Hedging Futures vs. Options – Grains

Futures vs. Options

Futures:

- Goal is to buy low and sell high: position in market
- Saying that the price will move in a favorable direction
- Hedge opposite the cash market

Options:

- No position needed in the futures market
- Creating a floor or ceiling in case of unfavorable price changes
- Added dimension to futures market: future underlies options

Why Use Futures or Options

Hedging with futures is a basic protection against moving prices. With futures this insurance protects against an unfavorable price change in the cash market by gaining in the futures market. Additionally, as futures and cash markets tend to move together losses in the cash market would be offset by gains in the futures market.

Hedging with options also allows for price protection. It would be similar to have the most basic type of car insurance which would be liability insurance. Then as additional insurance is added a higher premium on the insurance is paid. With options, the higher protection against a price change opposite of what you would like requires a higher premium (cost of the option). The premium cost is the sum of the intrinsic and time values associated with the option. Intrinsic value is the measure of the worth of the option at the time to the purchase. Time value of the option is the value of the option as the underlying futures contract and option moves to maturity. At the time of expiration, the time value is always zero meaning the any value at the time of expiration is intrinsic value.

For a producer selling their crop both futures and options are protection against falling prices. The difference between the two types of hedges is the way the risk is hedged by either offsetting the loss in one market with a gain in another or by protecting falling cash prices.

Using Futures or Options

With futures a single selling price is created when the futures position is entered by selling a futures contract. Therefore, value of the futures hedge depends on the how the market moves and how the basis changes. There is more value in the futures hedge when a lower cash selling price occurs. If prices increase less profit is realized. Overall, changes in the selling price of the commodity depend on the basis.

With options, protection occurs against a dramatic decline in prices by creating a minimum price floor. At the same time if prices rise then additional profits are realized. A change in basis affects the options hedge but less than the effect it has on the futures hedge.

When to use Futures or Options

An Example

A farmer is planting soybeans in the spring and is concerned about prices falling during harvest. This person is looking to hedge their risk in the futures and options markets. Currently, November futures are trading at $11.62 with basis currently at $.20 under November. The producer is also thinking of buying a put at $11.20 with a premium of $.50. This means that the floor price is $10.50. What should the producer do?

Hedging with futures depends on price movements in the futures and cash markets. Additionally, the change in basis affects the net selling price. When basis strengthens the cash price is higher relative to the futures price allowing for an increase in net selling price. A weakening basis causes the opposite to happen. Figure 1 briefly shows how a change in price affects the cash market, futures market, and overall net selling price.

	Price increase	Price decrease
Futures hedge (short)	Loss potential if futures hedge doesn't cover cash changes	Gain potential especially if basis strengthens
Options: put	Infinite gain minus the premium	Gain on futures in amount of floor price
Futures hedge (long)	Gain potential especially if basis weakens	Loss potential if futures hedge doesn't cover cash changers
Options: call	Gain on futures in amount of ceiling price	Infinite gain minus the premium

Figure 1

When hedging with options, a constant basis allows the producer to have a selling price at the floor when the cash price is below the floor. The floor is the strike price minus the cost of the premium. When futures price increases, the option is worthless meaning that the net selling price is the cash price minus the cost of the option (premium). Therefore a stronger basis will increase the net selling price and a weaker basis will decrease it. On the other hand, if futures price decreases then the option has value, depending on how much the market falls. Figure 2 shows examples of different futures and basis levels. In these cases, the gain is the difference between the current cash price and the floor price when the option was entered into.

Futures Price	basis	Cash price	Gain/loss on option	Net Selling Price
10.60	- 20	10.40	+ .10	10.50
10.50	- 10	10.40	+ .10	10.50
11.30	-10	11.20	- .50	10.70
10.50	-25	10.25	+ .25	10.50
11.30	-25	11.05	- .50	10.55

Figure 2

Overall, if prices decrease then the futures hedge is good providing that the basis strengthens. An option can also provide protection in case of a large price decrease in the futures and consequently cash markets.

Another Example

	Hedge	Long Put	Fenced Hedge
15-Apr	Sell CZ $4.25 HTA cost .05 to .10	Buy 420 Put 50 cents (Floor $3.70)	Buy 420 Put Sell 520 Call 25 cents (Floor 3.95, Ceiling 4.95)

Nov 20th: if futures are

$3.25	$1.00 profit	.45 cent profit	.70 cent profit
$4.50	$.25 loss	options worth 0 out the cost of put have cash to sell	options worth zero out cost of options have cash to sell
$5.50	$1.25 loss	options zero out the cost of put have cash to sell	Short call becomes a short futures position at $5.20 (ceiling 4.95) loss of 55 cents

In this example, corn futures in April are currently at $4.25. A put can be bought for a $.50 premium at $4.20 making the floor on the option $3.70. If in November the positions are offset, what would have been the results of different hedging strategies?

If the Market decreases: The straight futures hedge is the best options. Futures were sold at a higher price of $4.25 and bought back at $3.25. This means that a $1.00 profit was realized and any gains would offset any loss in the futures market. An options hedge realizes some profit, but not as much as the futures hedge because of the price floor. In this case a profit of $.45 was realized ($3.70 - $3.25). With the fenced hedge, the put option is used for price protection and a gain of $.95. However, the cost of the call must be subtracted for a final gain of $.70

If the Market stays approximately the same: In November, the futures market is slightly higher at $4.50 so a $.25 loss occurs as the buying price ($4.50) is higher than the selling price ($4.25). The option would be worth nothing since the futures price didn't fall. Therefore the net selling price would be the cash price minus the cost of the option (.50). There is no value to the fenced hedge meaning that the net selling price is the cash price minus the cost of the fenced hedge ($.25).

If the Market increases: The futures hedge in November would have provided a loss due to the selling price of $4.25 being $1.25 lower than the buying price of $5.50. In case as well the options hedge would have had less of a loss as the person is only out the cost of the premium which was $.50. This would have been subtracted from the cash price to get the net selling price. In the fenced hedge, there is no value to the put. The call has value and becomes a short futures position at $5.20 with a ceiling at $4.95. Since the new futures position is lower than the actual futures price there is a loss of $.30 on the position plus the cost of the short call for a total loss of $.55.

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