GRAIN MARKETING ALTERNATIVES USING FUTURES AND OPTIONS

An Introduction to Financial and Marketing Tools for WA Wheat Growers
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THE HEDGING CONCEPT

1. Hedging is defined as offsetting the risk of an adverse change in the cash market by entering an appropriate futures market position simultaneously

2. As an example, a wheat producer has wheat growing to sell at some time after harvest

   a. What is the risk of a price change?

      - price may decrease!!

   b. What futures position will offset the loss from a price decrease?

      - sell futures (short position)

   c. Net result if cash price changes:

      - loss on the cash market is offset by a gain on the futures position
      - loss on the futures market is offset by a gain on the cash position

THE HEDGING CONCEPT (continued)

3. Hedging is based on the idea that cash and futures markets are related and move up and down together

   a. relationship measured by <u>basis</u>

      - basis is defined as the cash price minus the futures price
      - basis can get weaker (smaller value) or stronger (larger value)

   b. hedging effectiveness is strongly influenced by how the actual basis behaves relative to what is expected

   c. remember, are using the futures market for a temporary sale of your commodity

HEDGING EXAMPLE
Short Hedge (Wheat Producer)

1. Mid Jan - Grain producer will harvest 30,000 bu. of wheat in August. Plans to sell about Aug. 15.

2. Evaluate expected hedge price using Chi Sep wheat futures contract:

"Appropriate" futures price = 335
\+ Expected basis (local) = -10 (under)
\- Cost of hedging = - 2

= Expected hedge price = 323 cents/bu.

3. Compare hedge to other alternatives:

- cash forward; price with options; don't price
- decides to hedge 20,000 bu. (67% of prod.)
  = sell 4 Sep (5000 bu. each) at 335
- expected hedge price = 323 cents/bu.

WHEAT HEDGE OUTCOME
Mid Aug. and Price Increases

A. Local price increases to 350 cents/bu.

Cash Market	Futures Market	Actual Basis
Sell wheat at 350	Sold at 335	
	(offset) Buy at 360	-10
	Loss = 25 cents/bu.	

Outcome

Cash Price = 350
Loss on Futures = 25 (-)
Cost of Hedge = 2 (-)

Net Price = 323 cents/bu.

WHEAT HEDGE OUTCOME
Mid Aug. and Price Decreases

B. Local price decreases to 260 cents/bu.

Cash Market		Futures Market	Actual Basis
Sell wheat at 260	(offset)	Sold at 335 Buy at 270 gain = 65 cents/bu.	-10

Outcome

Cash Price = 260
Gain on Futures = 65 (+)
Cost of Hedge = 2 (-)

Net Price = 323 cents/bu.

WHEAT HEDGE OUTCOME
Mid Aug.; Price Drops; Basis Weakens

C. Local price drops to 260 cents/bu. and basis weakens to -20 (under)

Cash Market		Futures Market	Actual Basis
Sell wheat at 260	(offset)	Sold at 335 Buy at 280 gain = 55 cents/bu.	-20

Outcome

Cash Price = 260
Gain on Futures = 55 (+)
Cost of Hedge = 2 (-)

Net Price = 313 cents/bu.

Note: Basis weakened by 10 cents (from an expected of -10 to -20). The actual net price was 10 cents below the expected hedge price.

WHEAT HEDGE OUTCOME
Mid Aug.; Price Up; Basis Strengthens

D. Local price increases to 3.50 cents/bu. and basis strengthens to 0

Cash Market	Futures Market	Actual Basis
Sell wheat at 350	Sold at 335	
	(offset) Buy at 350	0
	Loss = 15 cents/bu.	

Outcome

Cash Price = 350
Loss on Futures = 15 (-)
Cost of Hedge = 2 (-)

Net Price = 333 cents/bu.

Note: Basis strengthened by 10 cents (from an expected of -10 to 0). The actual net price was 10 cents above the expected hedge price.

PUT OPTION EXAMPLE
Purchase Put (Wheat Producer)

1. Mid Jan - Grain producer will harvest 30,000 bu. of wheat in August. Plans to sell about Aug. 15.

2. Evaluate level of expected price protection:

	Strike price of Sep put	= 330
+	Expected basis (local)	= -10 (under)
-	Put cost (premium + fee)	= 28 (-)

= Expected price protection = 292 cents/bu.

3. Compare to other alternatives:

- cash forward; hedge with futures; don't price
- decides to use put option alternative
  - buys 4 Chicago 330 Sep wheat puts (5000 bu. each) at 28 cents (27 cent premium + 1 cent broker fee) to obtain protection
  - expected minimum price is 292 cents per bu. with potential to benefit if price increases

PURCHASE WHEAT PUT OUTCOME
Mid Aug. and Price Increases

A. Local price increases to 350 cents/bu.

Cash Market	Futures Market	Actual Basis
Sell wheat at 350	Sep Futures price = 360 330 Put premium = 0 (no intrinsic value) Put expires worthless	-10

Outcome

Cash Price = 350
Cost of Put = 28 (-)
Sale of Put = 0

Net Price = 322 cents/bu.

PURCHASE WHEAT PUT OUTCOME
Mid Aug. and Price Decreases

B. Local price decreases to 260 cents/bu.

Cash Market	Futures Market	Actual Basis
Sell wheat at 260	Sep Futures price = 270 330 Put premium = 60 (intrinsic value) Sell put for premium	-10

Outcome

Cash Price = 260
Cost of Put = 28 (-)
Sale of Put = 60 (+)

Net Price = 292 cents/bu.

PUT OPTION OUTCOMES
Basis Changes

1. Changes in basis will impact option-based strategies in the same manner basis changes impact hedges:

   a. weakening basis means the actual price protection will be lower than the expected price protection level.

   b. strengthening basis means the actual price protection will be higher than the expected price protection level.