, or the cash market is expected to be \$0.20/bu. under the futures price.

Carl— So, in August, when he is making this decision, the March corn contract is trading for \$3.10/bu. Since he thinks the basis will be \$0.20/bu. under, his expected hedge price for the corn is \$2.90/bu.

Hedge or not hedge?

Kim— Now, just as before, he asks himself two questions: "What is the relationship of the anticipated hedge price to my price objective?" and, "What am I afraid of?"

Carl— In comparing the expected hedge price of \$2.90/bu. with his price objective of \$2.95/bu., he sees it is below the price objective—which is to his advantage.

Kim— An increase in price would work against him.

Carl— Given these facts, he decides to hedge. To do that, he buys March corn futures at \$3.10/bu.

Kim— Let's see what happens when January arrives.

Carl— Just as he had feared, both the cash corn market and the Chicago Board of Trade March corn futures contracts have gone up. March corn futures have advanced and are now selling for \$3.20/bu. The local cash market is \$3/bu. delivered to the producer's bin.

Kim— Notice that the basis is \$0.20/bu. under—exactly what he had forecast.

Carl— And the actual net purchase price turns out to be the \$3/bu. cash price minus the gain of \$0.10/bu. in the futures market, or \$2.90/bu. The hedge worked just as it was supposed to.

Kim— It worked because the actual basis turned out to be exactly as the forecast. Basis works the same regardless of whether you're selling or buying commodities. And, again, the final outcome of a hedge comes down to how well you can estimate the basis.

ESTABLISHED PRICE OBJECTIVE—\$2.95			
Mo.	Cash	Futures	Basis
A U G	Expected hedge price	Buy Mar CBT corn	-0.20
	\$2.90	\$3.10	
J A N	Local cash price	Sell Mar CBT corn	-0.20
	\$3.00	\$3.20	
		+\$0.10	
	Cash		\$3.00
	Futures		- 0.10
	Realized price		\$2.90

Carl— This is a good place to break for a few minutes, Fred. Rather than continuing with this buy hedging example and illustrating the effects of basis variation, I'd like you to join your facilitator in some discussion and exercises pertaining to pricing inputs and basis variation. Please stop the tape now.



(pause)

Role of the speculator

Fred— Welcome back. If you are like me, you're probably feeling fairly comfortable now with the concept of hedging. I'm sure you still have some unanswered questions though. Dr. Anderson has joined me to help answer these questions. Welcome, Kim.

Kim— Thanks.

Carl— Kim, I haven't heard much about "speculators" that we read so much about in the papers and magazines. How do they fit into the picture? Secondly, we haven't looked at the costs of using this system. How much will it cost us to hedge?

Kim— Those are good questions. Let's look at your first question. Believe it or not, "speculator" is not a dirty word. Producers speculate all the time when they don't have hogs or crops forward priced.

Fred— I suppose that's true. But just who are these speculators?

Kim— Speculators are often individuals who neither own nor intend to own or grow a commodity. They may be doctors, lawyers, plumbers . . . people who use futures trading as part of their personal investment strategy.

Fred— So they really aren't like farmers.

Kim— As far as growing the product, they are different. But like farm producers, they trade in the futures market to make a profit. In that respect, there isn't much difference between speculators and agricultural producers.

Fred— I'm still not sure I understand.

Kim— Maybe it will help if I ask you a question. What's the one thing we know for certain about the price of an agricultural product next month?

Fred— It's going to change . . . be different from now.

Kim— Exactly, and we often don't even know if it's going to move up or down, do we?

Fred— Unfortunately, that's right.

Kim— People speculate in the futures by either buying or selling futures contracts, and anticipate that while they have these contracts in their hands the price change is going to go in their favor. Some of them will win, and some will lose.

Fred— Okay . . . I understand that, but this seems more like gambling than anything else. What good is it to agricultural producers?

Kim— Remember, agricultural producers are looking at hedging as a possible tool to manage price risk, right?

Fred— Right.

Speculators assume price risk

Kim— They do that by using forward cash contracts, don't they? The buyer of their forward cash contracts and their products is willing to take the price risk. The same is true in the futures market. The person on the opposite side of their trade is willing to take the price risk. As a producer, you don't know who that person is and you don't care. That person could be a person who slaughters hogs or it could be a speculator.

Fred— And since producers will continue to sell their hogs locally, they will be concerned only with buying back a futures contract for each one sold.

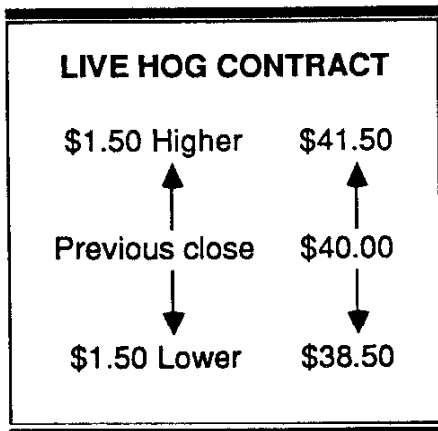
Kim— Correct. But that hits on the second important reason to have speculators in the market. Producers want to be able to get into and out of the market quickly and easily. They don't want to have to wait several days for their broker to find someone to take the opposite side of their contract.

Fred— Oh, I see. That's right. They want to be able to trade any day that the price meets their management objective.

Kim— So the speculator is a very important safety valve in this kind of a market. In fact, in the past, when a futures contract failed, it was often because the speculators weren't attracted to the market. Without the speculator, producers can't transfer price risk for their hogs or corn to someone else.

Fred— So they *do* have a reason for trading.

Kim— In exchange for taking the price risk, they hope to make a profit.



Fred— That sounds human enough. It certainly makes me feel better.

Kim— Now, your question about cost. If it's all right with you, I'd like to go back to our vidcotape. In this segment, Carl and I talk about the direct transaction costs and about some of the mechanics of the futures market.

Examining trading ranges

Kim— Let's examine some of the specific mechanics of the commodities markets by looking at some of the exchange rules.

One of the unique features of the exchanges is that there are daily trading ranges in which prices can fluctuate.

Carl— And there is good reason for that. The futures markets are open outcry auction markets. Now I don't know about you, Kim, but I'm certainly guilty of attending a few farm auctions where I came home the proud owner of something that I simply paid too much for.

Kim— No, that never happens down in Oklahoma.

Carl— I'll bet not.

Kim— We just don't tell anyone.

Carl— Since it seems to happen to most of us and since the commodity futures market is an auction, prices tend to fluctuate rapidly and there is the possibility of "auction fever" setting in on the floor. Therefore, to assure equitable and orderly trading, the exchanges have placed daily trading ranges on the various commodities.

Kim— An example is the live hog contract on the Chicago Mercantile Exchange. Trading can take place only in a range of \$1.50/cwt. above and \$1.50/cwt. below the previous trading day's settlement price.

Carl— That is, if yesterday's market price closed at \$40/cwt., trading can take place today between \$41.50/cwt. as a high and \$38.50/cwt. as a low.

Kim— This range is in place to keep the market from moving too drastically in any one day. It gives the market a little more time to adjust to new market information.

Problems of trading ranges

Carl— But Kim, this rule can also cause some problems. Let's say that there is news of a major decrease in the quantity of a product available in the marketplace. This

could signal both the cash and the futures market that prices should be higher.

Kim— That's right, and both of these markets may move higher. But the cash market doesn't have any cap on it, and the futures market does.

Carl— And that's the rub. Since the fundamental supply and demand situation is signaling for higher prices, everyone in the futures market wants to buy, but very few people want to sell. This is what is known as a "limit price move" in the futures.

Kim— Eventually the two markets will come back into equilibrium, but it could take a while, and it can be uncomfortable and discouraging to someone who wants out of the market but can't find anyone to take his trade.



Trading on the margin

Carl— Another significant feature of the commodity exchanges is the use of security deposits at the time the contract is made. These security deposits have to be made by both the buyer and the seller.

Kim— This deposit concept is called trading on the margin and allows traders to utilize the important economic concept of "leverage."

Carl— It is leverage that attracts speculators. With only 10% down, a 5% move in the price will yield a 50% return on your money.

Kim— That is the attractive part of leverage. But it is also a high-risk investment. If the market moves 5% against you, you will lose 50% of your money.

Carl— That's right, Kim. Now back to the concept of margin. The margin account insures the performance of the contracts.

Kim— Exchanges set minimum amounts of margins for each contract. In addition, brokerage firms may require a higher margin. Any amount over the minimum is negotiable between the producer and the broker.

Initial and maintenance margins

Carl— When two parties trade contracts, both the buyer and the seller are required to put up what we call an "initial margin," which is usually something between 5% and 10% of the contract's face value.

SECURITY DEPOSITS ALLOW:

- Trading on margin
- Use of leverage

MARGIN CALL		
Initial margin		\$1,200
Maint. margin		900
		<u>Account balance</u>
Wk 1 \$160 loss		\$1,040
Wk 2 \$100 loss		940
Wk 3 \$100 loss		<u>840</u>
Total \$360 loss		
Cust. margin call	\$ 360	

Kim— Once a contract is exchanged and the initial margin is established, three things can happen. The price can go up, it can go down, or it can stay the same.

Carl— If the price changes so that the change is in your favor—for example you sold a contract and the price went down—then additional margin money from the contract buyer will move into your account. The opposite happens if the price moves against you.

Kim— To be practical, this doesn't happen every time the price changes a penny. There is what is called "maintenance margins." A maintenance margin level is the minimum level your account can reach without adding funds.

Carl— Let's go through a quick example. Two different terms, now. The *initial margin* is, let's say \$1,200, and the *maintenance level* is set at \$900. On week one after your initial purchase if price moves against you such that you lose \$160, your account balance is \$1,200 minus \$160, or \$1,040.

Kim— The broker simply monitors that account; nothing happens because your account is still above the \$900 maintenance margin.

Carl— On week two, the market moves against you again such that a \$100 loss is incurred leaving an account balance of \$940.

Kim— Still no action is required.

Carl— On week three, there is another \$100 loss in your account, and your balance is now \$840.

Kim— You have now lost a total of \$360 and your account is below the \$900 maintenance margin. You are now required to add \$360 to your margin account with your brokerage firm to bring it back to the initial margin level.

Carl— It is common practice for a broker to ask the customer to maintain a reserve in his margin account to cushion against these unforeseen adverse price moves. Then the funds can be transferred with only a phone call. And for speculators, this is what is commonly done.

Financing a hedge

Kim— But for hedge accounts, it is highly recommended that a line of credit be established and money transferred directly between the lender and the commodity brokerage firm.

Carl— This requires a formal three-party agreement between the producer, lender and broker. We won't go through that in detail here, but it's important that this step not be overlooked. Many excellent hedging opportunities were either lost or cut short because of improper financing of the hedge.

Kim— Let's stop here for a minute. The futures market is a sophisticated and formalized market. It wasn't mentioned on the tape, but this market is constantly monitored by the exchange itself and by the Commodity Futures Trading Commission, a federal regulatory agency.

Fred— That's reassuring, Kim. The interest on the funds in our margin account is a cost, isn't it? Are there other costs as well?

Kim— Yes. You'll have a brokerage fee for each contract you trade. That is, for a single fee, say \$60, the broker will sell a hog contract and buy a hog contract for you. The brokerage fee is negotiable.

Fred— I see. This is a good spot to once again break and have you join your facilitator for a discussion of initial and maintenance margins. He will also provide some exercises and suggestions on keeping the necessary records to monitor a hedge account. Please stop the videotape now. We'll be back for a summary statement.

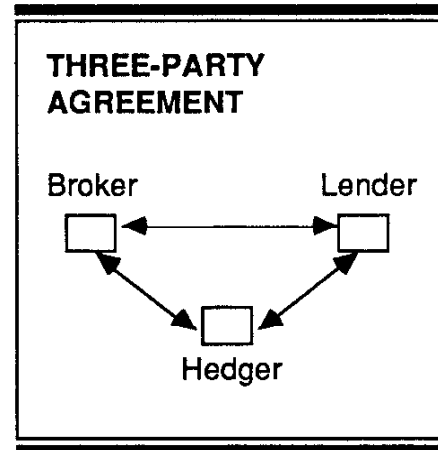


(pause)

Summary

Fred— In this module, we have explored the origin of commodity futures trading and how these markets have established themselves as an intricate part of agriculture. Hopefully, along the way we have dispelled some natural fears that commodity markets are "only for the big boys" and that more producers might legitimately consider them as a tool in managing their market and price risk. The secret, of course, is in understanding how those markets work.

In that vein, we have explored long and short hedging and the importance of basis as a foundation in that procedure. We have given you an opportunity to explore local basis data and make some forecasts which you know is the key to effective hedging. As Carl says, "If you can forecast the basis with more accuracy than you can predict the cash price, and most people can, then you should consider



hedging as a marketing tool." We have also given you other guidelines that will help you decide whether or not you should hedge.

We have discussed who speculators are, why they speculate, and the important role they play in the market. Hopefully, we have helped you appreciate their importance. Finally, we have discussed some of the trading procedures, rules and safeguards which now exist in the market today to protect you as a producer while insuring that the system works to the mutual benefit of all. We trust that we have been able to make you more confident in your hedging endeavors. Good luck.

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Each of the following organizations provide informational materials concerning futures, options, and related topics. For a brief description of these materials and an order form, write:

Chicago Board of Trade
Literature Services Department
LaSalle at Jackson
Chicago, IL 60604

National Futures Association
Public Affairs
P.O. Box 98383
Chicago, IL 60693

Chicago Mercantile Exchange
Office Services Department
30 S. Wacker Drive
Chicago, IL 60606

Commodity Futures Trading Commission
Office of Communication and Education Services
2033 K Street, N.W.
Washington, D.C. 20581

Appendix 1

Contract specifications

The following pages provide a list of futures (F) and options on futures (OF) contracts. Contract details are current, to the best of our knowledge, but any one of the areas listed is subject to change. The daily limit figure given is the normal limit that prices can move up or down from the previous day's close. A number of exchanges have variable limit policies, which can alter these limits in a volatile period. In addition, there are no limits on spot month contracts in many cases. For more information on limit changes, current minimum margin requirements or other contract details, you should check with your broker or the appropriate exchange. Adapted from: *Futures: The magazine of commodities & options, 1989 Reference Guide to Futures/Options Markets*. Volume 17, No. 13, pp. 112-120. Reprinted with permission.

Chicago Board of Trade (CBT)

141 W. Jackson Blvd., Chicago, IL 60604, (312) 435-3500

Sym.	Commodity	Trading hours (local time)	Delivery months	Contract size	Price quoted value	Min. price fluctuation	Max. daily limit
C	Corn (F, OF)	9:30-1:15	H,K,N,U,Z	5,000 bu.	¢/bu.	1/4¢/bu. = \$12.50	10¢/bu. = \$500
O	Oats (F)	9:30-1:15	H,K,N,U,Z	5,000 bu.	¢/bu.	1/4¢/bu. = \$12.50	6¢/bu. = \$300
S	Soybeans (F, OF)	9:30-1:15	F,H,K,N Q,U,X	5,000 bu.	¢/bu.	1/4¢/bu. = \$12.50	30¢/bu. = \$1,500
SM	Soybean meal (F, OF)	9:30-1:15	F,H,K,N Q,U,V,X	100 tons	\$/ton	10¢/ton = \$10	\$10/ton = \$1,000
SO	Soybean oil (F, OF)	9:30-1:15	F,H,K,N Q,U,V,X	60,000 lb.	¢/lb.	1/100¢/lb. = \$6	1¢/lb. = \$600
W	Wheat (F, OF) (Soft winter)	9:30-1:15	H,K,N,U,Z	5,000 bu.	¢/lb.	1/4¢/bu. = \$12.50	20¢/bu. = \$1,000

(F) = Futures contracts (OF) = Options on futures contracts. Months: F = January, G = February, H = March, J = April, K = May, M = June, N = July, Q = August U = September, V = October, X = November, Z = December

Chicago Mercantile Exchange (CME)

30 S. Wacker Dr., Chicago, IL 60606, (312) 930-1000

Sym.	Commodity	Trading hours (local time)	Delivery months	Contract size	Price quoted value	Min. price fluctuation	Max. daily limit
FC	Feeder cattle (F, OF)	9:05-1:00	F,H,J,K Q,U,V,X	44,000 lb.	\$/cwt.	2.5¢/cwt. = \$11	1.5¢/lb. = \$660
LC	Live cattle (F, OF)	9:05-1:00	G,J,M,Q,U,V,Z	40,000 lb.	\$/cwt.	2.5¢/cwt. = \$10	1.5¢/lb. = \$600
LH	Live hogs (F, OF)	9:10-1:00	G,J,M,N,Q,V,Z	30,000 lb.	\$/cwt.	2.5¢/cwt. = \$7.50	1.5¢/lb. = \$450
PB	Pork bellies (F, OF)	9:10-1:00	G,H,K,N,Q	40,000 lb.	\$/cwt.	2.5¢/cwt. = \$10	2¢/lb. = \$800
LB	Lumber (F, OF) (random-length)	9:00-1:05	F,H,K,N,U,X	150,000 bd. ft.	\$/1,000 bd. ft.	10¢/1,000 bd. ft. = \$15	\$5/1,000 bd. ft. = \$750

Chicago Rice and Cotton Exchange (CRCE)

141 W. Jackson Blvd., Chicago, IL 60604, (312) 341-3078

Sym.	Commodity	Trading hours (local time)	Delivery months	Contract size	Price quoted value	Min. price fluctuation	Max. daily limit
	Rough rice (F)	9:15-1:30	F,H,K,U,X	2,000 cwt. (200,000 lb.)	¢/cwt	0.5¢/cwt = \$10	30¢/cwt. = \$600

Coffee, Sugar & Cocoa Exchange Inc. (CSCE)

4 World Trade Center, New York, NY 10048, (212) 938-2800

Sym.	Commodity	Trading hours (local time)	Delivery months	Contract size	Price quoted value	Min. price fluctuation	Max. daily limit
	Cocoa (F, OF)	9:30-2:15	H,K,N,U,Z	10 metric tons	\$/ton	\$1/metric ton = \$10	\$88/metric ton = \$880
	Coffee "C" (F, OF)	9:45-2:28 (2:30 closing call)	H,K,N,U,Z	37,500 lb.	¢/lb.	1/100¢/lb. = \$3.75	None
	Sugar No. 11 (F, OF)	10:00-1:43 (1:45 closing call)	F,H,K,N,V	112,000 lb.	¢/lb.	1/100¢/lb. = \$11.20	1/2¢/lb. = \$560
	Sugar No. 14 (F)	9:40-1:43 (Closing call begins when white sugar's closing call is completed)	F,H,K,N,U,X	112,000 lb.	¢/lb.	1/100¢/lb. = \$11.20	1/2¢/lb. = \$560
	Sugar (F) (White)	9:45-1:43 (Closing call begins when Sugar No. 11's closing call is completed)	F,H,K,N,V	50 metric tons		20¢/metric ton = \$10	\$10/metric ton

(F) = Futures contracts (OF) = Options on futures contracts. Months: F = January, G = February, H = March, J = April, K = May, M = June, N = July, Q = August U = September, V = October, X = November, Z = December

Kansas City Board of Trade (KC)

4800 Main St., Suite 303, Kansas City, MO 64112, (816) 753-7500

Sym.	Commodity	Trading hours (local time)	Delivery months	Contract size	Price quoted value	Min. price fluctuation	Max. daily limit
W	Wheat (F, OF) (Hard red winter)	9:30-1:15	H,K,N,U,Z	5,000 bu.	¢/lb.	1/4¢/bu. = \$12.50	25¢/bu. = \$1250

MidAmerica Commodity Exchange (MCE)

141 W. Jackson Blvd., Chicago, IL 60604, (312) 341-3000

Sym.	Commodity	Trading hours (local time)	Delivery months	Contract size	Price quoted value	Min. price fluctuation	Max. daily limit
LC	Live cattle (F)	9:05-1:15	G,J,M,Q,U,V,Z	20,000 lb.	\$/cwt.	2.5/100¢/lb. = \$5	1.5¢/lb. = \$300
LH	Live hogs (F)	9:10-1:15	G,J,M,N Q,V,Z	15,000 lb.	\$/cwt.	2.5/100¢/lb. = \$3.75	1.5¢/lb. = \$225
C	Corn (F)	9:30-1:30	H,K,N,U,Z	1,000 bu.	¢/bu.	1/8¢/bu. = \$1.25	10¢/bu. = \$100
O	Oats (F)	9:30-1:30	H,K,N,U,Z	1,000 bu.	¢/bu.	1/8¢/bu. = \$1.25	10¢/bu. = \$100
S	Soybeans (F, OF)	9:30-1:30	F,H,K,N Q,U,X	1,000 bu.	¢/bu.	1/8¢/bu. = \$1.25	30¢/bu. = \$300
SM	Soybean meal (F)	9:30-1:30	F,H,K,N Q,U,V,Z	20 tons	\$/ton	10¢/ton = \$2	\$10/ton = \$200
W	Wheat (F, OF) (Soft winter)	9:30-1:30	H,K,N,U,Z	1,000 bu.	¢/bu.	1/8¢/bu. = \$1.25	20¢/bu. = \$200

Minneapolis Grain Exchange (MPLS)

400 S. Fourth St., Minneapolis, MN 55415, (612) 338-6212

Sym.	Commodity	Trading hours (local time)	Delivery months	Contract size	Price quoted value	Min. price fluctuation	Max. daily limit
W	Wheat (F, OF) (Hard red spring)	9:30-1:15	H,K,N,U,Z	5,000 bu.	¢/bu.	1/8¢/bu. = \$6.25	20¢/bu. = \$1,000
	High fructose corn syrup (F)	9:00-1:25	H,K,N,U,Z	37,000 lb. (dry)		2¢/cwt = \$7.40	\$1/cwt = \$370
O	Oats (F)	9:30-1:15	H,K,N,U,Z	5,000 bu.	¢/bu.	1/4¢/bu. = \$12.50	10¢/bu. = \$500

(F) = Futures contracts (OF) = Options on futures contracts. Months: F = January, G = February, H = March, J = April, K = May, M = June, N = July, Q = August U = September, V = October, X = November, Z = December

New York Cotton Exchange (CTN)

4 World Trade Center, New York, NY 10048, (212) 938-2650

Sym.	Commodity	Trading hours (local time)	Delivery months	Contract size	Price quoted value	Min. price fluctuation	Max. daily limit
	Cotton No. 2 (F, OF)	10:30-3:00	H,K,N,V,Z	50,000 lb. (approx. 100 bales)	¢/lb.	1/100¢/lb. = \$5	2¢/lb. = \$1,000

Citrus Associates of the New York Cotton Exchange Inc.

(See New York Cotton Exchange, CTN)

Sym.	Commodity	Trading hours (local time)	Delivery months	Contract size	Price quoted value	Min. price fluctuation	Max. daily limit
	Orange juice (F, OF)	10:15-2:45	F,H,K,N,U,X	15,000 lb.	¢/lb.	5/100¢/lb. = \$7.50	5¢/lb. = \$750

The Winnipeg Commodity Exchange (WPG)

500 Commodity Exchange Tower, 360 Main St., Winnipeg, Manitoba Canada R3C 3Z4, (204) 949-0495

Sym.	Commodity	Trading hours (local time)	Delivery months	Contract size	Price quoted value	Min. price fluctuation	Max. daily limit
	Domestic feed barley (F)	9:30-1:15	H,K,N,V,X,Z	100 metric tons	Can.\$/ton	10¢/ton = \$10	\$5/ton = \$500
	Alberta domestic feed barley (F)	9:30-1:15	G,J,M,U,X	20 metric tons	Can.\$/ton	10¢/ton = \$2	\$5/ton = \$100
	Flaxseed (F)	9:30-1:15	H,K,N,V,Z	100 metric tons	Can.\$/ton	10¢/ton = \$10	\$10/ton = \$1,000
	Domestic feed oats (F)	9:30-1:15	H,K,N,V,X,Z	100 metric tons	Can.\$/ton	10¢/ton = \$10	\$5/ton = \$500
	Canola/ rapeseed (F)	9:30-1:15	F,H,M,U,X	100 metric tons	Can.\$/ton	10¢/ton = \$10	\$10/ton = \$1,000
	Rye (F)	9:30-1:15	H,K,N,V,Z	100 metric tons	Can.\$/ton	10¢/ton = \$10	\$5/ton = \$500
	Domestic feed wheat (F)	9:30-1:15	H,K,N,V,X,Z	100 metric tons	Can.\$/ton	10¢/ton = \$10	\$5/ton = \$500

(F) = Futures contracts (OF) = Options on futures contracts. Months: F = January, G = February, H = March, J = April, K = May, M = June, N = July, Q = August, U = September, V = October, X = November, Z = December

Appendix 2

Glossary

Actuals: The physical commodities.

Arbitrage: Simultaneous purchase and sale of securities, cash commodities, or futures at different prices to profit from a price discrepancy. Arbitrage generally involves no net investment by the arbitrageur, and once positions are established, the return is riskless and certain. Includes some aspects of hedging. (See Spread.)

Asked: The price at which sellers will trade. This is usually accompanied by a bid, the price which buyers are willing to pay. The bid price is often a better indication of the true market level.

At the market: An order to buy or sell at the best price obtainable when the order reaches the trading pit.

Average down: To increase the size of a market position as it accumulates losses. The hope is to recover all losses if the price trend should reverse.

Backwardation: Market situation in which futures prices are progressively lower in the distant delivery months.

Basis: The difference between a cash price at a specific location and the price of a particular futures contract.

Basis contract: An agreement between a buyer and a seller that sets the basis for a commodity. Sometime after the contract is entered, the seller chooses to price the basis sale. At that time, the seller will receive the futures price minus the previously agreed upon basis.

Basis risk: The risk associated with unexpected changes in the basis between the time a hedge is placed and when it is lifted.

Bear (or bearish): One who believes or the belief that prices are too high and will decline. News is considered bearish if it is expected to depress prices.

Bear market: A downtrending market.

Bid: An offer to purchase a commodity at a specified price.

Board order: A standing order to execute a transaction at a specified price or one more favorable to the customer. (See also, Market if touched order.)

Break: A sharp price movement. A market may "break upward" or "break downward," although the term is reserved by some for price declines.

Break-even point: The future price (or prices) at which a particular strategy neither makes nor loses money. A "dynamic" break-even point is one that changes as time passes.

Broker: One who executes the buy and sell orders for customers.

Brokerage firm: An exchange member that buys and sells futures contracts, or options, for customers for a fee.

Bucket: Illegal practice of accepting customer orders to buy or sell without executing such orders on an exchange.

Bulge: A large price rise.

Bull (or bullish): One who believes or the belief that prices are too low and will head higher. News is considered bullish if it influences prices to strengthen.

Bull market: An uptrending market.

Bull move: The term used by some chartists to indicate where daily highs, lows, and closes are higher than previous indications.

Buy hedge: Also known as "long" hedge. Refers to the purchase of a futures contract to protect against the possible future cost increase of commodities. (See Hedging.)

Buy in: (See Cover.)

Buy in close: An order to buy within the closing price range at the end of a day's trading session.

Buy on opening: An order to buy within the opening price range at the beginning of a day's trading session.

Call point: The price at which the margin account reaches its maintenance level and the customer is asked to put up more money.

C.A.F. (C&F): Cost and Freight, usually a port of exit. A trade term to describe provisions of a cash grain purchase or sale which includes the purchase price and freight charges in the quoted price.

Car: A loose quantity term sometimes used to describe a contract, e.g., "a car of bellies." Derived from fact that quantities of the product specified in a contract used to correspond closely to the capacity of a railroad car. Same as "lot."

Carry: The amount the market will pay (return) from one trading or spot month to the next for future delivery of grain.

Carrying charges: The cost of storing the cash commodity. These charges include the physical storage costs, insurance costs, and an opportunity cost for the interest lost on the money tied up in the commodity.

Carryover: The leftover supply or surplus of a commodity from a previous marketing season.

Cash commodity: The actual physical product as distinguished from a futures contract.

Cash forward contract: A forward contract other than a futures contract or option.

Cash market: (1) A market where physical commodities are bought and sold. (2) An organized, self-regulated cash market section of a commodity exchange. (3) A decentralized market in which buyers and sellers compete, possibly with the aid of an association.

CBOT: The Chicago Board of Trade. (Also CBT.)

Certificate of deposit: A short-term obligation of a bank with a fixed maturity, generally less than 270 days.

C.I.F.: Cost, Insurance, and Freight. A trade term to describe a cash purchase or sale when these costs have been included in the quoted price.

CFTC: The Commodity Futures Trading Commission. The independent federal agency created by Congress to regulate commodity futures trading. The CFTC Act of 1974 became effective April 21, 1975. Previously, futures trading had been regulated by the Commodity Exchange Authority of the USDA.

Charting: Using graphs and charts to analyze past price behavior with the hope of forecasting future price movements. An essential part of technical analysis.

Clearinghouse: A separate agency that settles transactions made on the exchange trading floor. A clearinghouse reconciles differences and exchanges payments. Another key function of the clearinghouse is to guarantee financial integrity of all positions traded.

CLO: Abbr. An order to be executed at the closing of the market.

Closing price: Also known as range. The price or range during the period designated by an exchange as the official close.

Closing transaction: A trade that offsets an investor's position. Closing buy transactions reduce short positions, and closing sell transactions offset long positions.

CME: The Chicago Mercantile Exchange.

Commission: The fee charged by a broker for services such as buying or selling commodities or options for a customer.

Commission house: Same as brokerage firm.

Commitment: A trader is said to have a commitment when he assumes the obligation to accept or make delivery on a futures contract. (See Open interest.)

Commodity exchange: An organization operating under a set of bylaws aimed at promoting trade in one or more commodities by providing services and rules for the conduct of trade.

Confirmation: A document sent by the clearing commission firm to its client when a futures transaction is conducted — either purchase or sale. Generally shows the date of the trade, delivery month, price and quantity.

Contract: A term of reference describing a unit of trading for a commodity future. Also actual bilateral agreement between the buyer and seller of a futures transaction as defined by an exchange.

Corner: (1) To corner is to secure such relative control of a commodity or security that its price can be manipulated. (2) In the extreme situation, obtaining contracts requiring the delivery of commodities or securities exceeding the existing quantity of such commodities or securities.

Cost of delivery basis: The costs—transportation, yardage, inspection fees—of delivering commodities that fulfill the contract specifications of a futures contract to an approved delivery point.

Cover: The cancellation of a short or sold position on the futures market by purchasing an equal quantity of the same future. (See Evening up liquidation.)

Credit: Money received in an account. A credit transaction is one in which the net sale proceeds are larger than the net buy proceeds (costs), thereby bringing money into the account.

Crop year: The period beginning about harvest and extending 12 months. The beginning date of which varies by grain and is established by U.S.D.A. for purposes of keeping records of production, deposition and stocks.

Cwt: Abbr. One hundred pounds.

CXL: Abbr. Cancel. Used to cancel a previous, unexecuted order.

Day orders: An order to buy or sell at a specific price that expires at the end of a specific day's trading. Most orders are considered day orders unless designated as open orders of good-till-cancelled orders.

Day trader: Someone who initiates and offsets a position in a futures contract during the course of a single trading session.

Debit: An expense, or money paid out from an account. A debit transaction is one in which the net cost is greater than the net sale proceeds.

Deferred futures: The futures, to those currently traded, that expire during the most distant months. (See Nearbys.)

Deferred or delayed pricing: A method of selling cash grain in which the title of the grain passes from seller to buyer upon delivery. Price is determined at a later time. This arrangement may include a service charge.

Deliverable stocks: Commodities located in exchange-approved storage certified for delivery on futures contracts.

Delivery month: The calendar month in which a futures contract matures and contract settlement is required.

Delivery notice: Notice given by a member of a clearinghouse of his intent to deliver or a request for a commodity under terms of a contract.

Delivery points: Those points designated by futures exchanges at which commodities may be delivered to satisfy a futures contract.

Differentials: Premiums or discounts from the standing delivery grade or points specified by the exchange.

Dual trading: Allowing floor brokers to execute trades for customers as well as their own accounts.

EOS: Abbr. Enter Open Stop. Used to place a stop order.

Evening up: Basically the same as Cover.

Ex-pit transactions: Trades made outside the trading pit. There are two types: (1) A transfer of a customer's account between brokerage firms. (2) The transfer of cash commodities for a futures contract at a price agreed on by buyer and seller. Commercial traders sometimes use this technique to avoid basis risk when they close out a hedge position.

Fill: To execute an order.

First notice day: The first day transfer notices for delivery in a specific delivery month can be issued.

Floor broker: One who executes orders in the trading pit of an exchange.

Floor trader: A member who may trade only for his own account or for an account controlled by him, or a member who has such a trade made for him. Also referred to as a "local."

Forward contract: An agreement between seller and buyer whereby the seller agrees to deliver a specific quantity and quality of commodity to the buyer at a specific time and location. When the seller delivers, he will receive a previously agreed upon price.

Forward selling: Forward contracting in which the price is fixed at the time the contract is entered.

Free on board (F.O.B.): Commodities delivered free of transportation charges.

Free supply: The physical supply of a commodity in market channels as opposed to stocks held in government warehouses and not available for commercial sale.

Fundamentals: Those factors which affect the price of a commodity such as supply and demand, weather, political actions, etc.

Futures contract: A transferable, legally binding agreement to make or take delivery of a standardized amount of a commodity or standardized minimum quality grades during a specific month under terms and conditions established by the federally designated contract market on which trading is conducted.

Futures contract month: Any month futures contracts for a commodity are traded.

Futures price: The price of a particular futures contract determined by open competition between buyers and sellers on the trading floor of the exchange.

Good till cancelled (GTC): An order to buy or sell at a predetermined price until the order is fulfilled or cancelled.

Hedging: 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; a purchase or sale of futures as a temporary substitute for a cash transaction that will occur later.

Initial margin: See Margin.

Inverse: Describes a market where the nearby trading month contracts are worth more than those in later months.

Inverted market: A market in which the cash market price is greater than the futures market price. The basis is negative.

KCBT: Kansas City Board of Trade.

Last trading day: The day trading stops for a particular trading month. Contracts that have not been settled before the end of that day's trading must be fulfilled by delivery of the actual product.

Late tape: A lag in the reporting of futures market prices due to unusually heavy trading.

Leg: (1) A sizable price movement which is relatively uninterrupted by any corrections or reversals. (2) A risk-oriented method of establishing a two-sided position. Rather

than entering into a simultaneous transaction to establish the position (a spread, for example), the trader first executes one side of the position, hoping to execute the other side at a later time and a better price. The risk materializes from the fact that a better price may never be available and a worse price must eventually be accepted.

- Leverage:** (1) The ability to control a large amount of money with a small amount of funds. (2) In investments, the attainment of greater percentage profit and risk potential. A call holder has leverage with respect to a futures holder—the former can have greater percentage profits and losses than the latter for the same movements in the underlying future.
- Life of contract:** The entire time a contract is available for trade.
- Limit (up or down):** The maximum price advance or decline from the previous day's settlement price permitted in one trading session by the rules of the exchange.
- Limit order:** A customer's order to buy or sell with limits on time, price, or both.
- Liquidation:** A transaction made to reduce or close out a long or short position. (See Cover and Evening up.)
- Liquid market:** A market of sufficient volume where one can buy or sell contracts at little or no price concession.
- Local:** Person who trades strictly for his or her own account.
- Long:** Refers to buying an open futures contract or to a trader whose futures market position shows more purchases than sales.
- Long the basis:** Refers to the position taken when a buyer owns the actual commodities and sells a contract for an equal amount on the futures market. When producers sell futures to forward price, they are long the basis.
- Maintenance margin:** The amount of margin of equity that must be on deposit at all time. When a customer's equity falls below main-

tenance level, a broker issues a margin call for an amount that will bring the equity back to the initial margin level.

- Margin:** The amount deposited by buyers and sellers of futures, to insure performance on contract commitments; serves as a performance bond rather than a downpayment. Initial margin is the amount required when a futures position is opened.
- Margin call:** A request to deposit either the original margin at the time of the transaction or to restore the guarantee to a required minimum level.
- Market-if-touched:** An order that specifies a price that when touched becomes a market order.
- Market order:** An order to immediately buy and sell at the best available price.
- Market risk:** The possibility of price decline for the owner of a commodity and the possibility of price increase for a person who is required to purchase the commodity.
- Mark-to-market:** A daily cash flow system of calculating the gain or loss in each contract position resulting from changes in the contract price at the end of each trading day and adjusting the customer account accordingly.
- 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.
- Metric ton:** Measure of weight equalling 2,205 lbs. The same as 36.7 bushels of wheat or 39.9 bushels of corn.
- MGE:** Minneapolis Grain Exchange. (Also MPLS.)
- Nearbys:** The nearest active trading month of a futures market.
- Net position:** The difference between the open contracts long and the open contracts short held in any one commodity.

Nominal price: Also known as nominal quotation. The futures price quotation for a period when no actual trading took place.

Notice day: Any day on which notices of intent to deliver on futures contracts may be issued.

Offer: Indicates willingness to sell at a given price. Opposite of bid.

Offset: The liquidation of a long or short futures (or option) position by an equal and opposite futures (or option) transaction.

Open interest: A number indicating the size of the market by counting open contracts. Each open contract has a seller and a buyer, but to figure open interest, only one side of the contract is considered. Therefore, this refers to the total number of unliquidated purchases or sales or the total number of open contracts.

Open order: An order good till cancelled or filled.

Open position: Ownership of a fixed-price forward contract, especially a futures contract.

Opening: An order executed during the first few minutes of the trading day.

Opening price: Official price at beginning of a trading day. Also known as range.

Opening transaction: A purchase or sale which establishes a new position.

Out of position: Unable to make or take delivery in satisfaction of futures contracts; or location of cash commodity is at a nondeliverable point.

Overbought: Describes a market situation in which prices are believed to have increased too high in relation to the actual conditions of supply and demand.

Oversold: Describes a market situation in which prices are believed to have declined too far in relation to the actual conditions of supply and demand.

Overvalued: Describes a future trading at a higher price than it logically should. It is normally associated with the results of option price predictions by mathematical models. If

an option is trading in the market for a higher price than the market indicates, the option is said to be overvalued.

Paper profit: The profit which might have been realized if the contracts had been offset as of a stated date.

Par: The stated contract price as reported by the relevant commodity exchange. Various discounts and premiums may be applied to the Par price as stated in the relevant futures contract.

Pit: An octagonal platform on the trading floor of an exchange where traders and brokers buy and sell futures contracts.

Point: The price unit in which futures prices are expressed.

Position: Describes the commitment of a buyer or seller.

Position limit: The maximum number of speculative futures contracts one can hold open under the rules of the CFTC or the exchange on which the contract is traded.

Position trader: Someone who initiates a position and maintains it over an extended period of time—days, weeks, or months. The position trader is not as concerned with minute-to-minute or even hour-to-hour price changes as with the broad market trend.

Premium: (1) The amount a given futures contract sells over another futures contract. (2) The additional payment an exchange allows for delivery of higher-than-required quality of a commodity against a futures contract. (3) The price an option buyer pays to an option seller for the right to buy or sell a futures contract at a specific price during the life of the option.

Price limit: The maximum price change of a futures contract permitted during one trading session.

Price limit move: See Limit.

Purchase and sell statement: Statement sent by brokerage firm to a customer when his futures position has been closed out. It shows the types and quantities of commodities traded,

the purchase and sell prices, and the net futures profit or loss. Frequently referred to as the "P and S."

- Pyramiding:** Using profits from previously established positions as margin to increase the amount to the position.
- Quasi-arbitrage:** Preferential purchase or sale of one of two equivalent securities, generally futures versus the cash equivalent. Involves an investment by the quasi-arbitrageur; the return on the quasi-arbitrage is higher than the risk-adjusted rate of return by the amount of mispricing on the futures.
- Quotations:** The prices of futures, options, or cash contracts for any given commodity or time. Usually displayed in daily newspapers, on TVs, or on computer screens.
- Rally:** An upward movement of prices following a decline; opposite of a Reaction.
- Range:** The difference between the highest and lowest prices recorded during a trading session, week, month, life of contract, or any given period.
- Ratio strategy:** A strategy in which one has an unequal number of longs and shorts. Normally, it implies a preponderance of short options over either long options or long futures.
- Reaction:** A decline in prices following an advance; opposite of a Rally.
- Realized price:** The futures market price at which you hedged your commodity adjusted by the actual basis when you lifted the hedge.
- Recovery:** An upward correction of price following a downward trend.
- Registered commodity representative (RCR):** A person registered with an exchange and the Commodity Futures Trading Commission to trade commodities for customers.
- Regular:** Satisfying all requirements established by a commodity exchange to actually make or take delivery in satisfaction of futures contracts.
- Reporting level:** The number of futures con-

tracts, as determined by the CFTC, above which one must report daily to the exchange and the CFTC with regard to the size of one's position by commodity, by delivery month, and by purpose of trading.

- Resistance:** A price zone above the current price level which has proven difficult for the market to penetrate. (See Support.)
- Retender:** The right of holders of futures contracts who have been tendered a delivery notice through the clearinghouse to offer the notice for sale on the open market, liquidating their obligation to take delivery under the contract.
- Retracement:** A reversal of price direction for part of the distance of the original move.
- Ring:** See Pit.
- Risk:** The possibility of adverse outcomes associated with an action or business decision.
- Roll hedge:** Hedging a long-term asset or liability position with a series of individual maturity futures contracts. When one futures matures, the hedge is rolled over into the next delivery month.
- Rollover:** The replacement of one futures market position with another in the same commodity but in a different delivery month.
- Round trip:** A futures contract purchase followed by an offsetting sale before delivery or a sale followed by an offsetting purchase.
- Round turn:** Same-day execution of separate orders for purchase and sales transaction that offset each other. There is usually a smaller commission charge for offsetting buy and sell orders executed on the same day.
- Scalper:** Someone who trades a large number of contracts with minimum price fluctuations, perhaps one or two ticks. A position opened one minute can be closed moments later.
- Sell hedge:** Also known as a "short" hedge. Refers to the sale of a futures contract to protect against the possible decline in the price of a commodity. (See Hedging.)

Settlement price: The mid-point of the closing price range.

Short: Selling an open futures contract, or a trader whose net market position shows more open sales than open purchases.

Short the basis: Refers to a position in which a person sells a cash commodity and buys futures. This locks in the basis. This person retains ownership through buying futures in hopes of sharing in rising prices.

Sliding stop: A stop order which is moved up or down with the market until it is executed.

Speculator: One who attempts to anticipate price changes and, through market activities, makes profits; he is not using the futures market in connection with the production, processing, marketing or handling of a product.

Spot month of contract: At any time in the year, the next futures trading month for a particular commodity. For example, in June the spot month for corn would be July.

Spot price: The price at which the spot or cash commodity is selling. In grain trading, this is called the cash price.

Spread or straddle: In general, the purchase of one futures delivery month against the sale of another futures delivery month of the same commodity. The purchase of one delivery month of one commodity against the sale of the same delivery month of a different commodity; or the purchase of one commodity in one market against the sale of that commodity in a different market. The purpose of a spread transaction is to take advantage of distortions in normal price relationships. There are several different types.

Spreader: One who is concerned with the shifting relationships between different delivery months for the same contract or between different commodities over time.

Squeeze: Situation in which those short cannot repurchase their contracts except at a price substantially higher than the value of related contracts in the market.

Stack hedge: An alternative to the strip hedge in which the hedger buys or sells a strip of futures with proportionately more nearby contracts than deferred.

Stop loss order: An order to buy or sell that becomes a market order only when the market reaches the level mentioned in the order. Its purpose is to limit losses.

Strip hedge: A position using several sequential maturity futures to hedge an interest rate asset or liability maturing at the last contract's delivery.

Strip of futures: The purchase or sale of futures with successive maturities.

Support: A price zone below the current price level which has proven difficult for the market to penetrate. (See Resistance.)

Take futures: The action of buying futures to price a cash grain basis sale.

Technical analysis: The study of charts and, more specifically, price movement to forecast commodity prices.

Technician: A trader who relies on price movement patterns to decide whether to buy or sell. He generally disregards supply and demand conditions.

Tenders: Notices that announce intentions of tendering or delivering actual commodities in fulfillment of futures contracts.

Texas hedge: An existing cash commodity inventory "offset" by the purchase of futures contracts. This is, in reality, speculation since a true offset would be accomplished through the sale of futures contracts.

Thin market: A low volume market in which a large trade unduly affects the market price.

Three-way agreements: A contract signed by the hedger, broker, and lender. The agreement states that any decision to lift or place a hedge must be made jointly by all three parties.

Tick: See Point.

Trading limit: (1) The maximum price movement permitted in one trading session. (2) The maximum futures market position anyone is legally permitted to own or control.

Trend: The general direction, either up or down, of prices.

USDA: Abbr. United States Department of Agriculture.

Visible supply: The physical volume of a commodity in storage at major terminal markets.

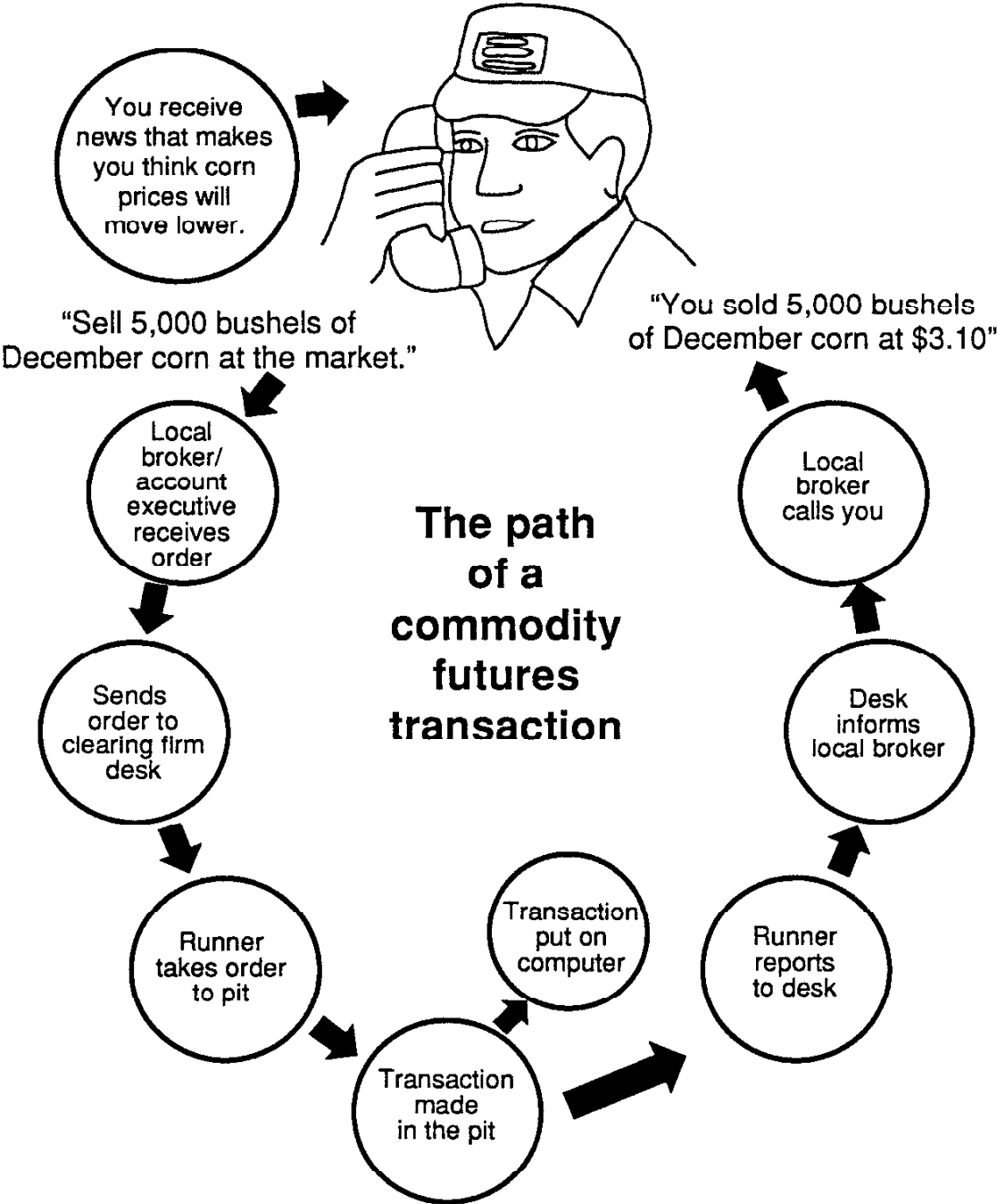
Volatility: A measure of the amount by which an underlying future is expected to fluctuate in a given period of time.

Volume of trading (or sale): A total of futures transactions made in one trading session. A transaction is a purchase and matching sale.

Warehouse: See Brokerage firm.

Warehouse receipt: A document proving possession by a licensed warehouse of the commodity. To be tenderable of future contracts, they must cover commodities recognized for delivery purposes by the exchange on which futures contracts are traded.

Appendix 3



Exercise 1

Video questions

Indicate whether each of the following statements is true (T) or false (F).

- T F 1. Forward contracts are the only price risk management tool available to agricultural producers.
- T F 2. The primary contract specifications for a commodity, such as product description, quantity, grade, delivery points and delivery date, are exactly the same for a forward contract and a futures market contract.
- T F 3. In hedging, you must first buy a futures contract so that you have one to sell later.
- T F 4. The first three steps in deciding to hedge are: (1) establish a price objective, (2) select the appropriate futures contract month, and (3) estimate your local hedge price.
- T F 5. "Basis" is the difference between the cash price (at any given time and place) and a particular futures contract price.
- T F 6. If today, July live hogs are trading for \$49.30/cwt. and the basis is estimated to be $-0.60/\text{cwt.}$, the expected hedge price is \$48.70/cwt.
- T F 7. If you can estimate the basis with more accuracy than you can forecast future cash prices, then you are a strong candidate for using hedging in your marketing strategy.
- T F 8. Most long hedges involve a complete hedge, where both the output and major inputs are priced using the futures market.
- T F 9. If you have estimated an expected hedge price that meets your price objective, you should always hedge.
- T F 10. Futures markets could work more effectively for hedging if there were no speculators.
- T F 11. "Margin" is simply another term for the commission charge in trading futures.

Exercise 2a

Short hedge: hog example

Part 1

Assumptions

- A hog producer is producing 261 head of slaughter hogs estimated to weigh 230 lbs. on April 1.
- The current date is November 1.
- Variable costs of production are \$41/cwt.
- The producer's profit objective is \$10/cwt.
- The April 1 basis is expected to be \$2/cwt. under the CME April hog futures contract.
- The CME April hog contract (30,000 lbs.) is currently trading at \$52/cwt.

Determine

1. Which contract could the producer use to establish a hedge?
2. How many contracts would the producer need to hedge all of the anticipated output?
3. Describe the position to be taken in the futures market to establish a hedge.
4. Calculate the producer's price objective. (Assume this is calculated considering the variable costs [VC] plus the profit objective.)
5. Calculate the expected hedge price.

Exercise 2a: Short hedge—hog example

Part 2

Assumption

- For the following calculations, assume that the hedge was established on November 1 and the hogs are being sold on April 1.

Determine

1. If the hogs are sold in the local cash market for \$46/cwt. and the CME April hog futures contract is trading for \$48/cwt.:
 - a. What is the actual basis?
 - b. What actions does the producer take in the cash and futures markets?
 - c. What is the net price received?

2. If the hogs are sold in the local cash market for \$54/cwt. and the CME April hog futures contract is trading for \$56/cwt.:
 - a. What is the actual basis?
 - b. What is the net price received?

Exercise 2b

Short hedge: corn example

Part 1

Assumptions

- A corn producer expects to produce 10,000 bu. of corn for October delivery.
- The current date is July 1.
- Variable costs of production are \$2.10/bu.
- The producer's profit objective is \$0.30/bu.
- An October 1 basis is expected to be \$0.30/bu. under the CBT December corn futures contract.
- The CBT December corn contract (5,000 bu.) is currently trading at \$2.60/bu.

Determine

1. Which contract could the producer use to establish a hedge?
2. How many contracts would the producer need to hedge all of the anticipated output?
3. Describe the position to be taken in the futures market to establish a hedge.
4. Calculate the producer's price objective. (Assume this is calculated considering the variable costs [VC] plus the profit objective.)
5. Calculate the expected hedge price.

Exercise 2b: Short hedge—corn example

Part 2

Assumption

- For the following calculations, assume that the hedge was established on July 1 and the corn is being sold on October 1.

Determine

1. If the corn is sold in the local cash market for \$2.10/bu. and the CBT December corn futures contract is trading for \$2.40/bu.:
 - a. What is the actual basis?

 - b. What actions does the producer take in the cash and futures markets?

 - c. What is the net price received?

2. If the corn is sold in the local cash market for \$2.50/bu. and the CBT December corn futures contract is trading for \$2.80/bu.:
 - a. What is the actual basis?

 - b. What is the net price received?

Exercise 2c

Short hedge: cotton example

Part 1

Assumptions

- A cotton producer expects to produce 100,000 lbs. of cotton for November delivery.
- The current date is July 1.
- Variable costs of production are \$0.40/lb.
- The producer's profit objective is \$0.10/lb.
- The expected November 15 basis is \$0.04/lb. under the CTN December cotton futures contract.
- The CTN December cotton contract (50,000 lbs.) is currently trading at \$0.64/lb.

Determine

1. Which contract could the producer use to establish a hedge?
2. How many contracts would the producer need to hedge all of the anticipated output?
3. Describe the position to be taken in the futures market to establish a hedge.
4. Calculate the producer's price objective. (Assume this is calculated considering the variable costs [VC] plus the profit objective.)
5. Calculate the expected hedge price.

Exercise 2d

Short hedge: feeder cattle example

Part 1

Assumptions

- A cattleman is expecting to market 130 steers weighing 675 lbs. for April 1 delivery.
- The current date is November 15.
- Variable costs of production are \$52/cwt.
- The producer's profit objective is \$10/cwt.
- The April 1 basis is expected to be \$1/cwt. over the CME April feeder cattle futures contract.
- The CME April feeder cattle contract (44,000 lbs.) is currently trading at \$64/cwt.

Determine

1. Which contract could the producer use to establish a hedge?
2. How many contracts would the producer need to hedge all of the anticipated output?
3. Describe the position to be taken in the futures market to establish a hedge.
4. Calculate the producer's price objective. (Assume this is calculated considering the variable costs [VC] plus the profit objective.)
5. Calculate the expected hedge price.

Exercise 2d: Short hedge—feeder cattle example

Part 2

Assumption

- For the following calculations, assume that the hedge was established on November 15 and the feeder steers are being sold on April 1.

Determine

1. If the feeder steers are sold in the local cash market for \$61/cwt. and the CME April feeder cattle futures contract is trading for \$60/cwt.:
 - a. What is the actual basis?
 - b. What actions does the producer take in the cash and futures markets?
 - c. What is the net price received?
2. If the steers are sold in the local cash market for \$70/cwt. and the CME April feeder cattle futures contract is trading for \$69/cwt.:
 - a. What is the actual basis?
 - b. What is the net price received?

Exercise 2e

Short hedge: soybean example

Part 1

Assumptions

- A soybean producer expects to produce 15,000 bu. of soybeans for November delivery.
- The current date is July 1.
- Variable costs of production are \$4.80/bu.
- The producer's profit objective is \$0.30/bu.
- The November 1 basis is expected to be \$0.30/bu. under the CBT November soybean futures contract.
- The CBT November soybean contract (5,000 bu.) is currently trading at \$6/bu.

Determine

1. Which contract could the producer use to establish a hedge?
2. How many contracts would the producer need to hedge all of the anticipated output?
3. Describe the position to be taken in the futures market to establish a hedge.
4. Calculate the producer's price objective. (Assume this is calculated considering the variable costs [VC] plus the profit objective.)
5. Calculate the expected hedge price.

Exercise 2f

Short hedge: live cattle example

Part 1

Assumptions

- A cattleman is expecting to market 110 slaughter steers estimated to weigh 1,100 lbs. on September 15.
- The current date is April 15.
- Variable costs of production are \$53/cwt.
- The producer's profit objective is \$5/cwt.
- The September 15 basis is expected to be \$1/cwt. under the CME October live cattle futures contract.
- The CME October live cattle contract (40,000 lbs.) is currently trading at \$62/cwt.

Determine

1. Which contract could the producer use to establish a hedge?
2. How many contracts would the producer need to hedge all of the anticipated output?
3. Describe the position to be taken in the futures market to establish a hedge.
4. Calculate the producer's price objective. (Assume this is calculated considering the variable costs [VC] plus the profit objective.)
5. Calculate the expected hedge price.

Exercise 2f: Short hedge—live cattle example

Part 2

Assumption

- For the following calculations, assume that the hedge was established on April 15 and the live cattle are being sold on September 15.

Determine

1. If the live cattle are sold in the local cash market for \$58/cwt. and the CME October live cattle futures contract is trading for \$59/cwt.:
 - a. What is the actual basis?

 - b. What actions does the producer take in the cash and futures markets?

 - c. What is the net price received?

2. If the live cattle are sold in the local cash market for \$70/cwt. and the CME October live cattle futures contract is trading for \$71/cwt.:
 - a. What is the actual basis?

 - b. What is the net price received?

Exercise 3a

Basis risk: hog example

Assumptions

- A hog producer is producing 261 head of slaughter hogs estimated to weigh 230 lbs. on April 1.
- The current date is November 1.
- Variable costs of production are \$41/cwt.
- The producer's profit objective is \$10/cwt.
- The April 1 basis is expected to be \$2/cwt. under the CME April hog futures contract.
- The CME April hog contract (30,000 lbs.) is currently trading at \$52/cwt.

Determine

1. Calculate the expected hedge price.
2. Assume that the hedge was established on November 1 by selling a CME April live hog contract for \$52/cwt. The hogs are being sold on April 1. If the hogs are sold in the local cash market for \$46/cwt. and the CME April hog futures contract is trading for \$47/cwt.:
 - a. What is the actual basis?
 - b. What is the net price received? Compare the net price with the expected hedge price.
3. If the hogs are sold in the local cash market for \$56/cwt. and the CME April hog futures contract is trading for \$57/cwt.:
 - a. What is the actual basis?
 - b. What is the net price received? Compare the net price with the expected hedge price.

Exercise 3b

Basis risk: corn example

Assumptions

- A corn producer expects to produce 10,000 bu. of corn for October delivery.
- The current date is July 1.
- Variable costs of production are \$2.10/bu.
- The producer's profit objective is \$0.30/bu.
- An October 1 basis is expected to be \$0.30/bu. under the CBT December corn futures contract.
- The CBT December corn contract (5,000 bu.) is currently trading at \$2.60/bu.

Determine

1. Calculate the expected hedge price.

2. Assume that the hedge was established on July 1 by selling a CBT December corn contract for \$2.60/bu. The corn is being sold on October 1. If the corn is sold in the local cash market for \$2.10/bu. and the CBT December corn futures contract is trading for \$2.30/bu.:
 - a. What is the actual basis?

 - b. What is the net price received? Compare the net price with the expected hedge price.

3. If the corn is sold in the local cash market for \$2.50/bu. and the CBT December corn futures contract is trading for \$2.70/bu.:
 - a. What is the actual basis?

 - b. What is the net price received? Compare the net price with the expected hedge price.

Exercise 3c

Basis risk: cotton example

Assumptions

- A cotton producer expects to produce 100,000 lbs. of cotton for November delivery.
- The current date is July 1.
- Variable costs of production are \$0.40/lb.
- The producer's profit objective is \$0.10/lb.
- The expected November 15 basis is \$0.04/lb. under the CTN December cotton futures contract.
- The CTN December cotton contract (50,000 lbs.) is currently trading at \$0.64/lb.

Determine

1. Calculate the expected hedge price.

2. Assume that the hedge was established on July 1 by selling CTN December cotton contracts. The cotton is being sold on November 15. If the cotton is sold in the local cash market for \$0.56/lb. and the CTN December cotton futures contract is trading for \$0.58/lb.:
 - a. What is the actual basis?

 - b. What is the net price received? Compare the net price with the expected hedge price.

3. If the cotton is sold in the local cash market for \$0.66/lb. and the CTN December cotton futures contract is trading for \$0.68/lb.:
 - a. What is the actual basis?

 - b. What is the net price received? Compare the net price with the expected hedge price.

Exercise 3d

Basis risk: feeder cattle example

Assumptions

- A cattleman is expecting to market 130 steers weighing 675 lb. for April 1 delivery.
- The current date is November 15.
- Variable costs of production are \$52/cwt.
- The producer's profit objective is \$10/cwt.
- The April 1 basis is expected to be \$1/cwt. over the CME April feeder cattle futures contract.
- The CME April feeder cattle contract (44,000 lbs.) is currently trading at \$64/cwt.

Determine

1. Calculate the expected hedge price.

2. Assume that the hedge was established on November 15 by selling a CME April feeder cattle contract for \$64/cwt. The steers are being sold on April 1. If the feeder cattle are sold in the local cash market for \$60/cwt. and the CME April feeder cattle futures contract is trading for \$58/cwt.:
 - a. What is the actual basis?

 - b. What is the net price received? Compare the net price with the expected hedge price.

3. If the feeders are sold in the local cash market for \$70/cwt. and the CME April feeder cattle futures contract is trading for \$68/cwt.:
 - a. What is the actual basis?

 - b. What is the net price received? Compare the net price with the expected hedge price.

Exercise 3e

Basis risk: soybean example

Assumptions

- A soybean producer expects to produce 15,000 bu. of soybean for November delivery.
- The current date is July 15.
- Variable costs of production are \$4.80/bu.
- The producer's profit objective is \$0.30/bu.
- The November 1 basis is expected to be \$0.30/bu. under the CBT November soybean futures contract.
- The CBT November soybean contract (5,000 bu.) is currently trading at \$6/bu.

Determine

1. Calculate the expected hedge price.

2. Assume that the hedge was established on July 15 by selling a CBT November soybean contract for \$6/bu. The soybeans are being sold on November 1. If the soybeans are sold in the local cash market for \$5.50/bu. and the CBT November soybean futures contract is trading for \$5.70/bu.:
 - a. What is the actual basis?

 - b. What is the net price received? Compare the net price with the expected hedge price.

3. If the soybeans are sold in the local cash market for \$6.50/bu. and the CBT November soybean futures contract is trading for \$6.70/bu.:
 - a. What is the actual basis?

 - b. What is the net price received? Compare the net price with the expected hedge price.

Exercise 3f

Basis risk: live cattle example

Assumptions

- A cattleman is expecting to market 110 slaughter steers estimated to weigh 1,100 lbs. on September 15.
- The current date is April 15.
- Variable costs of production are \$53/cwt.
- The producer's profit objective is \$5/cwt.
- The September 15 basis is expected to be \$1/cwt. under the CME October live cattle futures contract.
- The CME October live cattle contract (40,000 lbs.) is currently trading at \$62/cwt.

Determine

1. Calculate the expected hedge price.

2. Assume that the hedge was established on April 15 by selling a CME October live cattle futures contract for \$62/cwt. The live cattle are being sold on September 15. If the live cattle are sold in the local cash market for \$65/cwt. and the CME October live cattle futures contract is trading for \$67/cwt.:
 - a. What is the actual basis?

 - b. What is the net price received? Compare the net price with the expected hedge price.

3. If the live cattle are sold in the local cash market for \$70/cwt. and the CME October live cattle futures contract is trading for \$69/cwt.:
 - a. What is the actual basis?

 - b. What is the net price received? Compare the net price with the expected hedge price.

Exercise 4a

Long hedge: corn example

Part 1

Assumptions

- A cattle feeder expects to buy 30,000 bu. of corn for April 15 delivery.
- The current date is January 15.
- The April basis is expected to be \$0.20/bu. under the CBT May corn futures contract.
- The CBT May corn contract (5,000 bu.) is currently trading at \$2.60/bu.

Determine

1. Which contract could the producer use to establish a hedge?
2. How many contracts would the producer need to hedge all of the anticipated output?
3. Describe the position to be taken in the futures market to establish a hedge.
4. Calculate the expected hedge price.
5. List some price objectives the producer may consider which can be compared with the expected hedge price.

Exercise 4a: long hedge—corn example

Part 2

Assumption

- For the following calculations, assume that the hedge was established on January 15 and the corn is being bought on April 15.

Determine

1. If the corn is bought in the local cash market for \$2.20/bu. and the CBT May corn futures contract is trading for \$2.40/bu.:
 - a. What is the actual basis?
 - b. What actions does he take in the cash and futures markets?
 - c. What is the net price paid?

2. If the corn is bought in the local cash market for \$2.50/bu. and the CBT May corn futures contract is trading for \$2.70/bu.:
 - a. What is the actual basis?
 - b. What is the net price paid?

Exercise 4b

Long hedge: feeder cattle example

Part 1

Assumptions

- A cattle feeder expects to buy 130 head of 675-lb. steers for April 1 delivery.
- The current date is November 15.
- The April 1 basis is expected to be \$1/cwt. over the CME April feeder cattle futures contract.
- The CME April feeder cattle contract (44,000 lbs.) is currently trading at \$64/cwt.

Determine

1. Which contract could the producer use to establish a hedge?
2. How many contracts would the producer need to hedge all of the anticipated output?
3. Describe the position to be taken in the futures market to establish a hedge.
4. Calculate the expected hedge price.
5. List some price objectives the producer may consider which can be compared with the expected hedge price.

Exercise 4b: long hedge—feeder cattle example

Part 2

Assumption

- For the following calculations, assume that the long hedge was established on November 15 by buying CME April feeder cattle contracts for \$64/cwt. The feeder cattle are being bought on April 1.

1. If the feeder cattle are bought in the local cash market for \$61/cwt. and the CME April feeder cattle futures contract is trading for \$60/cwt.:
 - a. What is the actual basis?

 - b. What is the net price paid? Compare this with the expected hedge price.

2. If the feeders are bought in the local cash market for \$70/cwt. and the CME April feeder cattle futures contracts are trading for \$69/cwt.:
 - a. What is the actual basis?

 - b. What is the net price paid? Compare this with the expected hedge price.

Exercise 5a

Basis risk: corn example

Assumptions

- A cattle feeder expects to buy 30,000 bu. of corn for April 15 delivery.
- The current date is January 15.
- The April basis is expected to be \$0.20/bu. under the CBT May corn futures contract.
- The CBT May corn contract (5,000 bu.) is currently trading at \$2.60/bu.

Determine

1. Calculate the expected hedge price.

2. Assume that the long hedge was established on January 15 by purchasing a CBT May corn contract for \$2.60/bu. The corn is bought on April 15. If the corn is bought in the local cash market for \$2.30/bu. and the CBT May corn futures contract is trading for \$2.40/bu.:
 - a. What is the actual basis?

 - b. What is the net price paid? Compare this with the expected hedge price.

3. If the corn is bought in the local cash market for \$2.60/bu. and the CBT May corn futures contract is trading for \$2.70/bu.:
 - a. What is the actual basis?

 - b. What is the net price paid? Compare this with the expected hedge price.

Exercise 5b

Basis risk: feeder cattle example

Assumptions

- A cattle feeder expects to buy 130 head of 675-lb. steers for April 1 delivery.
- The current date is November 15.
- The April 1 basis is expected to be \$1/cwt. over the CME April feeder cattle futures contract.
- The CME April feeder cattle contract (44,000 lbs.) is currently trading at \$64/cwt.

Determine

1. Calculate the expected hedge price.

2. Assume that the long hedge was established on November 15 by buying CME April feeder cattle contracts for \$64/cwt. The feeder cattle are being bought on April 1. If the feeder cattle are bought in the local cash market for \$60/cwt. and the CME April feeder cattle futures contract is trading for \$58/cwt.:
 - a. What is the actual basis?

 - b. What is the net price paid? Compare this with the expected hedge price.

2. If the feeders are bought in the local cash market for \$70/cwt. and the CME April feeder cattle futures contracts are trading for \$68/cwt.:
 - a. What is the actual basis?

 - b. What is the net price paid? Compare this with the expected hedge price.

Exercise 6

Margin call

This is an example of a trader of live cattle contracts who first sells a contract on Day 1 and later buys back the contract on Day 10. Please recall that the contract size is 40,000 lbs, the initial margin is \$1,200 per contract, and the maintenance margin is \$900. Assume the current futures market price for April live cattle is \$65/cwt.

1. Approximately what percent of the total value of the contract must the trader commit (place in a margin account) to sell one live cattle contract?
2. How much must the price change per hundredweight before the trader must make a "margin call"?

Date	Market action	Change in closing price from previous day	Debit/Credit	Account balance	Margin call	Accum. margin call
Day 1	Sell @ \$65.00	_____	_____	_____	_____	_____
Day 1	Close @ \$64.40	_____	_____	_____	_____	_____
Day 2	Close @ \$63.40	_____	_____	_____	_____	_____
Day 3	Close @ \$64.50	_____	_____	_____	_____	_____
Day 4	Close @ \$65.50	_____	_____	_____	_____	_____
Day 5	Close @ \$66.00	_____	_____	_____	_____	_____
Day 6	Close @ \$67.50	_____	_____	_____	_____	_____
Day 7	Close @ \$69.00	_____	_____	_____	_____	_____
Day 8	Close @ \$68.00	_____	_____	_____	_____	_____
Day 9	Close @ \$67.00	_____	_____	_____	_____	_____
Day 10	Buy @ \$66.00	_____	_____	_____	_____	_____

3. Explain the financial outcome of this trade.

Answer key 1

Video questions

Indicate whether each of the following statements is true (T) or false (F).

- T (F) 1. Forward contracts are the only price risk management tool available to agricultural producers.
Comment: False. Price risk may be managed by offsetting the cash market position with an opposite position in the commodity futures market. For example, if you own feeder steers, price risk may be reduced by selling a CME feeder cattle futures contract.
- T (F) 2. The primary contract specifications for a commodity, such as product description, quantity, grade, delivery points and delivery date, are exactly the same for a forward contract and a futures market contract.
Comment: False. Product description, quantity, grade, delivery points, and delivery date are specified in both forward contracts and futures contracts. All these items are non-negotiable in a futures contract but are negotiable in a forward contract.
- T (F) 3. In hedging, you must first buy a futures contract so that you have one to sell later.
Comment: False. A producer buying commodities such as corn or soybeans would hedge by buying a futures contract. But, there are no rules that say you have to buy a contract before you can sell a contract. Producers that are going to hedge a later sell in the cash market have to enter the futures by first selling a futures contract.
- (T) F 4. The first three steps in deciding to hedge are: (1) establish a price objective, (2) select the appropriate futures contract month, and (3) estimate your local hedge price.
Comment: True. Price objectives are essential for making a marketing decision. Selecting the wrong delivery month may result in an unexpected loss. And you must estimate the local hedge price before comparing it with the price objective.
- (T) F 5. "Basis" is the difference between the cash price (at any given time and place) and a particular futures contract price.
Comment: True. The definition of "basis" is the difference between two prices. So "basis" is the difference between the cash price and a selected futures contract price.

- T** **F** 6. If today, July live hogs are trading for \$49.30/cwt. and the basis is estimated to be $-0.60/cwt.$, the expected hedge price is \$48.70/cwt.
Comment: True. Assuming no fees and interest costs: $\$49.30 - \$0.60 = \$48.70.$
- T** **F** 7. If you can estimate the basis with more accuracy than you can forecast future cash prices, then you are a strong candidate for using hedging in your marketing strategy.
Comment: True. A hedge trades price risk for basis risk. If the basis can be predicted with more accuracy than cash prices, hedging reduces price risk.
- T** **F** 8. Most long hedges involve a complete hedge, where both the output and major inputs are priced using the futures market.
Comment: False. A complete hedge involves both a long (buy) hedge and a short (sell) hedge. Many times the hedger may only be able to complete one of the legs of the hedge at a reasonable level.
- T** **F** 9. If you have estimated an expected hedge price that meets your price objective, you should always hedge.
Comment: False. It depends on your expectations about future prices. If you expect prices to move in your favor, you may elect to remain unhedged and speculate on improved returns. However, if you are uncertain about what prices will do in the future or expect prices to move against you, then a hedge offers protection for your price objective.
- T** **F** 10. Futures markets could work more effectively for hedging if there were no speculators.
Comment: False. Speculators are an essential part of the market. Without speculators there would be no one to take the price risk that hedgers want to be rid of.
- T** **F** 11. "Margin" is simply another term for the commission charge in trading futures.
Comment: False. The margin is the money that is maintained in a special account to guarantee contract performance.

Answer key 2a

Short hedge: hog example

Part 1

1. The nearby contract for an April 1 sale is the CME April live hog contract.
2. To fully hedge 261 head of hogs estimated to weigh 230 lbs., the hog producer would sell two CME April live hog contracts.

$$261 \text{ hogs} \times 230 \text{ lbs. per hog} = 60,030 \text{ lbs.} \quad \frac{60,030 \text{ lbs.}}{30,000 \text{ lbs. per contract}} \approx 2 \text{ contracts}$$

3. The producer would sell CME April live hog futures contracts.
4. The producer's price objective is \$51/cwt. (\$41 variable costs + \$10 expected profit)
5. The expected hedge price is \$50/cwt. (\$52 CME April hog contract price – \$2 under expected basis)

Part 2

- 1a. The actual basis is \$2 under, or **-\$2**. (\$46 cash price – \$48 CME April live hog contract price)
- 1b. **Buy CME April live hog futures contracts and sell the hogs in the cash market.**
- 1c. The net price received was the expected \$50/cwt. The hogs were sold for \$46/cwt. The CME April live hog contract was sold for \$52/cwt. and bought for \$48/cwt., for a profit of \$4/cwt. (\$46 cash price + \$4 profit = \$50 net price)

Price objective = \$51/cwt. (\$41 VC + \$10 profit)

Date	Cash	Futures	Basis
Nov. 1	Exp. hedge \$50	Sell CME April LH@ \$52	Expected -\$2
April 1	Sell cash \$46	Buy CME April LH @ \$48 Profit \$4	Actual -\$2
Net result			
	Cash sale	\$46	
	Futures profit	<u>4</u>	
	Net price	\$50	

Answer key 2a: Short hedge: hog example

- 2a. The actual basis is \$2 under, or **-\$2**. (\$54 cash price – \$56 CME April live hog contract price)
- 2b. The net price received was the expected **\$50/cwt**. The hogs were sold for \$54/cwt. The CME April live hog contract was sold for \$52/cwt. and bought for \$56/cwt., for a loss of \$4/cwt. (\$54 cash price – \$4 loss = \$50 net price)

Price objective = \$51/cwt. (\$41 VC + \$10 profit)

Date	Cash	Futures	Basis
Nov. 1	Exp. hedge \$50	Sell CME April LH @ \$52	Expected -\$2
April 1	Sell cash \$54	Buy CME April LH @ <u>\$56</u> Loss -\$4	Actual -\$2
Net result			
	Cash sale	\$54	
	Futures loss	<u>-4</u>	
	Net price	\$50	

Answer key 2b

Short hedge: corn example

Part 1

1. The nearby contract for an October 1 sale is the CBT December corn contract.
2. To hedge 10,000 bu. of corn, the producer would sell two CBT December corn contracts.

$$\frac{10,000 \text{ bu.}}{5,000 \text{ bu. per contract}} = 2 \text{ contracts}$$

3. The producer would sell CBT December corn futures contracts.
4. The producer's price objective is \$2.40/bu. (\$2.10 variable costs + \$0.30 profit)
5. The expected hedge price is \$2.30/bu. (\$2.60 CBT December corn contract price – \$0.30 under expected basis)

Part 2

- 1a. The actual basis is \$0.30 under, or **-\$0.30**. (\$2.10 cash price – \$2.40 CBT December corn contract price)
- 1b. Buy CBT December corn futures contracts and sell the corn in the cash market.
- 1c. The net price received was the expected \$2.30/bu. The corn was sold for \$2.10/bu. The CBT December corn contract was sold for \$2.60/bu. and bought for \$2.40/bu., for a profit of \$0.20/bu. (\$2.10 cash price + \$0.20 profit = \$2.30 net price)

Price objective = \$2.40/bu. (\$2.10 VC + \$0.30 profit)

Date	Cash	Futures	Basis
July 1	Exp. hedge \$2.30	Sell CBT Dec. corn @ \$2.60	Expected -\$0.30
Oct. 1	Sell cash \$2.10	Buy CBT Dec. corn @ <u>\$2.40</u> Profit \$0.20	Actual -\$0.30
Net result			
	Cash sale	\$2.10	
	Futures profit	<u>0.20</u>	
	Net price	\$2.30	

Answer key 2b: Short hedge—corn example

2a. The actual basis is \$0.30 under, or **-\$0.30**. (\$2.50 cash price – \$2.80 CBT December corn contract price)

2b. The net price received was the expected **\$2.30/bu**. The corn was sold for \$2.50/bu. The CBT December corn contract was sold for \$2.60/bu. and bought for \$2.80/bu., for a loss of \$0.20/bu. (\$2.50 cash price – \$0.20 loss = \$2.30 net price)

Price objective = \$2.40/bu. (\$2.10 VC + \$0.30 profit)

Date	Cash	Futures	Basis
July 1	Exp. hedge \$2.30	Sell CBT Dec. corn @ \$2.60	Expected -\$0.30
Oct. 1	Sell cash \$2.50	Buy CBT Dec. corn @ <u>\$2.80</u> Loss -\$0.20	Actual -\$0.30
Net result			
	Cash sale \$2.50		
	Futures loss <u>-0.20</u>		
	Net price \$2.30		

Answer key 2c

Short hedge: cotton example

Part 1

1. The nearby contract for a November 15 sale is the CTN December cotton contract.
2. To hedge 100,000 lbs. of cotton, the producer would sell two CTN December cotton contracts.

$$\frac{100,000 \text{ lbs.}}{50,000 \text{ lbs. per contract}} = 2 \text{ contracts}$$
3. The producer would sell CTN December cotton futures contracts.
4. The producer's price objective is \$0.50/lb. (\$0.40 variable costs + \$0.10 profit)
5. The expected hedge price is \$0.60/lb. (\$0.64 CTN December cotton contract price – \$0.04 under expected basis)

Part 2

- 1a. The actual basis is \$0.04 under, or **-\$0.04**. (\$0.56 cash price – \$0.60 CTN December cotton contract price)
- 1b. Buy CTN December cotton futures contracts and sell the cotton in the cash market.
- 1c. The net price received was the expected \$0.60/lb. The cotton was sold for \$0.56/lb. The CTN December cotton contract was sold for \$0.64/lb. and bought for \$0.60/lb., for a profit of \$0.04/lb. (\$0.56 cash price + \$0.04 profit = \$0.60 net price)

Price objective = \$0.50/lb. (\$0.40 VC + \$0.10 profit)

Date	Cash	Futures	Basis
July 1	Exp. hedge \$0.60	Sell CTN Dec. cotton @ \$0.64	Expected -\$0.04
Nov. 15	Sell cash \$0.56	Buy CTN Dec. cotton @ <u>\$0.60</u> Profit \$0.04	Actual -\$0.04
Net result			
	Cash sale	\$0.56	
	Futures profit	<u>0.04</u>	
	Net price	\$0.60	

Answer key 2c: Short hedge—cotton example

- 2a. The actual basis is \$0.04 under, or **-\$0.04**. (\$0.66 cash price – \$0.70 CTN December cotton contract price)
- 2b. The net price received was the expected **\$0.60/lb.** The cotton was sold for \$0.66/lb. The CTN December cotton contract was sold for \$0.64/lb. and bought for \$0.70/lb., for a loss of \$0.06/lb. (\$0.66 cash price – \$0.06 loss = \$0.60 net price)

Price objective = \$0.50/lb. (\$0.40 VC + \$0.10 profit)

Date	Cash	Futures	Basis
July 1	Exp. hedge \$0.60	Sell CTN Dec. cotton @ \$0.64	Expected -\$0.04
Nov. 15	Sell cash \$0.66	Buy CTN Dec. cotton @ <u>\$0.70</u>	Actual -\$0.04
		Loss -\$0.06	
Net result			
	Cash sale	\$0.66	
	Futures loss	<u>-0.06</u>	
	Net price	\$0.60	

Answer key 2d

Short hedge: feeder cattle example

Part 1

1. The nearby contract for an April 1 sale is the CME April feeder cattle contract.
2. To hedge 130 head of 675-lb. feeder cattle, the producer would sell two CME April feeder cattle contracts.

$$130 \text{ head} \times 675 \text{ lbs. per head} = 87,750 \text{ lbs.} \quad \frac{87,750 \text{ lbs.}}{44,000 \text{ lbs. per contract}} \approx 2 \text{ contracts}$$

3. The producer would sell CME April feeder cattle futures contracts.
4. The producer's price objective is \$62/cwt. (\$52 variable costs + \$10 profit)
5. The expected hedge price is \$65/cwt. (\$64 CME April feeder cattle contract price + \$1 over expected basis)

Part 2

- 1a. The actual basis is \$1 over, or +\$1. (\$61 cash price – \$60 CME April feeder cattle contract price)
- 1b. Buy CME April feeder cattle futures and sell the steers in the cash market.
- 1c. The net price received was the expected \$65/cwt. The feeder cattle were sold for \$61/cwt. The CME April feeder cattle contract was sold for \$64/cwt. and bought for \$60/cwt., for a profit of \$4/cwt. (\$61 cash price + \$4 profit = \$65 net price)

Price objective = \$62/cwt. (\$52 VC + \$10 profit)

Date	Cash	Futures	Basis
Nov. 15	Exp. hedge \$65	Sell CME April FC @ \$64	Expected \$1
April 1	Sell cash \$61	Buy CME April FC @ \$60 Profit \$4	Actual \$1
Net result			
	Cash sale	\$61	
	Futures profit	<u>4</u>	
	Net price	\$65	

Answer key 2d: Short hedge—feeder cattle example

2a. The actual basis is \$1 over, or +\$1. (\$70 cash price – \$69 CME April feeder cattle contract price)

2b. The net price received was the expected \$65/cwt. The feeder cattle were sold for \$70/cwt. The CME April feeder cattle contract was sold for \$64/cwt. and bought for \$69/cwt., for a loss of \$5/cwt. (\$70 cash price – \$5 loss = \$65 net price)

Price objective = \$62/cwt. (\$52 VC + \$10 profit)

Date	Cash	Futures	Basis
Nov. 15	Exp. hedge \$65	Sell CME April FC @ \$64	Expected \$1
April 1	Sell cash \$70	Buy CME April FC @ <u>\$69</u> Loss -\$5	Actual \$1
Net result			
	Cash sale	\$70	
	Futures loss	<u>-5</u>	
	Net price	\$65	

Answer key 2e

Short hedge: soybean example

Part 1

1. The nearby contract for an expected November 1 sale is the CBT November soybean contract.
2. To hedge 15,000 bu. of soybean, the producer would sell three CBT November soybean contracts.

$$\frac{15,000 \text{ bu.}}{5,000 \text{ bu. per contract}} = 3 \text{ contracts}$$

3. The producer would sell CBT November soybean futures contracts.
4. The producer's price objective is \$5.10/bu. (\$4.80 variable costs + \$0.30 profit)
5. The expected hedge price is \$5.70/bu. (\$6 CBT November soybean contract price – \$0.30 under expected basis)

Part 2

- 1a. The actual basis is \$0.30 under, or **-\$0.30**. (\$5.20 cash price – \$5.50 CBT November soybean contract price)
- 1b. Buy CBT November soybean futures and sell the soybeans in the cash market.
- 1c. The net price received was the expected \$5.70/bu. The soybeans were sold for \$5.20/bu. The CBT November soybean contract was sold for \$6/bu. and bought for \$5.50/bu., for a profit of \$0.50/bu. (\$5.20 cash price + \$0.50 profit = \$5.70 net price)

Price objective = \$5.10/bu. (\$4.80 VC + \$0.30 profit)

Date	Cash	Futures	Basis
July 1	Exp. hedge \$5.70	Sell CBT Nov. soybeans @ \$6.00	Expected -\$0.30
Nov. 1	Sell cash \$5.20	Buy CBT Nov. soybeans @ <u>\$5.50</u> Profit \$0.50	Actual -\$0.30
Net result			
	Cash sale	\$5.20	
	Futures profit	<u>0.50</u>	
	Net price	\$5.70	

Answer key 2c: Short hedge: soybean example

- 2a. The actual basis is \$0.30 under, or **-\$0.30**. (\$6.50 cash price – \$6.80 CBT November soybean contract price)
- 2b. The net price received was the expected **\$5.70/bu.** The soybeans were sold for \$6.50/bu. The CBT November soybean contract was sold for \$6/bu. and bought for \$6.80/bu., for a loss of \$0.80/bu. (\$6.50 cash price – \$0.80 loss = \$5.70 net price)

Price objective – \$5.10/bu. (\$4.80 VC + \$0.30 profit)

Date	Cash	Futures	Basis
July 1	Exp. hedge \$5.70	Sell CBT Nov. soybeans @ \$6.00	Expected -\$0.30
Nov. 1	Sell cash \$6.50	Buy CBT Nov. soybeans @ <u>\$6.80</u> Loss - \$0.80	Actual -\$0.30
Net result			
	Cash sale	\$6.50	
	Futures loss	<u>-0.80</u>	
	Net price	\$5.70	

Answer key 2f

Short hedge: live cattle example

Part 1

1. The nearby contract for an expected September 15 sale is the CME October live cattle contract.
2. To hedge 110 head of slaughter cattle estimated to weigh 1,100 lbs., the producer would sell three CME October live cattle contracts.

$$110 \text{ head} \times 1,100 \text{ lbs. per head.} = 121,000 \text{ lbs.} \quad \frac{121,000 \text{ lbs.}}{40,000 \text{ lbs. per contract}} \approx 3 \text{ contracts}$$

3. The producer would sell CME October live cattle futures contracts.
4. The producer's price objective is \$58/cwt. (\$53 variable costs + \$5 profit)
5. The expected hedge price is \$61/cwt. (\$62 CME October live cattle contract price – \$1 under expected basis)

Part 2

- 1a. The actual basis is \$1 under, or –\$1. (\$58 cash price – \$59 CME October live cattle contract price)
- 1b. Buy CME October live cattle futures and sell the slaughter steers in the cash market.
- 1c. The net price received was the expected \$61/cwt. The feeder cattle were sold for \$58/cwt. The CME October live cattle contract was sold for \$62/cwt. and bought for \$59/cwt., for a profit of \$3/cwt. (\$58 cash price + \$3 profit = \$61 net price)

$$\text{Price objective} = \$58/\text{cwt.} \text{ (}\$53 \text{ VC} + \$5 \text{ profit)}$$

Date	Cash	Futures	Basis
Apr. 15	Exp. hedge \$61	Sell CME October LC @ \$62	Expected – \$1
Sept. 15	Sell cash \$58	Buy CME October LC @ \$59	Actual – \$1
		Profit \$3	
Net result			
	Cash sale	\$58	
	Futures profit	<u>3</u>	
	Net price	\$61	

Answer key 2f: Short hedge—live cattle example

2a. The actual basis is \$1 under, or **-\$1**. (\$70 cash price – \$69 CME October live cattle contract price)

2b. The net price received was the expected **\$61/cwt**. The live cattle were sold for \$70/cwt. The CME October live cattle contract was sold for \$62/cwt. and bought for \$71/cwt., for a loss of \$9/cwt. (\$70 cash price – \$9 loss = \$61 net price)

Price objective = \$58/cwt. (\$53 VC + \$5 profit)

Date	Cash	Futures	Basis
Apr. 15	Exp. hedge \$61	Sell CME October LC @ \$62	Expected - \$1
Sept. 15	Sell cash \$70	Buy CME October LC @ <u>\$71</u> Loss -\$9	Actual - \$1
Net result			
	Cash sale	\$70	
	Futures loss	<u>-9</u>	
	Net price	\$61	

Answer key 3a

Basis risk: hog example

1. The expected hedge price is **\$50/cwt.** (\$52 CME April hog contract price – \$2 under expected basis)
- 2a. The actual basis is \$1 under, or **-\$1.** (\$46 cash price – \$47 CME April hog contract price)
- 2b. The net price received was **\$1 more than the expected \$50/cwt.** The hogs were sold for \$46/cwt. The CME April hog contract was sold for \$52/cwt. and bought for \$47/cwt., for a profit of \$5/cwt. (\$46 cash price + \$5 profit = \$51 net price)

Price objective = \$51/cwt. (\$41 VC + \$10 profit)

Date	Cash	Futures	Basis
Nov. 1	Exp. hedge \$50	Sell CME April LH @ \$52	Expected -\$2
April 1	Sell cash \$46	Buy CME April LH @ <u>\$47</u>	Actual -\$1
		Profit \$5	
Net result:	Cash sale \$46		
	Futures profit <u>5</u>		
	Net price \$51		

- 3a. The actual basis is \$1 under, or **-\$1.** (\$56 cash price – \$57 CME April hog contract price)
- 3b. The net price received was **\$1 more than the expected \$50/cwt.** The hogs were sold for \$56/cwt. The CME April hog contract was sold for \$52/cwt. and bought for \$57/cwt., for a loss of \$5/cwt. (\$56 cash price – \$5 loss = \$51 net price)

Price objective = \$51/cwt. (\$41 VC + \$10 profit)

Date	Cash	Futures	Basis
Nov. 1	Exp. hedge \$50	Sell CME April LH @ \$52	Expected -\$2
April 1	Sell cash \$56	Buy CME April LH @ <u>\$57</u>	Actual -\$1
		Loss - \$5	
Net result:	Cash sale \$56		
	Futures loss <u>-5</u>		
	Net price \$51		

Answer key 3b

Basis risk: corn example

1. The expected hedge price is **\$2.30/bu.** (\$2.60 CBT Dec. corn contract price – \$0.30 under expected basis)
- 2a. The actual basis is \$0.20 under, or **–\$0.20.** (\$2.10 cash price – \$2.30 CBT Dec. corn contract price)
- 2b. The net price received was **\$0.10 higher than the expected \$2.30/bu.** The corn was sold for \$2.10/bu. The CBT December corn contract was sold for \$2.60/bu. and bought for \$2.30/bu., for a profit of \$0.30/bu. (\$2.10 cash price + \$0.30 profit = \$2.40 net price)

Price objective = \$2.40/bu. (\$2.10 VC + \$0.30 profit)

Date	Cash	Futures	Basis
July 1	Exp. hedge \$2.30	Sell CBT Dec. corn @ \$2.60	Expected –\$0.30
Oct. 1	Sell cash \$2.10	Buy CBT Dec. corn @ <u>\$2.30</u>	Actual –\$0.20
		Profit \$0.30	
Net result:	Cash sale \$2.10	Futures profit <u>–0.30</u>	
	Net price	\$2.40	

- 3a. The actual basis is \$0.20 under, or **–\$0.20.** (\$2.50 cash price – \$2.70 CBT Dec. corn contract price)
- 3b. The net price received was **\$0.10 higher than the expected \$2.30/bu.** The corn was sold for \$2.50/bu. The CBT December corn contract was sold for \$2.60/bu. and bought for \$2.70/bu., for a loss of \$0.10/bu. (\$2.50 cash price – \$0.10 loss = \$2.40 net price)

Price objective = \$2.40/bu. (\$2.10 VC + \$0.30 profit)

Date	Cash	Futures	Basis
July 1	Exp. hedge \$2.30	Sell CBT Dec. corn @ \$2.60	Expected –\$0.30
Oct. 1	Sell cash \$2.50	Buy CBT Dec. corn @ <u>\$2.70</u>	Actual –\$0.20
		Loss –\$0.10	
Net result:	Cash sale \$2.50	Futures loss <u>–0.10</u>	
	Net price	\$2.40	

Answer key 3c

Basis risk: cotton example

1. The expected hedge price is **\$0.60/lb.** (\$0.64 CTN Dec. cotton contract price – \$0.04 under expected basis)
- 2a. The actual basis is \$0.02 under, or **–\$0.02.** (\$0.56 cash price – \$0.58 CTN Dec. cotton contract price)
- 2b. The net price received was **\$0.02 higher than the expected \$0.60/lb.** The cotton was sold for \$0.56/lb. The CTN December cotton contract was sold for \$0.64/lb. and bought for \$0.58/lb., for a profit of \$0.06/lb. (\$0.56 cash price + \$0.06 profit = \$0.62 net price)

Price objective = \$0.50/lb. (\$0.40 VC + \$0.10 profit)

Date	Cash	Futures	Basis
July 1	Exp. hedge \$0.60	Sell CTN Dec. cotton @ \$0.64	Expected –\$0.04
Nov. 15	Sell cash \$0.56	Buy CTN Dec. cotton @ <u>\$0.58</u>	Actual –\$0.02
		Profit \$0.06	
Net result:	Cash sale \$0.56	Futures profit <u>–0.06</u>	
	Net price \$0.62		

- 3a. The actual basis is \$0.02 under, or **–\$0.02.** (\$0.66 cash price – \$0.68 CTN Dec. cotton contract price)
- 3b. The net price received was **\$0.02 higher than the expected \$0.60/lb.** The cotton was sold for \$0.66/lb. The CTN December cotton contract was sold for \$0.64/lb. and bought for \$0.68/lb., for a loss of \$0.04/lb. (\$0.66 cash price – \$0.04 loss = \$0.62 net price)

Price objective = \$0.50/lb. (\$0.40 VC + \$0.10 profit)

Date	Cash	Futures	Basis
July 1	Exp. hedge \$0.60	Sell CTN Dec. cotton @ \$0.64	Expected –\$0.04
Nov. 15	Sell cash \$0.66	Buy CTN Dec. cotton @ <u>\$0.68</u>	Actual –\$0.02
		Loss –\$0.04	
Net result:	Cash sale \$0.66	Futures loss <u>–0.04</u>	
	Net price \$0.62		

Answer key 3d

Basis risk: feeder cattle example

1. The expected hedge price is **\$65/cwt.** (\$64 CME April feeder cattle contract price + \$1 over expected basis)
- 2a. The actual basis is \$2 over or, **+\$2.** (\$60 cash price – \$58 CME April feeder cattle contract price)
- 2b. The net price received was **\$1 more than the expected \$65/cwt.** The feeder cattle were sold for \$60/cwt. The CME April feeder cattle contract was sold for \$64/cwt. and bought for \$58/cwt., for a profit of \$6/cwt. (\$60 cash price + \$6 profit = \$66 net price)

Price objective = \$62/cwt. (\$52 VC + \$10 profit)

Date	Cash	Futures	Basis
Nov. 15	Exp. hedge \$65	Sell CME April FC @ \$64	Expected +\$1
April 1	Sell cash \$60	Buy CME April FC @ \$58	Actual +\$2
		Profit \$6	
Net result:	Cash sale \$60	Futures profit <u>6</u>	
	Net price \$66		

- 3a. The actual basis is \$2 over, or **+\$2.** (\$70 cash price – \$68 CME April feeder cattle contract price)
- 3b. The net price received was **\$1 more than the expected \$65/cwt.** The feeder cattle were sold for \$70/cwt. The CME April feeder cattle contract was sold for \$64/cwt. and bought for \$68/cwt., for a loss of \$4/cwt. (\$70 cash price – \$4 loss = \$66 net price)

Price objective = \$62/cwt. (\$52 VC + \$10 profit)

Date	Cash	Futures	Basis
Nov. 15	Exp. hedge \$65	Sell CME April FC @ \$64	Expected +\$1
April 1	Sell cash \$70	Buy CME April FC @ \$68	Actual +\$2
		Loss – \$4	
Net result:	Cash sale \$70	Futures loss <u>– 4</u>	
	Net price \$66		

Answer key 3e

Basis risk: soybean example

1. The expected hedge price is **\$5.70/bu.** (\$6 CBT November soybean contract price – \$0.30 under expected basis)
- 2a. The actual basis is \$0.20 under, or **–\$0.20.** (\$5.50 cash price – \$5.20 CBT November soybean contract price)
- 2b. The net price received was **\$0.10 higher than the expected \$5.70/bu.** The soybeans were sold for \$5.50/bu. The CBT November soybean contract was sold for \$6/bu. and bought for \$5.70/bu., for a profit of \$0.30/bu. (\$5.50 cash price + \$0.30 profit = \$5.80 net price)

Price objective = \$5.10/bu. (\$4.80 VC + \$0.30 profit)

Date	Cash	Futures	Basis
July 15	Exp. hedge \$5.70	Sell CBT Nov. soybeans @ \$6.00	Expected –\$0.30
Nov. 1	Sell cash \$5.50	Buy CBT Nov. soybeans @ <u>\$5.70</u>	Actual –\$0.20
		Profit \$0.30	
Net result:			
	Cash sale	\$5.80	
	Futures profit	<u>–0.30</u>	
	Net price	\$5.80	

- 3a. The actual basis is \$0.20 under, or **–\$0.20.** (\$6.50 cash price – \$6.70 CBT November soybean contract price)
- 3b. The net price received was **\$0.10 higher than the expected \$5.70/bu.** The soybeans were sold for \$6.50/bu. The CBT November soybean contract was sold for \$6/bu. and bought for \$6.70/bu., for a loss of \$0.70. (\$6.50 cash price – \$0.70 loss = \$5.80 net price)

Price objective = \$5.10/bu. (\$4.80 VC + \$0.30 profit)

Date	Cash	Futures	Basis
July 15	Exp. hedge \$5.70	Sell CBT Nov. soybeans @ \$6.00	Expected –\$0.30
Nov. 1	Sell cash \$6.50	Buy CBT Nov. soybeans @ <u>\$6.70</u>	Actual –\$0.20
		Loss –\$0.70	
Net result:			
	Cash sale	\$6.50	
	Futures loss	<u>–0.70</u>	
	Net price	\$5.80	

Answer key 3f

Basis risk: live cattle example

1. The expected hedge price is \$61/cwt. (\$62 CME October live cattle contract price -\$1 under expected basis)
- 2a. The actual basis is \$2 under or, -\$2. (\$65 cash price - \$67 CME October live cattle contract price)
- 2b. The net price received was \$1 less than the expected \$61/cwt. The live cattle were sold for \$65/cwt. The CME October live cattle contract was sold for \$62/cwt. and bought for \$67/cwt., for a loss of \$5/cwt. (\$65 cash price - \$5 loss = \$60 net price)

Price objective = 58/cwt. (\$53 VC + \$5 profit)

Date	Cash	Futures	Basis
April 15	Exp. hedge \$61	Sell CME October LC @ \$62	Expected -\$1
Sept. 15	Sell cash \$65	Buy CME October LC @ <u>\$67</u>	Actual -\$2
		Loss - \$5	
Net result:	Cash sale \$65	Futures loss <u>-5</u>	Net price \$60

- 3a. The actual basis is \$1 over, or +\$1. (\$70 cash price - \$69 CME October live cattle contract price)
- 3b. The net price received was \$2 more than the expected \$61/cwt. The live cattle were sold for \$70/cwt. The CME October live cattle contract was sold for \$62/cwt. and bought for \$69/cwt., for a loss of \$7/cwt. (\$70 cash price - \$7 loss = \$63 net price)

Price objective = \$58/cwt. (\$53 VC + \$5 profit)

Date	Cash	Futures	Basis
April 15	Exp. hedge \$61	Sell CME October LC @ \$62	Expected -\$1
Sept. 15	Sell cash \$70	Buy CME October LC @ <u>\$69</u>	Actual +\$1
		Loss - \$7	
Net result:	Cash sale \$70	Futures loss <u>-7</u>	Net price \$63

Answer key 4a

Long hedge: corn example

Part 1

1. The nearby contract for an April 15 purchase is the CBT May corn contract.
2. To hedge 30,000 bu. of corn, the cattle feeder would buy six CBT May corn contracts.

$$\frac{30,000 \text{ bu.}}{5,000 \text{ bu. per contract}} = 6 \text{ contracts}$$
3. The cattle feeder would buy CBT May corn futures contracts.
4. The expected hedge price is \$2.40/bu. (\$2.60 CBT May corn contract price – \$0.20 under expected basis)
5. Two examples are given on the tape: (1) the price you could afford to pay for the input if you already had the output priced and you simply subtracted out all your other costs, and (2) setting the price that you think is reasonable. There may be a large number of examples, but the important point is to stress that a price objective is necessary. You need a target to evaluate the success of the hedge.

Part 2

- 1a. The actual basis is \$0.20 under, or **-\$0.20**. (\$2.20 cash price – \$2.40 CBT May corn contract price)
- 1b. The buyer sells CBT May corn contracts and buys corn on the cash market.
- 1c. The net price paid was the expected \$2.40/bu. The corn was bought for \$2.20/bu. The CBT May corn contract was bought for \$2.60/bu. and sold for \$2.40/bu., for a loss of \$0.20/bu. (\$2.20 cash price + \$0.20 loss = \$2.40 net price)

Price objective = _____

Date	Cash	Futures	Basis
Jan. 15	Exp. hedge \$2.40	Buy CBT May corn @ \$2.60	Expected -\$0.20
April 15	Cash purchase \$2.20	Sell CBT May corn @ <u>\$2.40</u> Loss -\$0.20	Actual -\$0.20
Net result			
	Cash purchase	\$2.20	
	Futures loss	<u>+0.20</u>	
	Net price	\$2.40	

- 2a. The actual basis is \$0.20 under, or **-\$0.20**. (\$2.50 cash price – \$2.70 CBT May corn contract price)
- 2b. The net price paid was the expected **\$2.40/bu**. The corn was bought for \$2.50/bu. The CBT May corn contract was bought for \$2.60/bu. and sold for \$2.70/bu., for a profit of \$0.10/bu.
(\$2.50 cash price – \$0.10 profit = \$2.40 net price)

Price objective = _____

Date	Cash	Futures	Basis
Jan. 15	Exp. hedge \$2.40	Buy CBT May corn @ \$2.60	Expected -\$0.20
April 15	Cash purchase \$2.50	Sell CBT May corn @ <u>\$2.70</u>	Actual -\$0.20
		Profit \$0.10	
Net result			
	Cash purchase	\$2.50	
	Futures profit	<u>-0.10</u>	
	Net price	\$2.40	

Answer key 4b

Long hedge: feeder cattle example

Part 1

1. The nearby contract for an April 1 purchase is the CME April feeder cattle contract.
2. To hedge 130 head of 675-lb. feeder steers, the producer would buy two CME April feeder cattle contracts.

$$130 \text{ head} \times 675 \text{ lbs. per head} = 87,750 \text{ lbs.} \qquad \frac{87,750 \text{ lbs.}}{44,000 \text{ lbs. per contract}} \approx 2 \text{ contracts}$$

3. The producer would buy CME April feeder cattle futures contracts.
4. The expected hedge price is \$65/cwt. (\$64 CME April feeder cattle contract price + \$1 over expected basis)
5. Two examples are given on the tape: (1) the price you could afford to pay for the input if you already had the output priced and you simply subtracted out all your other costs, and (2) setting the price that you think is reasonable. There may be a large number of examples, but the important point is to stress that a price objective is necessary. You need a target to evaluate the success of the hedge.

Part 2

- 1a. The actual basis is \$1 over, or +\$1. (\$61 cash price – \$60 CME April feeder cattle contract price)
- 1b. The buyer sells CME April feeder cattle contracts and buys cattle in the cash market.
- 1c. The net price paid was the expected \$65/cwt. The feeder cattle were bought for \$61/cwt. The CME April feeder cattle contract was bought for \$64/cwt. and sold for \$60/cwt., for a loss of \$4/cwt. (\$61 cash price + \$4 loss = \$65 net price)

Price objective = _____

Date	Cash	Futures	Basis
Nov. 15	Exp. hedge \$65	Buy CME April FC @ \$64	Expected +\$1
April 1	Cash purchase \$61	Sell CME April FC @ \$60 Loss -\$4	Actual +\$1
Net result			
	Cash purchase	\$61	
	Futures loss	+ 4	
	Net price	\$65	

- 2a. The actual basis is \$1 over, or +\$1. (\$70 cash price – \$69 CME April feeder cattle contract price)
- 2b. The net price paid was the expected \$65/cwt. The feeder cattle were bought for \$70/cwt. The CME April feeder cattle contract was bought for \$64/cwt. and sold for \$69/cwt., for a profit of \$5/cwt. (\$70 cash price – \$5 profit = \$65 net price)

Price objective = _____

Date	Cash	Futures	Basis
Nov. 15	Exp. hedge \$65	Buy CME April FC @ \$64	Expected +\$1
April 1	Cash purchase \$70	Sell CME April FC @ <u>\$69</u> Profit \$5	Actual +\$1
Net result			
	Cash purchase	\$70	
	Futures profit	<u>- 5</u>	
	Net price	\$65	

Answer key 5a

Basis risk: corn example

1. The expected hedge price is **\$2.40/bu.** (\$2.60 CBT May corn contract price – \$0.20 under expected basis)
- 2a. The actual basis is \$0.10 under, or **–\$0.10.** (\$2.30 cash price – \$2.40 CBT May corn contract price)
- 2b. The net price paid was **\$0.10/bu. higher than the expected \$2.40/bu.** The corn was bought for \$2.30/bu. The CBT May corn contract was bought for \$2.60/bu. sold for \$2.40/bu., for a loss of \$0.20/bu. (\$2.30 cash price + \$0.20 loss = \$2.50 net price)

Price objective = _____

Date	Cash	Futures	Basis
Jan. 15	Exp. hedge \$2.40	Buy CBT May corn @ \$2.60	Expected –\$0.20
April 15	Cash purchase \$2.30	Sell CBT May corn @ <u>\$2.40</u> Loss –\$0.20	Actual –\$0.10
Net result:	Cash purchase \$2.30 Futures loss <u>+ 0.20</u> Net price \$2.50		

- 3a. The actual basis is \$0.10 under, or **–\$0.10.** (\$2.60 cash price – \$2.70 CBT May corn contract price)
- 3b. The net price paid was **\$0.10/bu. higher than the expected \$2.40/bu.** The corn was bought for \$2.50/bu. The CBT May corn contract was bought for \$2.60/bu. and sold for \$2.70/bu., for a profit of \$0.10/bu. (\$2.60 cash price – \$0.10 profit = \$2.50 net price)

Price objective = _____

Date	Cash	Futures	Basis
Jan. 15	Exp. hedge \$2.40	Buy CBT May corn @ \$2.60	Expected –\$0.20
April 15	Cash purchase \$2.60	Sell CBT May corn @ <u>\$2.70</u> Profit \$0.10	Actual –\$0.10
Net result:	Cash purchase \$2.60 Futures profit <u>– 0.10</u> Net price \$2.50		

Answer key 5b

Basis risk: feeder cattle example

1. The expected hedge price is \$65/cwt. (\$64 CME April feeder cattle contract price + \$1 over expected basis)
- 2a. The actual basis is \$2 over, or +\$2. (\$60 cash price – \$58 CME April feeder cattle contract price)
- 2b. The net price paid was \$66/cwt., \$1 higher than the expected \$65/cwt. The feeder cattle were bought for \$60/cwt. The CME April feeder cattle contract was bought for \$64/cwt. and sold for \$58/cwt., for a loss of \$6/cwt. (\$60 cash price + \$6 loss = \$66 net price)

Price objective = _____

Date	Cash	Futures	Basis
Nov. 15	Exp. hedge \$65	Buy CME April FC @ \$64	Expected +\$1
April 1	Cash purchase \$60	Sell CME April FC @ <u>\$58</u>	Actual +\$2
		Loss -\$6	
Net result:	Cash purchase \$60	Futures loss + 6	
	Net price \$66		

- 3a. The actual basis is \$2 over, or +\$2. (\$70 cash price – \$68 CME April feeder cattle contract price)
- 3b. The net price paid was \$1 higher than the expected \$65/cwt. The feeder cattle were bought for \$70/cwt. The CME April feeder cattle contract was bought for \$64/cwt. and sold for \$68/cwt., for a profit of \$4/cwt. (\$70 cash price – \$4 profit = \$66 net price)

Price objective = _____

Date	Cash	Futures	Basis
Nov. 15	Exp. hedge \$65	Buy CME April FC @ \$64	Expected +\$1
April 1	Cash purchase \$70	Sell CME April FC @ <u>\$68</u>	Actual +\$2
		Profit \$4	
Net result:	Cash purchase \$70	Futures profit - 4	
	Net price \$66		

Answer key 6

Margin call

This is an example of a trader of live cattle contracts who first sells a contract on Day 1 and later buys back the contract on Day 10. Please recall that the contract size is 40,000 lbs., the initial margin is \$1,200 per contract, and the maintenance margin is \$900. Assume the current futures market price for April live cattle is \$65/cwt.

1. Approximately what percent of the total value of the contract must the trader commit (place in margin account) to sell one live cattle contract? **4.6%**

$$\begin{array}{l} \text{One live cattle contract: } 400 \text{ cwt.} \times \$65/\text{cwt.} = \$26,000 \\ \text{Initial margin: } \$1,200 \text{ per contract} \end{array} \quad \frac{\$1,200}{\$26,000} = 0.046 \text{ (or } 4.6\%)$$

2. How much must the price change per hundredweight before the trader must make a "margin call"? **\$0.75/cwt.**

$$\$1,200/\text{contract} - \$900 \text{ maintenance margin} = \$300/\text{contract} \quad \frac{\$300/\text{contract}}{400 \text{ cwt./contract}} = \$0.75/\text{cwt.}$$

Date	Market Action	Change in closing price from previous day	Debit/Credit	Account balance	Margin call	Accum. margin call
Day 1	Sell @ \$65.00		+ 1,200	\$ 1,200		
Day 1	Close @ \$64.40	- 0.60	+ 240	\$ 1,440		
Day 2	Close @ \$63.40	- 1.00	+ 400	\$ 1,840		
Day 3	Close @ \$64.50	+ 1.10	- 444	\$ 1,400		
Day 4	Close @ \$65.50	+ 1.00	- 400	\$ 1,000		
Day 5	Close @ \$66.00	+ 0.50	- 200	\$ 800	\$ 400	\$ 400
Day 6	Close @ \$67.50	+ 1.50	- 600	\$ 600	\$ 600	\$ 1,000
Day 7	Close @ \$69.00	+ 1.50	- 600	\$ 600	\$ 600	\$ 1,600
Day 8	Close @ \$68.00	- 1.00	+ 400	\$ 1,600		\$ 1,600
Day 9	Close @ \$67.00	- 1.00	+ 400	\$ 2,000		\$ 1,600
Day 10	Buy @ \$66.00	- 1.00	+ 400	\$ 2,400		\$ 1,600

3. Explain the financial outcome of this trade.

Sell	\$65	Ending account balance	\$2,400
Buy	<u>\$66</u>	minus Accum. margin call	1,600
	- \$ 1	minus Initial margin	<u>1,200</u>
	-\$1 X 400 cwt. = -\$400 (loss)	Loss	(\$400)