COMMODITY OPTIONS
Price Insurance for the Farmer

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INTRODUCTION

Most agricultural producers are familiar with the use of insurance. People insure buildings against fire, equipment against accidents and their life against death and injury. Insurance is purchased in order to trade a small but certain loss (insurance premium) for a large uncertain loss.

In most agricultural products, one of the greatest risks incurred in the past 1 0 years has been price change. That is, prices for the products grown or stored have been so uncertain that what appeared profitable when planted or placed on feed ended up unprofitable due to price decreases.

A related problem has been that if a forward pricing alternative (such as cash contracts or **hedging** in the futures market) was used to control price risk, an additional risk of uncertain final production was incurred due to over or under forward pricing of expected production.

Now there is a way to "insure" prices against declines while taking advantage of price increases. The opportunity is provided by the commodity options market.

WHAT IS THE COMMODITY OPTIONS MARKET?

The commodity options market is simply a market in which producers may purchase the opportunity to sell or buy a commodity at a certain price. Just as a farmer may purchase the right from an insurance firm to collect on a policy in case his buildings burn, he can purchase the right to sell his commodities at a specific price if market prices go below the specified price. A separate market exists to purchase the right to buy commodities at a specified price of market prices are higher than the specified price. So, there are really two separate commodity options - one to insure products being sold against price declines, and another to insure products purchased against price increases.

Purchasers in these options markets have the "opportunity" but not the "obligation" to exercise their agreement. Therefore, the markets are appropriately named "option markets" since they deal in an option, not an obligation. For instance, ff one desired to buy the right to sell corn for $3.00 per bushel, the commodity options market provides the opportunity. By paying the market determined premium, one could then collect on the option if prices are below $3.00 per bushel when the corn would actually be sold. If prices are higher than $3.00 per bushel, the corn could be sold for the higher price and the cost of the premium is absorbed.

As mentioned, there are actually two basic types of commodity options: a **call option and a put option.** The call option gives the holder the right, but not the obligation, to **buy** the underlying commodity from the option writer at a specified price on or before the option's expiration date. The put option gives the holder the right, but not the obligation, to **sell** the underlying commodity to the option writer at a specified price on or before the option's

expiration date. The call option and the put option are two distinct contracts. A put option is **not** the opposite side of a call option. It may be helpful in distinguishing between the two types of options by using the following "memory trick." The holder of the put option can choose to "put-it-to-em," that is, sell the product while the holder of the call option can "call-upon-em" to provide the product.

Strike Price

The "specified price" in the option is referred to as the **exercise price or strike price.** This is the price at which the underlying commodity can be exchanged and is fixed for any given option, put or call. There are several options with different strike prices traded during any period of time. As a general rule, the more volatile the price is for the underlying commodity, the greater the number of options at different strike prices that will be available for trade. If the price of the underlying commodity changes over time, then additional strike prices may be traded.

Underlying Commodity

The underlying commodity for the commodity option is not the commodity itself, but rather a futures contract for that commodity. For example, a November soybean option will actually be an option for a November delivery soybean futures contract. In this sense, the options are on futures and not on the physical commodity.

Buyers and Sellers

In the option market, as in every other market, every transaction requires both a buyer and a seller. The buyer of an option is referred to as an option holder. Holders of options may be either seekers of price insurance or speculators. The seller of an option may also be either a speculator or one who desires partial price protection. Whether one chooses to buy (hold) or sell (write) an option depends primarily upon one's objectives. The market will contain many insurers and price speculators, each providing a service to the other.

Expiration

Options on agricultural commodities have futures contracts as the underlying commodity. Futures contracts have a definite predetermined maturity date during the delivery month. So too, options will have a date at which they mature and expire. For example, a $7.00 November soybean option is an option to buy or sell one November soybean futures contract at $7.00. The option can be exercised by the holder on any business day until mid-October at which time the option expires. Trading in most options will not be conducted during the futures contract delivery month. Currently, only the feeder cattle option expires the same time as does the feeder cattle futures contract. Upon **expiration,** the option becomes worthless.

Option Premiums

The option (put or call) **writer or grantor** is willing to incur an obligation in return for some compensation. The writer of an option is an option seller. The compensation is called the option **premium**. Using the insurance analogy, a premium is paid on an insurance policy to gain the coverage it provides and an option premium is paid to gain the right granted in the option.

The premium is determined by public outcry and acceptance in an exchange trading pit, and like all commodity prices, can be expected to change daily.

While the interaction of supply and demand for options will ultimately determine the option premium, two major factors will interact to affect the level of prices. The first factor is the **difference between the strike price of the option and the price of the underlying commodity** and is called **intrinsic value.** For example, take a November soybean put option with a strike price of $8.00 and the underlying commodity with a current price of $7.75. The option could be sold for at least $0.25 since others would be willing to purchase the right to sell at $8.00 when the market is currently $7.75. The $0.25 is said to be the intrinsic value. **As** long as the market price on the underlying commodity is below the strike price on a put option, the option will have intrinsic value. Of course, the converse of the price relationship is true for a call option. A call option has intrinsic value when the market price is above the strike price. Any option that has intrinsic value is said to be **"in-the-money."**

When the market price of the commodity and the strike price are equal, the option is said to be **"at-the-money"** and the intrinsic value is zero. When the market price on the underlying commodity is above the strike price on a put option, there is no intrinsic value and the option is said to be **"out-of-the-money."** The converse of this price relationship would be true for a call option.

A second factor that will influence the option premium is the **length of time to expiration** of the option. Assuming all else is held constant, option premiums will usually decrease as the length of time until expiration decreases. This phenomenon is called the **time value** of an option. For example, in March the time premium on a $7.00 May soybean option will be less than the premium on a $7.00 August option, because the option with a longer time to expiration has a greater probability of moving in-the-money than the option with less time. Therefore, it is worth more on that factor alone. The longer the time period, the greater the chance that events will occur that could cause substantial movement in futures prices and change the value of the option. As a result, the option writer demands a greater premium to assume the larger risk of writing a longer term option.

"Out-of-the-money" options have a value which reflects only time value. "In-the-money" options possess both time value and intrinsic value.

OFFSET OF AN OPTION

The method by which most holders of "in-the-money" options will realize any accrued profit is by resale of the option. This is referred to as "off-setting" an option position. Most option buyers will **offset** their position rather than exercise the option. This is done to avoid losing any remaining time value and the resultant decisions, margin deposits and commissions from assuming a futures market position. The option could be resold to another trader at a premium at least equivalent to the intrinsic value that results from an "in-the-money" price relationship. Since the option markets provide the opportunity to secure price insurance, they can be expected to operate in a manner that allows for reinsurance or resale of the option to another party.

For example, assume a soybean grower purchased an "out-of-the-money" $7.00 strike

price November soybean put option for a premium of $0.15 while the current market value was $7.50. During the life of the option, the current market price falls to $6.50 and the put option has moved into-the-money" with a current premium of $0.60 per bushel ($0.50 intrinsic value and $0.1 0 time value). The original option buyer could sell the option through a broker to another trader. Using the above numbers, our trader would realize a return of $0.60 - $0.15 $0.45.

EXERCISING AN OPTION

Another method by which the holder of an option could realize accrued profit is by exercising the option. The decision to **exercise** an option lies only with the holder. If the decision is made to exercise, the following procedures are followed. For a put, the holder is assigned a **short** (sell) position in the futures market equal to the strike price. At the same time, the option grantor is assigned a " (buy) futures position at the same price. Then both positions are adjusted to reflect the current futures settlement price. It is rational to exercise a put option only when the market price is below the strike price so the holder's futures position will show a profit. The futures position of the grantor will show an equivalent loss. At this point, the option contract has been fulfilled and both parties are free to trade their futures contracts as they see fit.

Using the above example, if the put option was exercised, our trader would now have a short (sell) futures position at a price of $7.00. Using the above numbers, our trader would realize a net return of $7.00 - 6.50 -.15 premium paid = $0.35, which is less than the proceeds obtained from the sale of the option. In addition, our trader may be required to post additional **margin** money with the broker for maintenance of the futures position. Furthermore, he would incur an additional brokerage commission for liquidation of his futures contract. With a liquid options market, it appears that an offsetting trade within the options market is more advantageous than exercising.

READING OPTION QUOTES

SOYBEAN OPTION QUOTES
Friday May 19, 1989
SOYBEANS (CBOT) 5,000 bu.; cents per bu.

Strike Price	Calls-Settle			Puts-Settle		
	Sep-c	Nov-c	Jan-c	Sep-p	Nov-p	Jan-p
625	—	—	—	—	14 ½	—
650	—	56 ½	—	16	22 ½	—
675	44 ½	43 ½	42	27	34	34
700	34	34	33	39 ½	49	48
725	25	26 ½	25	55 ½	65	63 ½
750	18 ½	20 ½	20	74	83	---

Est. Vol. 7,500, Thurs. Vol. 5,654 call, 2,464 puts
Open Interest Thurs. 70,645 calls, 28,253 puts
Futures Settlement Prices:
Sept-$6.93 ½ Nov-$6.85 1/4 Jan-$6.94 3/4

Sources: Weekly Statistical Summary, CBOT, Friday, May 19, 1989 and *Wall Street Journal*, Monday, May 22, 1989.

The date, May 19, 1989, is the date on which the trading occurred. The months SEP, NOV and JAN represent three futures delivery months on which option contracts could be traded. The futures settlement price for each of these contracts is listed below the main table. Notice six different strike prices are shown for each option contract month. Using the November option month for an example, there are actually many separate option contracts that are tradeable. Here six different strike prices are shown for both calls and puts. The example prices show a total of 36 option contracts; 18 call options and eighteen put options.

The prices listed under the columns headed Call-Settle and Put-Settle are premiums that were determined through trading that day at the exchange. No trading occurred in contracts indicated by the dashed lines. Price differentials of one-fourth of a cent are used. The premium on the $7.00 November put option is $0.49 per bushel (named a "November 7 dollar put"). This would represent a total premium of $0.49 time 5,000 bushels or $2,450. This option is "in-the-money" since the strike prices is greater than the November futures contract settlement price. The intrinsic value is $7.00 - $6.8525 = $0.1475. The remainder of the premium, $0.49 - $.1475 = $0.3425 is the time value remaining in the option.

The November $6.75 put is "out-of-the-money." That is, it has no intrinsic value and the prudent person would not exercise R at the given futures market price. Even though it has no intrinsic value; there is still a time value associated with it as indicated by its $.34 premium. There are about five months before expiration in which market prices could fall below the $6.75 strike price and thus make it an "in-the-money option. The premium quoted reflects that time value.

Underneath the main table is additional valuable information. The estimated volume is provided by the exchange regulatory personnel on the number of contracts traded that day. It is followed by the exact volume from the preceding trading day broken down by calls and puts. Open interest is the number of outstanding or existing options contract for all available strike prices and contract months.

EVALUATING OPTION PRICES

Now that the mechanics of options trading have been explored, it is time to consider two critical questions.

1) What do varying strike prices mean as far as price insurance?
2) How does a producer actually secure this insurance?

First, let's consider a method for evaluating thp price insurance levels being offered. There are three steps to consider in evaluating options prices. The first factor is the selection of the appropriate option contract month. To do this, select the option which will expire closest to but not before the time the physical commodity will be sold or purchased. For example, if soybeans will be harvested and sold in November, the January option would be appropriate. The November option would generally not be chosen since trading on it will have ceased prior to the actual harvest and sale.

The second step is to select the appropriate type of option. If the producer wishes to insure products against price declines, then he or she would be interested in buying a put (the right to sell). If the producers motive is to insure future commodity purchases against price increases, then the purchase of a call (the right to buy) will be needed. To continue our example, if a soybean producer wishes to insure the beans he will be selling in November, then he will be interested in purchasing the right to sell a January (put) option.

The third step to consider in evaluating option prices is to calculate the minimum cash selling price (MSP) being offered by the put option selected. Or, for a call option, the maximum purchase price (MPP) would need to be calculated. These calculations can be accomplished in five steps and will be illustrated using the preceding sample quotes.

January Soybean Put Option Premiums
January Futures Settlement $6.94 3/4

Strike prices	Puts Settlement
$6.75	34
$7.00	48
$7.25	63 1/2

1) Select a strike price within the option month. For instance, a $7.00 January put.
2) Subtract the premium from the strike price for a put, or add the premium for a call. In the example, a $7.00 January put cost $0.48 per bushel. So, $7.00 - $0.48 = $6.52 per bushel.
3) Subtract (for a put) or add (for a call) the "opportunity cost" of paying the premium for the period it will be outstanding. For example, if the option premium of $.48 per bushel is paid in May and the option is liquidated by offsetting in November, an interest cost for the 6 month period needs to be added. If borrowed funds are used and the interest rate is twelve percent, (for example), then the cost would be one percent per month or six percent for six months. The interest cost associated with a $0.48 per bushel put option premium would be $0.03 per bushel. This leaves a net price of $6.52 - $0.03 $6.49.
4) Subtract (for a put) or add (for a call) the commission fee for both buying and offsetting the option. Assume the brokerage firm charges $100.00 per round turn for handling each option contract. The per bushel commission fee would be $0.02 ($100 for 5000 bushels). The net price is now $6.49 - $0.02 = $6.47.
5) One final adjustment must be made to these prices. The option strike price must be localized to reflect the difference between prices at the major commodity markets and the local cash market. To localize the price, we must subtract the expected harvest time basis. **Basis** is the difference between the local price and the mid-western futures market delivery point price at delivery time. This basis reflects the price differences between the large national and local markets. By adjusting the option price for basis, a minimum selling price can now be obtained for a put or a maximum purchase price obtained for a call.

For example, if the normal harvest basis is $0.30 under, then the likely minimum local cash price becomes $6.47 - $0.30 = $6.17 +. The plus sign refers to the fact that this is the minimum price expected from a cash sale protected by a purchased put option.

Farmers can buy more or less price insurance by buying options with different strike prices. To determine the minimum selling price suggested by each strike price, just repeat Steps 1 through 5. An evaluation of each strike price would result in the following set of minimum selling prices.

Minimum Selling Prices for Put Options with Different Strike Prices

Strike Prices	Premiums	Interest	Commission	Basis	Minimum Selling Price
----------Dollars Per Bushel----------					
$6.75	-.34	-.02	-.02	-.30	$6.07
$7.00	-.48	-.03	-.02	-.30	$6.17
$7.25	-.63 ½	-.04	-.02	-.30	$6.255

USING OPTIONS TO INSURE AGAINST FALLING PRICES

Let's now illustrate a put purchase for price insurance in soybeans. Assume that Joe Farmer plants soybeans in May expecting to harvest 10,000 bushels of soybeans in November. He must recognize that other than weather, his biggest risk during the production season is not knowing the price he will get for his beans at harvest. Farmer wishes to reduce this risk by "insuring" a future price that will cover production costs. He can do this by purchasing 2 January soybean put options (options to sell 10,000 bushels of January soybean futures) at a strike price of $7.00 per bushel. As a result, Farmer has established a minimum cash price for his soybeans of $7.00 per bushel minus the premium, less the normal local basis while retaining upside price potential.

Example 1 shows the result if prices increase during the production period. Example 2 shows the result of prices decrease. In each case, the cost of price insurance - the premium and other costs - was $0.53 cents per bushel and the actual difference between his local cash price and the national market prices (basis) was -$.30 as he anticipated.

Example 1. Put Option When Prices Increase

Date	Cash Market	Soybean Option Market
May 15	Expects to produce 10,000 bushels soybeans for November harvest. Expect minimum sale price of $6.17	Buy 2 January soybean put options at a $7.00 per bushel strike price, premium paid is $0.48 per bushel. Commission and interest are $0.05. Expected basis = $0.30
Nov. 15	Harvest and sell 10,000 bushels soybeans at $7.80 a bushel.	January soybean futures trading at $8.10. Let Jan. soybean option expire.
Results:	Cash price + gain or loss in options market = actual price received for beans = $7.80 - .53 = $7.28	Offset premium received - original premium paid plus costs = 0 - .53 = $-.53

In Example 1, as futures and cash prices rise, the options end up out-of-the-money and are allowed to expire. But despite the premium and other cost of $0.53 per bushel, the rise in cash prices resulted in a realized price of $7.28 per bushel. The net price would have been $7.80 per bushel had the put not been bought, emphasizing that the use of options may not maximize price at any point in time. Options may be highly effective over time in assuring a more stable income and avoiding disastrous losses resulting from dramatic price level changes,

Example 2- Put Option When Prices Fall

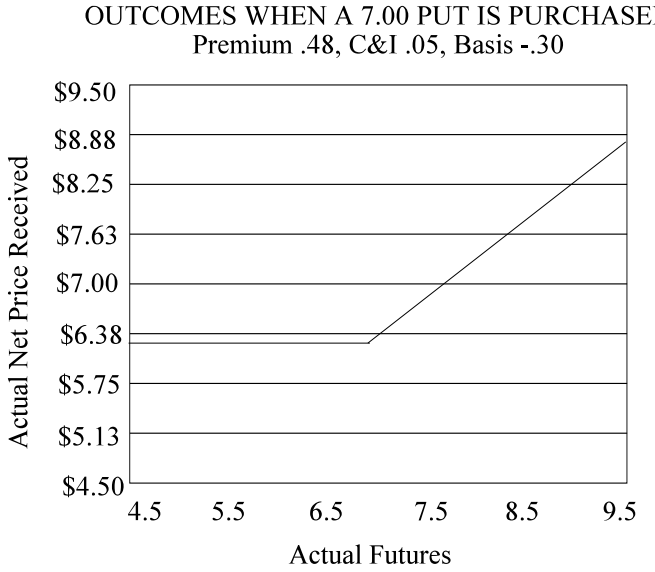
Date	Cash Market	Soybean Option Market
May	Expect to produce 10,000 bushels soybeans for November harvest. Expect minimum sale price of $6.17.	Buy 2 January soybean put options at a $7.00 per bushel strike price, premium paid is $0.48 per bushel. Commission and interest cost are $0.05. Expected basis = -$0.30.
Nov. 15	Harvest and sell 10,000 bushels soybeans at $5.30 per bushel.	Sell 2 January soybean put options at a $7.00per bushel strike price and receive a premium payment of $1.44 bushel. (a)
Results:	Cash price + gain or loss in options market = Actual price received for beans = $5.30 - $.91 = $6.21	Offset premium received - original premium paid = $1.44 - $0.53 = $.91

(a) January soybean futures assumed to be trading at $5.60 per bushel, giving the put option an intrinsic value of $1.40 per bushel. It is further assumed that the put had a time value of $0.04 per bushel. The total premium would, therefore, be $1.44.

In Example 2, futures prices fell along with cash prices. The put option at a strike price of $7.00 per bushel was iii-the-money in November. The put was offset by selling two January soybean put options for a premium of $1.44 per bushel. The offset resulted in a $.91 per bushel gain ($1.44 premium resale -$O.53 original premium and costs paid) which, when added to the cash price of $5.30, gave Farmer a realized price of $6.21 per bushel. The net price received is $.04/bu. greater than the expected minimum sale price established in May due to the additional $.04/bu. time value received from the offset. Had the put not been bought, the realized cash price would have been $5.30 per bushel.

Chart 1 shows how the purchase of the January soybean put works to insure a minimum price, no matter the actual market price. Notice also that while the maximum price obtainable is not set, it will always be $0.53 per bushel less than the market price due to the premium paid and the marketing costs.

Chart 1



USING OPTIONS TO INSURE AGAINST RISING PRICES

In the preceding example, the use of options as insurance against falling prices was illustrated. Users of agricultural commodities, such as grain for feed use, may desire insurance against price increases on anticipated future purchases.

For example, consider a hog finishing operator who, in January, can pencil-in positive net returns on his next run of hogs if he could purchase 5,000 bushels of corn for no more than the current price of $3.40 per bushel. The hogs will go on feed at the end of February, and the corn will need to be purchased at that time. The operator would be satisfied with the expected return and desires to insure against an increase in the price of corn. Since the call option provides the right to purchase corn at a specified price in the future, he will be interested in purchasing a call option. Also, the March option contract month would be the appropriate month to select as it matures closer to, but not before, the time when corn will be purchased.

The operator now needs to determine the one strike price that will meet his objective of buying corn for no more than $3.40 per bushel. Each strike price can be evaluated by the following formula:

Maximum Purchase Price	=	Premium	+	Brokerage Fee	+	Opportunity Cost + Basis

The producer can normally purchase corn for $0.20 over the March futures in late February, can buy and sell an option contract for $1 00 ($0.02 per bushel for 5,000 bushels), and has an opportunity cost of 1 % per month. An example of a March corn call option might result in the following maximum purchase prices.

Illustration of Calculation of Maximum Purchase Prices Utilizing a Call Option

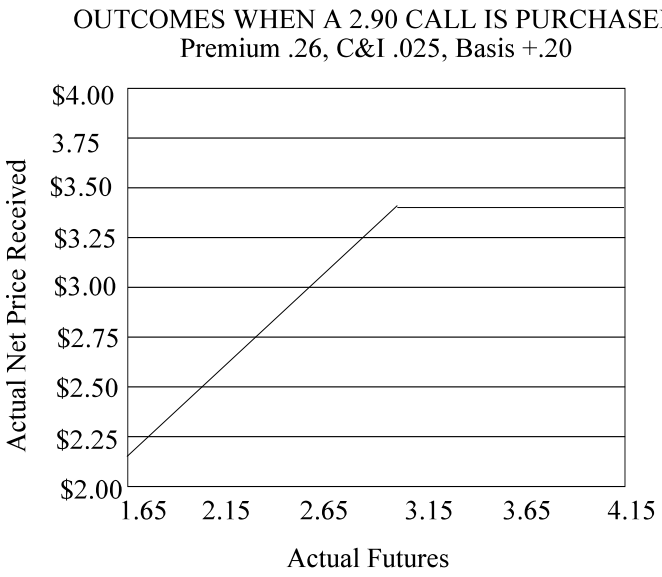
Strike Price	Premium	Brokerage Fee	Opportunity Cost	Basis	Maximum Purchase Price
----------Dollars Per Bushel----------					
$2.80	+0.43	+0.02	+0.01	+0.20	$3.46
2.90	+0.26	+0.02	+0.005	+0.20	3.385
3.00	+0.18	+0.02	+0.004	+0.20	3.404
3.10	+0.13	+0.02	+0.003	+0.20	3.453
3.20	+0.07	+0.02	+0.001	+0.20	3.491

Only the $2.90 strike price will allow the hog producers to lock in a maximum buying price for his corn needs that meets his objective. He calls his broker and orders him to buy one $2.90 March corn call option and forwards a check for $1,400. ($1,400. = 5,000 bushels x $0.26 + $100.00 brokerage fee). By utilizing the $2.90 call option, the hog producer can now be sure he will not pay more than $3.385 for his corn needs should corn prices rise, but may still buy corn for less if corn prices fall. The following illustrations show the results obtained if prices rise and if they fall.

Example with Corn Prices Rising		
Date	**Cash Corn Market**	**Options Market**
January 5	Will need 5,000 bushels corn on February 25. Expected maximum purchase price of $3.385	Buy one $2.90 March corn call options for $0.26 premium and $0.025 cost. Expected basis = +$0.20.
Feb. 25	Purchase 5,000 bushels of corn locally for $3.80 per bushel.	March corn futures $3.60 Sell one $2.90 March corn call options for $0.70.
Results	Cash price paid - options gain or + options loss = net price paid. = $3.80 = 0.415 = $3.385 per bushel.	Gain or loss = offset premium received - original premium paid plus cost = $0.70 - 0.285 = + $0.415.
Example with Corn Prices Falling		
Date	**Cash Corn Market**	**Options Market**
January 5	Will need 5,000 bushels corn on Feb. 25. Expect maximum purchase price of $3.385.	Buy one $2.90 March corn call option for $0.26 premium and $0.025 cost. Expected basis = + $0.20.
Feb. 25	Cash corn price $2.60	March corn futures $2.40. $2.90 March corn call option is out-of-the-money and expires worthless.
Results;	Cash price paid - options gain or + option loss = net price paid. =$2.60 + 0.285 = $2.885 per bushel	Gain or loss = offset premium received - original premium paid plus cost = 0 - $0.285 = -$0.285.

Chart 2 illustrates the resulting maximum net price of purchasing a March $2.90 corn call option under alternative market prices in late February. Notice that while the minimum price obtainable is not set, it will always be $0.285 more than market price due to the premium paid and marketing costs.

Chart 2



ADVANCED OPTIONS STRATEGIES

Converting forward Cash Contracts to Minimum Prices

One worry of making a forward cash market sale now is that the price will be higher in the future. By selling now, one misses out on the higher price if it should occur. Call options can be used to protect against "selling too soon". The value or premium of a call option will increase as the underlying futures market price rises. Therefore, a call option can be used to "hedge" a sale in the cash market. A call option can thus provide the opportunity to "re-own" a commodity if prices rise.

For example, consider a soybean farmer named Joe, who decides to forward cash contract soybeans during the growing season. Referring back to the soybean option quotes of May 19, 1989 used earlier, we see that November futures prices settled at $6.85 1/4. A local grain elevator offers Joe a cash forward soybean contract for harvest delivery at $6.55 per bushel. Joe knows his costs of production are $6.00 per bushel and wants to sell above that level. The $6.55 cash forward contract allows Joe to make a profit and so he signs agreeing to deliver 1,000 bushels. Joe knows there is a good likelihood that sometime between now and harvest, prices are likely to rise and he wants to be able to take advantage of the higher prices if they do occur. Joe evaluates the available call option contracts and determines his minimum selling price in the manner which follows.

Minimum Selling Prices: Forward Contracts Plus Call Options

Strike Price	Contract Prices	Premiums Price	Interest	Commission	Minimum Selling Price
----------Dollars Per Bushel----------					
$6.50	$6.55	-.56 ½	-.03	-.02 =	$5.93 ½
$6.75	$6.55	-.43 ½	-.03	-.02 =	$6.06 ½
$7.00	$6.55	-.34	-.02	-.02 =	$6.17
$7.50	$6.55	-.26 ½	-.02	-.02 =	$6.24 ½
$7.50	$6.55	-.20 ½	-.01	-.02 =	$6.31 ½

All of the call option strike prices except the $6.50 will allow Joe to sell above his target of $6.00. The decision is which strike price to choose. The lower strike options cost more and reduce the minimum expected selling price. However, since they are closer to the current futures price of $6.851/4, they will gain in value faster if the market were to rise. The "in-the-money" strikes of $6.50 and $6.75 will gain in value penny-for-penny with a rise in the futures price. The higher valued strike prices yield a higher minimum selling price but they will not gain in value as rapidly as the lower strikes until the soybean futures prices approaches their value. Joe weights the alternatives and purchases the "out-of-the-money" $7.25 strike price call option.

Assume that later in the growing season a drought scare occurs and soybean futures prices rise to $8.00 a bushel. The value of the $7.25 call option would rise to at least $8.00 - $7.25 = $0.75. Joe could then offset the option at a gain and increase his minimum selling price. The gain would be the current value of the option less the original premium less the interest and commissions ($0.75 - 0.261/2 - .04 = $0.441/2). Joe would then realize a price for his soybeans of the cash forward contract price of $6.55 plus the options market gain of $0.441/2 for a total of $6.991/2 per bushel. The price could be higher if there was any time value remaining in the option premium.

If prices fail to rise after Joe purchased the call option the premium value of the option would go to zero and he would receive the $6.241/2 per bushel minimum expected selling price. It should be noted that the combination of a call option purchase and a forward cash contract behaves just as the put purchase illustrated earlier. In fact this combination is sometimes referred to as a "synthetic put". The advantage of the synthetic put as compared to the simple put purchase is that both the cash market buyer and basis can be established ahead of the cash market sale. Of course, this can be a disadvantage if forward cash contract basis levels are not favorable or if the flexibility to choose alternative delivery locations is desirable.

Call Options Instead of Storage

Another use of the call option is its use as a substitute for crop storage. Storage of a

commodity incurs costs including interest on the value of the commodity, shrinkage, management and facilities costs. In addition to these costs are the risks of quality loss and price declines. As an alternative to storage, the crop could be sold and income generated. The sold inventory could be replaced with a call option that would increase in value if the futures market price should rise. The decision involves weighing the costs and possible returns of the call option against the costs and possible returns of storage.

As an example, consider farmer Joe who has unpriced soybeans at harvest in November. The current cash price is $6.25 per bushel. He has on-farm storage available, but his neighbor has offered to rent it from him for $0.03 per bushel per month. Joe calculates it costs him $0.10 a bushel per month to hold his soybeans including one percent per month interest, a charge for shrinkage and the three cents he could get if he rented out his bins to his neighbor. To make a profit, the cash price must rise by more than ten cents per month.

The May, 1990 at-the-money $6.50 soybean call option is trading for $0.42 a bushel. Interest and brokerage would cost another four cents for a total cost of $0.46. The May call option provides the right to purchase May soybean futures at $6.50 anytime between now and its expiration in mid-April, a period of about five months.

Joe has at least three alternatives to consider. Sell the soybeans now for $6.25 and avoid all storage costs; store the soybeans and hope the price rises by more than ten cents a month; or sell the soybeans for $6.25 and spend $0.46 cents to "replace" the inventory with a call option. With the latter alternative, Joe receives a minimum net price of $5.79 and would have that money available to pay bills or invest in some fashion.

Now let’s go forward in time five months to the first of April. The following table summarizes the results of the three strategies when prices fall by ten percent, remain steady and rise by ten percent. If prices remain steady, the best choice would have been to have sold at harvest, the second best would have been to have sold and purchased a call option. this will be true when the cost of the option is less than the costs of storage. The worst choice would have been unpriced storage.

If prices fall, the call option is still the second best alternative for while the value of the option has declined, the net price received remains at $5.70 or the harvest cash price less the costs of the option. When prices rise, the option performs just as well as storage. This is true when cash prices track closely with futures prices. In this example, the call option strategy yields slightly more since its cost is less than storage.

Summary of Soybean Storage Strategies

	Sell at Harvest	Storage for 5 months	Sell in cash Buy Call Options
Cash Price in April	----------Net Price Received----------		
$6.25	$6.25	$5.75	$5.79
$5.63	$6.25	$5.13	$5.79
$6.87	$6.25	$6.37	$6.41

In summary, the "sell in the cash and buy a call" alternative to storage will provide greater returns when prices fall. Depending upon the relative costs of the option and actual storage costs, the call option may perform equal to or better than storage when prices remain steady or rise. Even when the two alternatives perform equally well, the return on investment in the call option is greater since only a small portion of the value of the "inventory" is at risk with the option compared with the full value when the crop is actually stored.

'Fencing' In A Price Range

The strategies considered so far have involved only the purchase of options to set floor or ceiling price. These strategies can be modified to set a price range around the market price, providing higher downside price protection at the expense of some of the upside price potential. By simultaneously buying a put and selling a call option, a "fence" can be erected between the put option strike price and the call option strike price, less the net cost of the premium and basis adjustment. The fence keeps out all prices between its borders, both higher and lower, while allowing the net price actually received to "roam" between the fence's boundary.

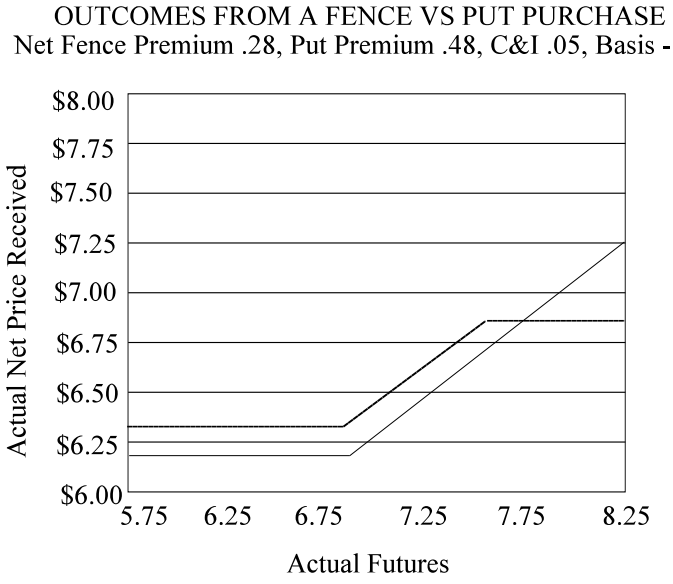
For example, Joe Farmer in example 1 purchased a $7.00 January put for $.48/bu. When the $7.00 strike is adjusted for an expected -.30/bu. basis .05/bu commission and interest as well as the $.48/bu premium paid out, Joe Farmers put purchase sets a floor price of $6.17/bu. By selling a $7.50 call, Joe could collect a $.20 premium, thus reducing his net premium paid to $.28 ($.48 - $.20). Joe's new floor price would be $6.37/bu. with the combined put purchase and call sale. However, because Joe sold a January call option, any January futures price higher than the $7.50 call strike will result in a loss. The loss results from the fact that Joe has sold the right to someone else to call from him at $7.50. If the January futures were $7.70/bu for instance, the call holder could buy from Joe at $7.50 and sell at $7.70 resulting in a $.20 loss for Joe. Thus, a cap bean price is also set at the call's $7.50 strike less the net premium cost, basis adjustment, and interest and commission cost ($7.50 -.28 -.30 - .05 $6.87/bu.).

Chart 3 illustrates Joe Farmer's maximum and minimum net price fence if he combines buying a

$7.00 January put for $.48/bu. premium with selling a $7.50 call for $.20/bu. premium. The results of the fence is also compared to the straight put purchase of the original example (chart 1). In both cases, a $.05/bu. interest and commission charge is assumed.

The advantage of a fence is that it can provide a higher floor price than does the straight put purchase. The floor price is higher by the amount of premium received from selling the call. The disadvantage is that very high prices are "fenced" out by the addition of the call. Also, a call seller may have an initial margin payment and margin call responsibilities: a simple put purchase does not.

Chart 3



GLOSSARY

At-The-Money - An option in which the price of the underlying commodity is equal to the strike price.

Basis - The historical difference between the local cash price and the price of the near month futures contract.

Call Option - The right, but not the obligation, to buy the underlying commodity (a futures contract) at a stated price during a specified time period.

Exercise - The process by which the option buyer converts the option into a futures position.

Exercise Price - Same as strike price.

Expiration Date - The date at which the option buyer loses the right to exercise the option.

Futures Contract - The agreement to buy and receive or sell and deliver a commodity at a future date for a specified price.

Hedging - The sale (or purchase) of futures against the physical commodity or its equivalent as protection against a price decrease (or increase).

In-The-Money - An option in which the price of the underlying commodity exceeds the strike price of a call or is below the strike price of a put. An in-the-money option has intrinsic value and can be exercised at a profit.

Intrinsic Value - The portion of the premium that reflects the positive difference between the strike price of the option and the price of the underlying commodity (futures contract). Intrinsic value exists when the price of the underlying commodity exceeds the strike price of a call or is below the strike price of a put.

Long - One who has bought a futures contract.

Margin - The amount deposited by buyers and sellers to insure performance on futures contracts. Option writers must also maintain a margin deposit account. If a futures or option writer's position is losing money, requests for additional money to maintain the margin deposit levels are termed "margin calls."

Offset - The liquidation of an options position by an equal and opposite transaction.

Out-of-The-Money - An option in which the price of the underlying commodity is below the strike price of a call or exceeds the strike price of a put. An out-of-the-money option has no intrinsic value and cannot be exercised at a profit.

Premium - The money an option buyer pays an option seller for an option.

Put Option - The right, but not the obligation, to sell the underlying commodity (a futures contract) at a stated price during a specified time period.

Short - One who has sold a futures contract.

Strike Price - The price at which the option can be exercised and the underlying commodity exchanged. It is the price at which the futures position will be established if exercised.

Time Value - The amount by which an option's premium exceeds its intrinsic value. It reflects the fact that the longer the time until the expiration of the option, the greater the probability of the option attaining intrinsic value. If an option has no intrinsic value, its premium is entirely time value.

Writer or Grantor - The party that sells an option.

Bulletin 921 /Revised April, 1990

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