Overview of Price Risk Module 4:
A Primer on Using Futures and Options in Grain Marketing

This presentation provides a basic introduction to the terminology and concepts associated with trading futures contracts and options on futures contracts. The presentation focuses on basic futures trading terminology, the idea of opening and closing (by offsetting) a futures position, defining options on futures contracts, and identifying sources of value in option premiums. A specific option example (Sep CBT Wheat) is used as a means to establish the relationship between alternative strike prices and value as represented by the premiums. The purpose of the presentation is to provide a level of knowledge about futures and options necessary to understand the concept of hedging.

Cash markets are readily understood by most agricultural producers, especially for immediate (or spot) delivery. However, there needs to be an awareness that cash markets also price agricultural commodities in advance of the actual physical exchange. Whether for immediate or delayed delivery, the real focus of the cash market is on the physical commodity. Futures markets trade futures contracts. Futures contract trading can be viewed as a logical extension of forward cash markets. However, everything is standardized in a futures contract putting the focus on determining price at the time a trade takes place. Additionally, since futures contracts are standardized, they can easily be resolved with money rather than the physical commodity.

Reviewing the specific terms of a futures contract provides the sense that everything influencing value is predetermined. Buyer and seller negotiate price knowing that quantity, quality, delivery period, and location have already been established. Buyer and seller only negotiate the per unit price. Referring to the contract specifications at the end of the handout provides additional reinforcement of futures and option contract specificity. Futures trading is done on a margin. Rather than provide the full value of the contract at the time of the trade, buyers and sellers must post a margin when they initiate a futures trade. Margin accounts must be maintained, since additional monies may be required to keep the account balance at a minimum level if the market moves against a trader. Futures trades are executed through a broker with access to the exchange, so trading futures contracts involves paying a commission (or fee) to a broker for executing trades on your behalf.

As with any market, participants can enter the market as either a buyer or a seller. Buying a futures contract is called being in a long position. A buyer has a commitment to receive delivery and that commitment can be offset (resolved with money) rather than actually receiving delivery. Selling a futures contract is called being in a short position. A seller has a commitment to

make delivery and that commitment can be offset (resolved with money) rather than actually making delivery. Since a buyer (or seller) has a commitment to accept (or make) delivery, actual delivery at the termination of the contract is an obvious alternative to meeting the contractual terms. However, offsetting the obligation (resolving with money) is the most common way of dealing with the commitment. A trader in a long position offsets the position with a sell (short) of the same futures contract (that is, same commodity and same contract month). A trader in a short position offsets the position with a buy (long) of the same futures contract.

Options on futures are a relatively simple extension of futures trading. A futures option gives the option owner (or buyer) the right (not the obligation) to a designated futures position at a specified price (the strike price). The whole idea behind owning an option is that the holder has a right to something, but is not obligated to do anything. The focus of this presentation is on being the buyer (or holder) of options. Sellers of options (or writers) are necessary for option trading to occur, and an option seller has a well defined obligation rather than a right. A designated futures position implies the contract commodity, contract month, and type of position (long or short) are known in advance. Whether the holder has a right to a short (or long) futures position is determined by whether they are holding a put (or a call). The price (or trading value) of an option is represented by the premium, which is quoted on a per unit basis (cents per bushel for grains). Options expire at a predetermined point in time as stated in the option contract specifications. As a general rule, most grain option contracts expire about the 25th day of the month preceding the contract month of the underlying futures contract.

Using an example of puts on CBT Sep wheat can illustrate several points. If the underlying futures contract is trading at 335 cents per bushel, higher strike prices (the right to sell high) are expected to have a higher value (the premium is higher). Lower strike prices (the right to sell low) are expected to have a lower value (a smaller premium). Both ideas can be illustrated by the actual premiums for alternative strike prices. Actual premiums can also be used to illustrate intrinsic and time value. Selecting a strike price for a put that is above the current futures price (the 340 strike in the example) shows that a put that gives the right to sell at 5 cents above the market (340 versus the current futures price of 335) has 5 cents of obvious (or intrinsic) value. However, the current premium is 33.50 cents (28.50 cents more than the 5 cents of intrinsic value). That additional 28.50 cents must be time value. A put with a strike price that is below the current futures price (the 300 strike price) can also be selected for illustration. The 300 put gives the right to sell the futures position at 35 cents below the current price of 335. There is no obvious (or intrinsic) value.

Why is the premium still 12.25 cents? There is a chance that the futures price could move below the 300 strike price before expiration. What factors influence the chance the futures price may drop more than 35 cents to less than 300? Time to expiration (more time, greater chance of a significant price drop) and volatility of the market (more volatility, greater chance of a significant price drop). Call options could be used with similar examples to point out that the concepts are the same, but the value concepts are reversed because calls are the right to a long futures position.

The discussion of closing a futures position can also be enhanced by using actual examples. Select out of the money strike prices to show options that would expire worthless. Options with strike prices that are in the money have value that can either be exercised or sold to capture this market value.

SLIDE 4.1 ***Important Terminology***

- Cash Market
  - *– a market which focuses on the buying and selling of the physical commodity for immediate or delayed delivery*
- Futures Market
  - *– a market which focuses on the buying and selling of futures contracts*
  - *– a logical extension of the cash forward market*
  - *– a transferable agreement to make or take delivery of a standardized amount and quality of a specified commodity at a specified point in time and location*
  - *– think of it as a market offering a temporary sale of your commodity*
  - *– can resolve agreements with money rather than delivery*

SLIDE 4.2 ***Futures Contract Specifications***

- Standardized amount:
  - *– contract quantity = 5,000 bushels*
- Standardized quality:
  - *– deliverable grades vary by contract, examples:*
  - *– CBT Wheat: USDA #2 soft red winter*
  - *– MPLS white wheat: USDA #1 soft white*
  - *– KC wheat: USDA #2 hard red winter*
- Specified time:
  - *– contract months for wheat: Jul, Sep, Dec, Mar, May*
- Specified delivery point:
  - *– delivery point varies by contract, examples:*
  - *– CBT wheat = Chicago or Toledo*
  - *– MPLS white wheat = Lower Columbia*

NOTES

SLIDE 4.3 ***Futures Contract Terminology***

- Margin
  - *– money deposited by traders when entering the futures market to assure performance for all participants*
  - *– usually a small portion of the total contracts value*
  - *– may receive margin calls if market moves against your position*
- Commission
  - *– fee paid to broker for executing a trade in the futures market*
  - *– based on "round-turn" or entry and exit of a contract*
  - *– varies by broker (approx. $30/contract)*

SLIDE 4.4 ***Alternatives in Trading Futures***

- Buy a futures contract(s)
  - *– "long" position*
  - *– have a commitment to delivery*
  - *– can offset commitment at some point*
- Sell a futures contract(s)
  - *– "short" position*
  - *– have a commitment to receive delivery*
  - *– can offset commitment at some point*

Note: entering short or long means you have an obligation (open position) and a margin is required.

- Delivery is an obvious alternative or
- Offset your open position:
  - *– "long" sell same futures contract at current price*
  - *– "short" buy same futures contract at current price*

NOTES

SLIDE 4.5 ***Under standing options on futur es contr acts***

- Options on futures:
  - *– represent the right, (but not the obligation) to enter a designated contract at a specific price*
  - *– the owner of an option is not required to enter a futures position*
- Types of options:
  - *– "put" option represents the right to sell*
  - *– "call" option represents the right to buy*
- Strike price:
  - *– price at which the option buyer has the right to sell (for a put) or buy (for a call) the underlying contract*
- Option premium:
  - *– the market value of the right; quoted in cents per bushel for grain (times 5,000 bushels)*
- Option expiration:
  - *– options expire about the 25th day of the month before the underlying futures contract month*

NOTES

SLIDE 4.6 ***Put Option Example***

- Situation:
  - *– mid January*
  - *– objective: evaluate price protection available through harvest (August)*
- Current futures/options market situation:
  - *– CBT SEP wheat futures price = 335.00 cents per bushel*

Strike Price	***Premium (cents/bu)***
300	*12.25*
310	*16.25*
320	*21.25*
330	*27.00*
340	*33.50*

- Know:
  - *– can purchase right to sell CBT Sep futures*
  - *– right to sell at several different strike prices above or below the current market price*
  - *– premiums vary by strike price; right to sell gets more expensive as strike price goes up*
  - *– option on Sep wheat expires about 25 August*
- Option premium influenced by:
  - *– strike price relative to the current futures; intrinsic value exists if strike price is above futures price*
    - 300 put has 0 cents of intrinsic value
    - 340 put has 5 cents of intrinsic value
  - *– time until expiration; futures price can change*
    - 300 put can have intrinsic value if futures price goes below 300
    - more time to expiration = more time value
    - more market volatility = more time value

NOTES

SLIDE 4.6 ***Put Option Example***

CONTINUED

- Closing a put position
  - *– "sell" at the current premium; premium changes over time as futures price changes and expiration approaches*
  - *– let option expire if worthless; option expires with no intrinsic value*
  - *– exercise and obtain futures position; may be automatic if expires with value*

NOTES