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Evaluating Options vs. Futures Contracts

This is number four in a series of six NebGuides on agricultural options. It explains how to evaluate options vs futures contracts.

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Options and futures contracts are similar. Both represent actions that occur in the future. Futures markets are contracts to either accept or deliver the actual physical commodity, while an option contract is a contract on the underlying futures contract. Options contracts give the farmer the right, but not the obligation, to buy or sell an underlying commodity. This underlying commodity is a futures contract. Due to these similarities and the fact that options are based on a futures contract, producers may question the value of using an options contract. To make a decision between using a futures contract or an options contract, producers need to evaluate both alternatives.

Options vs. Futures Contracts

An evaluation investigating advantages and disadvantages of futures and options contracts is necessary.

Advantages of Options

1. No margin calls.
2. Ability to take advantage of favorable price moves.
3. Limited risk. The maximum potential loss is known when the option is purchased.

Disadvantages of Options

1. Must pay a premium.
2. Because of the "price insurance" (premium) associated with options, they may yield a lesser return than other marketing alternatives in certain market situations.
3. If an option is exercised, a futures position, with all its financial and contract obligations, is

assumed.

4. Option premiums may not move penny for penny with futures contract moves "Delta" effect.

Advantages of Futures Contracts

1. If price moves are favorable, the producer realizes the greatest return with this marketing alternative.
2. No premium charge is associated with futures market contracts.

Disadvantages of Futures Contracts

1. Subject to margin calls.
2. Unable to take advantage of favorable price moves.
3. Net price is subject to Basis change.

To make a true comparison between a futures contract and an options contract, the producer should set up potential price scenarios based on his outlook of future market trends.

Different Market Scenarios

Uptrending Market

Market Situation: Suppose, after spring planting, a farmer decides to use a forward pricing technique to market a portion of his corn crop. Due to wet, cold weather in Russia, plantings have been severely delayed with some speculation that planted acreage is down 10% from year ago levels. In addition, the value of the U.S. dollar has eased over the winter months with hope that buying patterns will shift favorably toward U.S. agricultural products.

Although the farmer has a bullish market outlook, we would like to lock in a set price for corn. Let's take a look at a hedging strategy and then an options strategy.

Alternative 1: Hedging. On May 31, the December corn futures were trading at \$2.50. Although the farmer feels prices may move higher than \$2.50, a hedge is placed to guard against the risk of a price decrease. The local spot price is \$2.30. On December 1, the farmer closes the futures position by buying back the December contract which is now trading at \$2.65. Grain is delivered to the local elevator where the spot price is \$2.42. The farmer's transactions and returns:

Hedging Price Increase

10,000 bu #2 yellow corn

May 15 December Corn S 2.50

Dec 1 B 2.65

--Futures Profit or (Loss) (-.15)

Dec 1 Spot Price 2.42

--Futures Profit or (Loss) (-.15)

-----Net Return 2.27

Before contrasting this with an options contract, let's look at the advantages and disadvantages of this

marketing decision.

Advantages: Even though prices trended against the producer's position, an assured price for the corn crop was secured. Loss in the futures market was nearly completely offset by the gain made in the local spot market. ($2.42 - 2.30 = \$0.12$ gain in spot market vs. $-.15$ loss in the futures market.)

Disadvantages: Due to the nature of a futures contract position, the producer was unable to take advantage of any price increases. As prices traded above the 2.50 contract position, margin calls also had to be met.

Alternative 2: Options Contract. Suppose an options contract was used instead. On May 15 these were the strike prices and premium values for a December corn put option.

Strike Price (\$/bu) Premium (1/8 /bu)

\$2.30	1/4
2.40	5/8
2.50	4
2.60	11 5/8
2.70	21 3/4

The producer bought the 2.50 put option for a four cent premium expense. With futures prices trading at 2.65 on December 1, the producer allowed his put option contract to expire.

Options - Price Increase

May 15	Put Option December Corn	
	--Strike Price	2.50
	--Premium	.04
Dec 1	Futures December Corn	2.65
	--Spot Price	2.42

Actions: Allows contract to expire and sells corn locally.

--Spot Price	2.42
--Less Premium	-.04
----Net Price	2.38

Advantages: Buying a \$2.50 put option in May yields a net price of \$2.38 when December futures are \$2.65 at harvest. Futures prices rose above the \$2.50 strike price, and the farmer chose to let the option contract expire. This strategy allows the producer to take advantage of the higher local cash price without having an offsetting loss of \$.15 cents in the futures market. The farmer was also not subject to margin calls when futures prices rose above his \$2.50 strike price.

Disadvantages: The producer paid four cents premium on May 15 which must be deducted from the receipts of the local cash sale.

Summary - Price Increase. In an uptrending market, an options contract is most profitable. In the example, the option alternative yielded \$2.38/bu, while the futures alternative returned \$2.27/bu. The difference in net return between the two alternatives ($\$2.38 - \$2.27 = \$0.11$) is associated with the \$.15 loss on the futures contract in the hedging alternative less the four cent premium expense associated with the option contract ($\$.15 - \$.04 = \$0.11$).

When considering the futures contract, it may be argued that any price increase would be offset by an equal gain in the cash market. Although there would generally be a price increase in the local market, it may or may not equal the price increase in the futures market. In comparing futures and options contracts, the options contract would generally remain more profitable than the futures contract alternative regardless of the associated price increase in the cash market. As long as the premium value is less than the loss on the futures contract, the option contract alternative would be most profitable in an uptrending market.

Downtrending Market

Market Situation: Suppose carryover stocks from the previous crop year continue to overshadow and depress prices. The prospects for increased export earnings look dim in light of a stable U.S. currency and excellent spring planting conditions. The farmer's outlook on the industry is bearish. He decides to lock in a price for his crop, but first he examines both pricing alternatives.

Alternative 1: Hedging. Suppose on May 15 the December corn futures are trading at \$2.40/bu. The current bid price at the local elevator is \$2.20/bu. Fearing lower prices, the farmer hedges corn. On December 1, the producer closes the future contract position by buying back the December contract which is now trading at \$2.20/bu. Upon delivery of the grain to the local market, the producer receives a spot price of \$2.00/bu.

Advantages: The producer secured an assured price for corn on the futures market. Because prices traded in the producers favor, no margin calls were made. In addition, no premium values are associated with futures contracts. In a downtrending market, this alternative realizes a higher return than an options contract would because of an options associated premium expense.

Disadvantages: Although prices moved favorably, there is always the risk of adverse price moves in relation to a futures position. This risk could result in margin calls and losses on the futures market.

Hedging - Price Increases

--10,000 bu #2 yellow corn			
May 15	December corn	S	2.40
Dec 1	December corn	B	2.20
--Futures Profit or (Loss)			+.20
Dec 1	Spot Price		2.00
--Futures Profit or (Loss)			+.20
			\$2.20

Alternative 2: Options Contract. Suppose the farmer established an options contract in a downtrending market. On May 15, these option strike prices and premiums were reported.

Strike Price (\$/bu) Premium (1/8 /bu)

\$220	1
230	3 1/2
240	12
250	17 1/2
260	21 3/4

The farmer decides to purchase the \$2.40/bu put option which has an associated premium of 12 cents. With futures prices trading at \$2.20/bu on December 1, the farmer exercises this contract. By doing so, the farmer assumes a short position at \$2.40 on the December corn futures contract. The farmer would immediately offset this position by purchasing a December corn futures contract at the current \$2.20.

Option Price Decreases

May 15	Put Option December Corn		
	---Strike Price	2.40	
	---Premium	.12	
Dec 1	Futures December Corn		
	---Spot Price	2.00	
Actions: Exercises options contract and offsets futures position.			
Dec 1	December Corn	S	2.40
Dec 1	December Corn	B	2.20
	---Futures Profit or (Loss)		+.20
Dec 1	Spot Price		2.00
	---Futures Profit or (Loss)		+.20
	-----Net Return (Spot \pm Futures)		2.20
	---Less Premium		-.12
	---Net Return with Options		2.08

Readers should note in this example the premium used was 12 cent vs the previous example using a 4 cent premium. This was done to illustrate that in the first example the market philosophy was for prices to rise (little or no risk to the seller) therefore low premium. Second example, more risk that the option would be exercised, higher premium.

Advantages: In this situation the farmer took advantage of the 12 cent insurance plan. When prices moved below the 2.40 strike price, the farmer exercised this option. In this way, the farmer profited on the futures market by 20 cents. With this position, the farmer was still free to take advantage of any price increases had they occurred.

Disadvantages: Although the producer profited by 20 cents on the futures market, the actual return was whittled down after premium expense was deducted.

Summary - Price Decrease. The hedging alternative would have been most profitable in this example of a downtrending market. The hedging alternative yielded \$2.20/bu while the option alternative yielded

only \$2.08/bu. The difference in net returns ($2.20 - 2.08 = .12$) is due solely to the premium associated with the option contract.

Conclusion

Options and futures contracts are forward pricing mechanisms that can be used by producers to establish an assured price level. Determining market trends is mere speculation. However, there are tools available to help the producer make an educated, sound, market analysis.

Futures and options contracts were each compared in both uptrending and downtrending market situation.

In a downtrending market, using a futures contract yielded the highest return. As long as prices continued to drop, the returns on the futures market were pure profit. Because there are no premium values associated with futures contracts, no premium was deducted from the profit.

If an options contract was used, the premium value had to be deducted from returns, thereby making it less profitable than the futures contracts.

In the case of an uptrending market, an options contract is generally more profitable than a futures contract. In an uptrending market, a futures contract loses money on the futures market and margin calls must be met. When options are used, no margin calls are made and the producer can allow his option contract to expire to take advantage of the price increase in the local market. An options contract would yield a higher return as long as the premium is less than the loss associated with the use of a futures contract on the futures market.

AGRICULTURAL GRAIN OPTIONS

This series includes the following NebGuides which may be obtained at your local Cooperative Extension office.

- G85-768, *Basic Terminology for Understanding Grain Options*
- G85-769, *Options Contract Specifications on grain Futures Contracts*
- G85-770, *An Introduction to Grain Options on Futures Contracts*
- G85-771, *Evaluating Grain Options Versus Futures Contracts*
- G85-772, *Using Grain Options to Follow a Rising Market*
- G85-773, *How to Evaluate Grain Pricing Opportunities*

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