

# Basics of Live Cattle Options Trading



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The option market presents a challenge to many people in that the terminology differs from that of futures markets. It is imperative that an individual understands what he or she wants to accomplish with options and can communicate those needs to their broker. If an individual does not understand the difference between puts and calls and buying and selling of options, the individual can be disappointed.

This Extension Facts discusses what live cattle options are and two common uses of live cattle options. Also, a glossary of terms and definitions is included. This Extension Facts does not review futures markets and hedging. For more information see Extension Facts 434 and 436.

## History of Options

The trading of options in the United States has a long and colorful history. Trading in options on domestic agricultural commodities was banned in the United States in 1936. Prior to 1936, agricultural commodity options were traded by U.S. commodity exchanges and option dealers. An attempt to manipulate the wheat market in 1933 resulted in political pressure that led to the 1936 ban. In the mid-1970's, trading in options, tied to London commodity futures contracts, flourished in the U.S. Abuse of the London option market led the Commodity Futures Trading Commission (CFTC) to suspend most option trading in the U.S. in 1978. These scandals resulted largely from failure to supervise and regulate trading on options.

In September 1981, the CFTC approved a three-year pilot program in trading of gold, T-bonds and sugar options. In January 1983, President Reagan signed the Commodity Trading Act of 1982 which lifted the previous ban on trading agricultural commodity options. In 1983, the CFTC authorized each U.S. commodity exchange to propose options on two agricultural commodity futures contracts being traded on that exchange. The Chicago Mercantile Exchange (CME) selected the live hog and live cattle contracts. Trading in both options began in October 1984.

## The Commodity Option Market

The commodity option market is simply a market in which producers may purchase the right but not the obligation to buy or sell a commodity futures market contract at a specific price before a specific time expires. Agricultural options simply provide *price insurance* for producers. Options allow the producer to *insure* against declines while taking advantage of price increases.

Buyers in the option markets have the *right* but not the *obligation* to exercise their option. One of the unique attributes of options is that the buyer has the legal right to use (exercise) the option but is not obligated to use it.

## Types of Options

There are two different types of options. The two types are *calls* and *puts* and they offer opposite pricing alternatives. A *put* option gives the buyer the right to sell a futures contract at a given price level (strike price), on or before the expiration date. The *call* option gives the buyer the right to buy a futures contract at a given price level (strike price), on or before the expiration date.

Puts and calls are separate option contracts. They are *not* the opposite sides of the same transaction. For every buyer of a put option, there is a seller (or writer) of the same put option. The same is true for call options.

The *buyer* of a put or call option has three possible alternatives after the option has been purchased. The buyer's alternatives are: (1) let the option expire (do nothing); (2) offset the option at the current premium value; or (3) exercise the option. The majority of option buyers will offset the option at expiration or prior to expiration and receive the current premium value. Exercising the option (alternative 3), would be used if the buyer of the option wanted a position in the underlying futures market.

There are also three alternatives for the individual (writer) who sells an option. The option may (1) expire; (2) be offset at the current premium value; or (3) be exercised by the buyer, which causes the writer to accept a futures position at the specified (strike) price. The *buyer* of an option is the only person who can choose to exercise the option.

## Option Premiums

The major cost associated with the option market for the *buyer* of options is the premium. The premium is known when the option is purchased. The *buyer* of options has *no*

margin calls as in using the futures markets to hedge livestock. Supply and demand in the marketplace will ultimately determine option premiums. Option buyers will be willing to pay premiums to acquire the rights associated with the particular option. Option sellers (writers) receive those premiums as compensation for the risk associated with writing the option.

As previously stated, supply and demand will ultimately determine option premiums. However, two major factors interact to affect the premium levels. The first factor is the difference between the strike price of the option and the price of the underlying commodity. The second factor is the length of time before the option expires.

The portion of the premium attributed to the difference between the strike price and the price of the underlying commodity is called *intrinsic value*. For example, a February cattle put option with a strike price of \$62.00 and a February Live Cattle futures contract at a price of \$60.00, gives the option \$2.00 of intrinsic value. The right to sell \$62.00 February cattle when February Live Cattle are at \$60.00 will be worth at least \$2.00. As long as the market price of February Live Cattle is below the strike price of a *put* option, the option will have intrinsic value. A *call* option has intrinsic value as long as the underlying commodity is priced above the strike price of the option.

The second factor that influences option premiums is the length of time before the option expires. Option premiums will usually decrease as the length of time until expiration decreases. The longer the time period until expiration, the option seller (writer) demands a greater premium to assume the larger risk of writing a longer term option.

### Option Expiration

Another significant difference in options and the existing futures market is the expiration date. A futures contract generally stops trading on about the 20th of the contract month. For example, February Live Cattle trade until approximately February 20th. Options stop trading ten business days before the first delivery day of the underlying futures contract. An option on February Live Cattle will stop trading approximately the middle of January. The producer using options needs to be aware of this, because the difference in expiration dates may affect the option month he picks for price protection.

### Putting Options To Use

Not all potential uses of live cattle options are discussed here. When the option market, futures market, and cash market are considered, many combinations are possible. The discussion here is limited to the following uses: (1) buying put options; and (2) writing call options.

### Buying Put Options

Buying put options is the most straight-forward options strategy for someone seeking protection from price declines. The following is the September 24, 1985 option

premium quotes and the February Live Cattle close. Similar quotes can be found daily in the *Wall Street Journal* and most major city newspapers.

#### Live Cattle

Strike Price	Feb.-Call	Feb.-Put
\$56	\$4.25	\$1.50
58	3.10	2.35
60	2.20	3.37
62	1.50	4.62
64	1.00	—
66	.65	—
February Futures Close \$58.80		

From the quoted premiums, you can see that the individual has four possible strike prices to choose from (\$56-\$62). Which strike price is the best buy? The individual wanting price protection is the only one who can answer that question. The following is how a producer determines the *Minimum Selling Price* the option market is offering for cash cattle.

Strike Price	Premium	Basis	Minimum Selling Price
\$56	\$1.50	\$2.00	\$52.50
58	2.35	2.00	53.65
60	3.37	2.00	54.63
62	4.62	2.00	55.38

Which strike price should the producer buy? It depends on the producer's need for price insurance, the breakeven price of his cattle, and his price expectations. It is possible that the option market is not offering a price that will cover the producer's breakeven price for his cattle. Buying a \$58.00 put option gives the producer the right to sell his cattle at \$58.00, less the premium, and less the expected basis. In this example, the \$58.00 strike price is offering a producer a minimum selling price of \$53.65 for his cattle. Assume the producer decides to buy a February put option at a \$58.00 strike price for price insurance on cattle he expects to market in January.

Cattle prices can be the same, higher, or lower in January when the cattle are ready for slaughter. The following table gives the outcome at different cash cattle prices in January for the producer who bought a \$58.00 February put option.

If the February Live Cattle Futures is \$58.00 or below when a producer sells the cattle in mid-January and the basis estimate is correct, the producer will receive a net price of \$53.65 for his cattle. The \$53.65 is the same as the *minimum selling price* we previously computed. Even if cattle prices drop to \$40.00, the producer who bought the \$58.00 put (the right to sell \$58.00 cattle) will receive \$53.65 for his or her cattle. The only reason he or she would

February Futures Price in Mid January	Basis	Premium	Minimum Value of Put at Expiration <sup>1</sup>	Net Price Received
\$66	\$-2.00	\$-2.35	\$-0-	61.65
64	-2.00	-2.35	-0-	59.65
62	-2.00	-2.35	-0-	57.65
60	-2.00	-2.35	-0-	55.65
58	-2.00	-2.35	-0-	53.65
56	-2.00	-2.35	2.00	53.65
54	-2.00	-2.35	4.00	53.65
52	-2.00	-2.35	6.00	53.65

<sup>1</sup> This assumes the value of the option at expiration equals the difference in the strike price (\$58) and the futures price shown in the table when the option has intrinsic value. This also assumes no transaction costs (for example, brokerage fees.).

receive a different amount is if the producer did not correctly anticipate the basis. In this example it is assumed that the expected and actual basis are the same. However, this is very seldom the case.

If the February Live Cattle Futures go to \$66.00, the producer receives \$61.65 for his cattle. The \$58.00 put option expires or is not exercised and the producer receives the benefit of the cattle price increase. If the producer had known for sure what cattle prices would be in January, he or she could have received a higher cash price since buying a put option will always be the second best alternative. If the producer knew the February Live Cattle price would be \$66, he or she would not have needed the price protection. The producer would have received \$64 for the cattle, assuming a \$2.00 basis. This is \$2.35 more than the producer received when the put option was bought.

If the February Live Cattle Futures price drops to \$52.00, the producer would have received a higher net price for the cattle by hedging them. A hedge would have yielded a \$56.00 price (\$58.00 - \$2.00 basis) or \$2.35 more than the producer received when a \$58 put was bought.

Buying the put allows the producer to take advantage of a rising market, but gives the producer price protection in a falling market. The cost of this is the premium on the put option of \$2.35. If a producer knew with certainty which way the market would move, he or she could make a better marketing decision than using the option market. Most producers do not know which way the market will move, and many cannot afford the risk of a falling market.

### Writing a Call

Writing calls is another way in which options can be used by cattlemen to improve overall profitability of cattle feeding. Writing calls *does not* protect a cattle feeder from a large drop in prices, but it does afford some price protection while generating some income. Writing a call is like selling insurance, in that the seller receives the premiums, but takes the risk of an unfavorable price movement.

If a producer decides that writing a call is the best method to price his or her cattle, he or she must first decide which strike price is the best alternative. The producer must

know his or her production costs to determine the best strike price. The following is how a producer determines the *Maximum Selling Price* the option market is offering if the producer decides to write a call.

Strike Prices	Premium	Basis	Maximum Selling Price
\$56	\$4.25	\$2.00	\$58.25
58	3.10	2.00	59.10
60	2.20	2.00	60.20
62	1.50	2.00	61.50
64	1.00	2.00	63.00
66	.65	2.00	64.65

Assume a producer decides to write the \$58.00 call. The producer receives the \$3.10 premium, but will have to maintain a margin account and make margin calls in the case of adverse price moves. In this case, an adverse price move would be an increase in cash cattle prices, since the writer of the call has given the buyer of the call the right to buy cattle at \$58.00.

Cattle prices can be the same, higher, or lower in January when the cattle are marketed. The following table gives the outcome at different cattle prices in January for the producer who sells (writes) a \$58.00 February call.

February Futures Prices in Mid January	Basis	Premium	Gain or Loss From Call Option <sup>1</sup>	Net Price
\$66	\$-2.00	+\$3.10	\$-4.90	\$59.10
64	-2.00	+3.10	-2.90	59.10
62	-2.00	+3.10	-.90	59.10
60	-2.00	+3.10	+1.10	59.10
58	-2.00	+3.10	+3.10	59.10
56	-2.00	+3.10	+3.10	57.10
54	-2.00	+3.10	+3.10	55.10
52	-2.00	+3.10	+3.10	53.10

<sup>1</sup> The gain or loss from options is computed from the Futures Price minus the strike price plus the premium for in the money prices.

As can be seen from the table, the producer who writes calls has a different situation than the producer who buys put. The call writer sets a maximum price he or she will receive for their cattle, but it does not provide downside price protection other than the value of the premium received. Regardless how high February cattle futures move, the increase in the cash price will be offset by the loss in the option market. A producer can not receive the advantage of higher cattle prices and does not establish a minimum selling price for his or her cattle.

Why would a cattle feeder consider writing a call instead of buying puts? The cattle feeder may think the chances are low of prices dropping, and believes he or she can generate additional revenue by writing calls against the cattle already on feed.

## Summary

Options offer producers many new pricing alternatives. A producer needs to understand the options market before he participates in the market. Options are a form of price insurance for the buyers of options. Options provide a means to increase income for the writer of options. There are advantages and disadvantages to both writing or buying options. But as long as there is risk associated with feeding cattle, producers must consider the option market as a viable alternative for pricing cattle.

## Option Terms and Definitions

**Assignment**—notice to an option writer that the option which he has written has been exercised by an option holder. Assignments are made by the clearing corporation to the brokerage firm and by the brokerage firm to individual option writers.

**At-the money**—an option whose strike price is the same as the current market price of the underlying futures contract.

**Call option**—an option that gives the option buyer the right to purchase (go “long”) the underlying futures contract at the strike price on or before the expiration date.

**Clearing corporation**—the exchange Clearing Corporation, whose function it is to clear (match) all purchases and sales and to assure the financial integrity of all futures and option transactions on that particular exchange. Once trade has been cleared, the Clearing Corporation becomes the buyer to every seller and seller to every buyer.

**Closing purchase**—an option purchase that liquidates (offsets) the position of an option writer (seller). It involves the purchase of an option identical in strike price and expiration to the option originally sold.

**Closing sale**—the sale of an option with the same terms as the original option purchase. A closing sale results in the liquidation of the position of the option buyer (holder).

**Covered option**—an option position in which the option writer has an opposite cash or futures position.

**Exercise**—the action taken by the buyer (holder) of a call who wishes to purchase (go “long”) the underlying futures contract or by the buyer (holder) of a put who wishes to sell (go “short”) the underlying futures contract.

**Expiration date**—the last day on which an option may be exercised. Options expire on a specified date during the preceding month. An option on a March futures contract expires in February, but it is nonetheless referred to as a March option because the exercises would lead to the creation of a March futures position.

**Futures contract**—a contract traded on a futures exchange for the delivery of a specified commodity at a future time. The contract specifies the item to be delivered and the terms and conditions of delivery.

**Hedge**—the purchase or sale of offsetting positions in the cash, futures, and options markets to achieve protection against an adverse price change.

**In-the-money**—an option that has intrinsic value. A call is in-the-money if the current futures price is above the

option strike price. A put is in-the-money if the current futures price is below the option strike price.

**Intrinsic value**—the dollar amount that could be realized if an option were to be currently exercised. See “in-the-money”.

**Long**—the position created by the purchase of a futures contract or option if there is no offsetting position.

**Margin**—money which must be deposited to provide protection to both parties to a trade. The exchange establishes the minimum margin amount. Brokerage firms often require margin deposits greater than exchange minimum. Buyers of options do not have to post margins since their risk is limited to the option premium. Sellers of options (writers) must post margins.

**Margin calls**—additional funds that a person with a futures position or the writer of an option may be called upon to deposit if there is an adverse price change or if margin requirements are increased. Buyers of options are not subject to margin calls but sellers are.

**Naked option**—an option position in which the option holder or writer has no opposite cash or futures position.

**Opening purchase**—the purchase of a call or put that establishes a new position.

**Opening sale**—the sale (writing) of a call or put that establishes a new position.

**Option buyer**—the purchaser of a call or a put. Also referred to as **option holder**. An option purchase may be in connection with either an opening or a closing transaction.

**Option grantor**—see **option writer**.

**Option holder**—see **option buyer**.

**Option writer**—the seller of a call or a put in connection with either an opening or closing transaction. Also known as **option seller** or **option grantor**.

**Out-of-the-money**—a put or call which has no intrinsic value, that is, a call whose strike price is above the current futures price or a put whose strike price is below the current futures price.

**Premium**—the price of an option—the sum of money, arrived at in the competitive market (trading pit of the exchange), that the option buyer pays and the option writer receives for the rights granted by the option.

**Put option**—an option that gives the option buyer the right to sell (go “short”) the underlying futures contract at the strike price on or before the expiration date.

**Short**—the position created by the sale of a futures contract or option if there is no offsetting position.

**Strike price**—the price at which the holder of an option may exercise his right to buy (in the case of a call) or sell (in the case of a put) the underlying futures contract. Also known as **exercise price**.

**Time value**—any amount by which an option’s premium exceeds its intrinsic value. If an option has no intrinsic value, its premium is entirely time value.

**Underlying futures contract**—the specific futures contract that may be bought or sold by the exercise of an option.

