

## Minimum Price Verses Call Option Contracts

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Many elevators are offering the traditional marketing alternatives plus a minimum price contract. With wheat prices above the government loan rate, minimum price contracts or selling wheat and buying a call option contract may be valuable marketing alternatives. Therefore it is important for producers to investigate minimum price contracts and buying call option contracts.

Both minimum price and call option contracts may be used to insure against higher prices. Insurance against higher prices may be desirable when the commodity has been sold and there is a possibility that prices may increase.

Before producers sign a minimum price contract, they should understand how the contract works and how buying a call option may give them a higher net price than the minimum price contract. In reality, using a minimum price contract or buying a call option contract are essentially the same action.

Both contracts allow producers to capture price increases without taking price risk. To use either a minimum price contract or to buy call option contracts, producers need to understand the relationship between call option contracts and underlying futures contracts. Producers must also realize that there is a cost with both contracts.

### Futures Option Contracts

Futures options are related to futures contracts. A futures option contract is a contract that gives the buyer the choice (right) to take a position in the underlying futures contract. If a producer buys a Kansas City Board of Trade (KCBOT) December call option contract, the producer has the choice (right) to buy (long position) a KCBOT December wheat futures contract.

The price at which the producer has the choice (right) to buy is the strike price. The strike price is selected by the producer when the call option is purchased. Thus, the strike price is specified in the option contract.

A buyer of an option contract can not be forced to take the underlying futures position. The buyer has the choice. If it is profitable to take the position, the buyer will take the position. If its not profitable to take the underlying futures position, the buyer will not do it. And, no one can make the buyer do anything!

The underlying contract is the futures contract that has the same title as the option contract. Minimum price contracts specify a futures call option contract. For example, if a December Wheat call option is purchased or specified in a minimum price contract, the underlying futures contract is the December wheat contract.

An important point is that the option contract, thus the minimum price contract, expire about one month before the underlying futures contract. If a December call option is selected, the minimum price contract will expire about November 20th.

### Minimum Price Contract

A minimum price contract is an agreement between a grain buyer and the producer. After a minimum price is agreed upon, ownership of the grain is transferred from the producer to the buyer. The minimum price is paid to the producer. If the price of the underlying futures contract increases above the selected strike price, the producer may be paid the increase.

Minimum price contracts are normally in increments of 1,000 bushels, but may be in 5,000 bushel increments. After the contract is signed, the producer will not receive less than the posted cash price minus a premium and minus a small fee. The fee is normally one cent per bushel. The premium will depend on the selected futures option contract and strike price

The steps in a minimum price contract are as follows:

1. producer sells wheat to a buyer for the posted cash price,

2. producer selects a futures call option contract,
3. producer selects a strike price for the futures call option contract,
4. producer and buyer sign a minimum price contract,
5. a check is given to a producer for the posted cash price minus the premium associated with the selected contract and strike price and a fee,
6. producer watches the underlying futures contract price,
7. producer may choose to exercise the minimum price contract before the selected call option expires, and
8. grain buyer pays the producer the amount that the underlying futures contract price is greater than the selected strike price.

Minimum price contracts are simple to use. The most difficult parts are selecting an option contract, selecting a strike price, calculating the minimum price, and deciding when to exercise the contract. Exercising requires that the producer stay aware of the underlying futures contract price.

### Call Option Contracts

A call option wheat contract gives the buyer the right (choice) to buy an underlying futures contract. Call options may increase in value as futures prices increase. Thus, if a call option has been purchased and prices increase, the buyer may capture part of the price increase.

Option contract premiums are comprised of two values—intrinsic and time value. Intrinsic value is the amount the underlying futures contract price is above the strike price. Time value is the amount the premium is greater than the intrinsic value. For example, if the premium for a 260 cent December call option is 20.6 cents per bushel and the December futures contract price is 268 cents per bushel, the intrinsic value is eight cents (268 - 260) and the time value is 12.6 cents per bushel (20.6 - 8). Note that with minimum price contracts, only the intrinsic value of the call is paid at the time of final pricing. More on this point later.

KCBOT wheat option contract strike prices are in ten cent per bushel increments and 5,000 bushel contracts. The option contract buyer selects the strike price and pays the premium (Table 1). On July 1, 1987, strike prices for the December call option ranged between 250 and 310 cents per bushel. A buyer could have selected to buy a December wheat futures contract at any of the strike prices. If the 260 cent strike had been selected, the premium that was determined by auctioning the 260 call option contract in the KCBOT pit was 20.6 cents per bushel.

Option contracts may be purchased for each of the five KCBOT or Chicago BOT (CBOT) wheat futures contracts. The futures contracts are March, May, July, September, and December. Remember that the option contract expires one month prior to the underlying futures contract.

**TABLE 1. Kansas City Board of Trade December Wheat Call Options Premiums: 1987<sup>a</sup>**

STRIKE PRICE	JULY 1	AUG 3	SEPT 1	OCT 1	NOV 1	NOV 20
	(268)	(269)	(281)	(291)	(286)	(286)
250	25	22	32	41.5	36	36
260	20.6	18.4	23	31	26	26
270	15	13.4	16.4	22.2	16.2	16
280	12	8.4	12	16	8.2	6
290	9.2	6.5	7	8	3.4	0
300	6.6	4	4.8	3.6	1.4	0
310	4.5	2.9	2.5	1.8	0.6	0

<sup>a</sup>The Kansas City Board of Trade December wheat futures price is shown in parenthesis.

Option contracts are for 5,000 bushel wheat futures contracts. Thus, call options may only be used in increments of 5,000 bushels.

The steps to use a KCBOT or CBOT wheat call option contract to establish a minimum price are:

1. producer sells wheat to a buyer for the posted cash price,
2. a check is given to a producer based on the posted cash price,
3. producer sign contracts to set up a brokerage account with a broker,
4. producer selects a futures call option contract,
5. producer selects a strike price for the futures call option contract,
6. producer watches the futures contract option contract premium,
7. if the option contract has any value, producer offsets or exercises the call option contract before the selected call option expires, and
8. if the option has any value (premium), broker pays the producer this amount.

Note that these steps are nearly the same as with a minimum price contract. The only differences are that the premium and fee are paid to the broker instead of the grain buyer, the producer captures the call option premium rather than the amount the futures contract is greater than the selected strike price, and the broker pays the producer before the contract expires.

### Minimum Price Versus Buying a Call Option Contract

The 1987 wheat crop year will be used to compare the returns from a minimum price contract with buying a call option contract. Presume that on July 1, 1987, a producer had 7,000 bushels of wheat. The elevator posted cash price was \$2.30 per bushel. And, the producer wanted to protect the price through November. Thus, a December call option would be selected.

A December contract was selected because the contract expired on November 20, 1987. Thus this contract offered protection during the period desired. If additional price protection was desired, the call option contract could be exercised or sold to capture any remaining value. Then a March call option could be purchased. A March option contract would protect prices into late February.

The premiums for each strike price between 250 and 310 cents per bushel are shown in Table 1. Lower strike prices give more insurance against higher prices. Thus, premiums are higher for lower strike prices.

Selecting a strike price is not easy. Lower strike prices offer more protection but they cost more. Premiums ranged from 25 cents per bushel for a 250 cent strike price to 4.5 cents for a 310 cent strike price.

A good place to start is with the strike price that is "at-the-money." The "at-the-money" strike price is the strike price that is equal to the underlying futures contract price. On July 1, 1987, there was not a strike price at the money. A 270 call option contract would be closest to "at-the-money." Actually, the 270 call is "out-of-the-money" by two cents. This means that the futures price is two cents less than call strike price.

On July 1, 1987, the premium for a KCBOT 270 December wheat call option contract was 15 cents per bushel. A 290 December call premium was 9.2 cents per bushel and the 250 premium was 25 cents per bushel.

If a 270 KCBOT wheat call option contract is selected, the minimum price from a minimum price contract would be \$2.14. The minimum price from buying a call option would be \$2.14 (Table 2).

For both a minimum price and buying a call option contract, a minimum price of \$2.14 per bushel has been established. It must be noted that all 7,000 bushels of wheat may be covered with a minimum price contract, but only 5,000 bushels may be covered when buying a call option. Thus, the accounting is slightly different for each contract. With a minimum price contract, the producer would receive a check for \$14,980 (\$2.14 x 7,000 bushels) and would have a minimum price contract for 7,000 bushels.

When buying a call option contract, the producer would receive a check for \$16,100 (\$2.30 x 7,000 bushels). A 5,000 bushel December call option, costing \$800 (\$0.15 + \$0.01 = \$0.16; \$0.16 x 5,000 bushels), would be purchased through a broker. The minimum return would be \$15,300, \$320 higher than with a minimum price contract.

**TABLE 2. Minimum Price Contract Versus Buying a Kansas City Board of Trade 270 December Wheat Call Option Contract.**

	Minimum Price Contract	Call Option Contract
	(Cents Per Bushel)	
Sell Wheat	230	230
270 Call Premium	15	15
Fee	1	1
Minimum Price	214	214

Table 3 shows the value of a minimum price contract purchased on July 1, 1987. To determine the net price received, these values would be added to the minimum price. For example, a 270 call option is used to establish a 214 cent minimum price contract. If the contract was exercised on October 1, 1987, the net price would be 236 cents (214 + 21).

**TABLE 3. Value of a Minimum Price Contract<sup>a</sup>**

STRIKE PRICE	JULY 1	AUG 3	SEPT 1	OCT 1	NOV 1	NOV 20
	(268)	(269)	(281)	(291)	(286)	(286)
250		19	31	41	36	36
260		9	21	31	26	26
270		0	11	21	16	16
280		0	0	11	6	6
290		0	0	1	0	0
300		0	0	0	0	0
310		0	0	0	0	0

<sup>a</sup>Value is determined by the amount that the futures price, shown in parenthesis, is above the strike price.

When a call option is sold to offset a previous call option purchase, the entire premium is received. Thus, the premiums presented in Table 1 may be used to determine the call option price increase.

With a 270 strike price on the underlying KCBOT December contract, the net price increases from a 214 minimum price contract on August 3 were zero, 11 cent on September 1, 21 cent on October 1, and 16 cent on November 1 and November 20. The net price increases from a 270 call option were 13.4 cents on August 3, 16.4 cent on September 1, 22.2 cent on October 1, 16.2 cent on November 1, and 16 cent on November 20 (Table 1). Note that it is assumed that a 270 December call option was purchased on July 1 and sold on any of the listed dates.

The net price and total return received from a minimum price contract and a call option contract are shown in Table 4. Wheat could have been sold at harvest for \$16,100 (\$2.30 x 7,000 bushels).

The results shown in Table 4 do not compare using a minimum price contract or buying a call option with simply selling the wheat. If wheat had been sold on July 1, producers would have received \$16,100. A minimum price contract cost \$1,120 and a call option contract cost \$800. It was October 1 before the minimum price contract returns exceeded a cash sell. And, it was after September 1 before the producer was ahead when buying a call option contract.

The results shown in Table 4 also show that the producer would have been better off buying a call option than a minimum price contract. One reason is that the analysis assumed that the producer bought a minimum price contract for all 7,000 bushels. The results would have been different if 3,000 bushels had been sold and 4,000 bushels would have been placed under a minimum price contract.

**TABLE 4. Net Price and Total Return From 214 December Minimum Price and 270 Call Option Contracts<sup>a</sup>.**

Date	Minimum Price <sup>b</sup>		Call Option <sup>c</sup>	
	Net Price	Total Return	Net Price	Total Return
July 1	\$2.14	\$14,980	\$2.186	\$15,300
Aug 3	\$2.14	\$14,980	\$2.284	\$15,970
Sept 1	\$2.25	\$15,750	\$2.304	\$16,120
Oct 1	\$2.35	\$16,450	\$2.362	\$16,410
Nov 1	\$2.30	\$16,100	\$2.302	\$16,110
Nov 20	\$2.30	\$16,100	\$2.30	\$16,100

<sup>a</sup>Wheat return from a harvest sell would have been \$16,100.  
<sup>b</sup>7,000 bushels were sold under a minimum price contract for a \$2.14 net price. Any amount the underlying December futures contract price is above the 270 strike price may be paid to the producer.  
<sup>c</sup>2,000 bushels were sold for \$2.30 per bushel and 5,000 bushels were sold for a net \$2.14 plus any value in the call option premium.

Tables 5 and 6 show that the lower the strike price (more in-the-money), the less the difference between buying a call option and using the minimum price contract. For example, on October 1, the return from a 290 strike price was seven cents higher with a call option than a minimum price contract. But with a 270 strike price, the difference was only 1.2 cents per bushel.

The highest net price would have been obtained by accepting a price in early October or late November. Also, the highest net price would have been obtained by buying the lowest strike price. For example, on October 1, the price increase for a 250 cent strike price was 41.5 cents per bushel (Table 1). The net price increase for a 310 strike was 2.5 cents per bushel.

The premium and fee paid to the broker is almost identical to the premium and fee paid to the grain buyer. *Margin accounts are not part of either buying a call option or using a minimum price contract.* The most that will be required in either marketing method is the premium and fee.

The decision to use minimum price or call option contracts is not complicated. However, the decision process is time consuming and requires pushing a steady pencil. Each method has its advantages and disadvantages. The key is to get all the facts and push the pencil before a decision is made.

The second table (Table 6) shows how much the net price received would have increased compared to storing and selling the wheat at a later date. Storage and interest cost was four cents per bushel per month. For example, on November 20, the net price received, via a 270 minimum price contract, would have been 20 cents per bushel higher than storing wheat and selling cash wheat on November 20.

**TABLE 5. Net Call Return Greater Than Net Minimum Contract Return.**

STRIKE PRICE	JULY 1	AUG 3	SEPT 1	OCT 1	NOV 1	NOV 20
	(268)	(269)	(281)	(291)	(286)	(286)
250		3	1	0.5	0	0
260		9.4	2	0	0	0
270		13.4	5.4	1.2	0.2	0
280		8.4	12	5	2.2	0
290		6.5	7	7	3.4	0
300		4	4.8	3.6	1.4	0
310		2.9	2.5	1.8	0.6	0

**TABLE 6. Net Return From Minimum Contract After Storage and Interest<sup>a</sup>.**

STRIKE PRICE	JULY 1	AUG 3	SEPT 1	OCT 1	NOV 1	NOV 20
	(268)	(269)	(281)	(291)	(286)	(286)
250		-2	14	28	27	30
260		-7.6	8.4	22.4	21.4	24.4
270		-11	4	18	17	20
280		-8	-3	11	10	13
290		-5.2	-1.2	3.8	6.8	9.8
300		-2.6	1.4	5.4	9.4	12.4
310		-0.5	3.5	7.5	11.5	14.5

<sup>a</sup>Storage and interest costs were four cents per bushel per month.

## Conclusions

Two additional tables need to be evaluated. The first table (Table 5) summarizes and compares the returns from a minimum price contract with the returns from buying a call option. This table shows that net price increases are higher with buying call options than with minimum price contracts. The reason is that with a minimum price contract, only the difference between the underlying futures contract price and the strike price is paid. Premiums are normally higher than this difference. Producers that buy and sell call option contracts will receive the full premium. Given equal bushels were sold with a minimum price contract as with buying a call option contract, the net price difference ranged between zero at expiration to 13.4 cents on August 3, 1987.



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