Agricultural Commodity Marketing: Futures, Options, Insurance

Introduction to Options on Futures Contracts

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Fact Sheet

- Introduction to Options
- CME Options on Futures: The Basics

Options and Futures

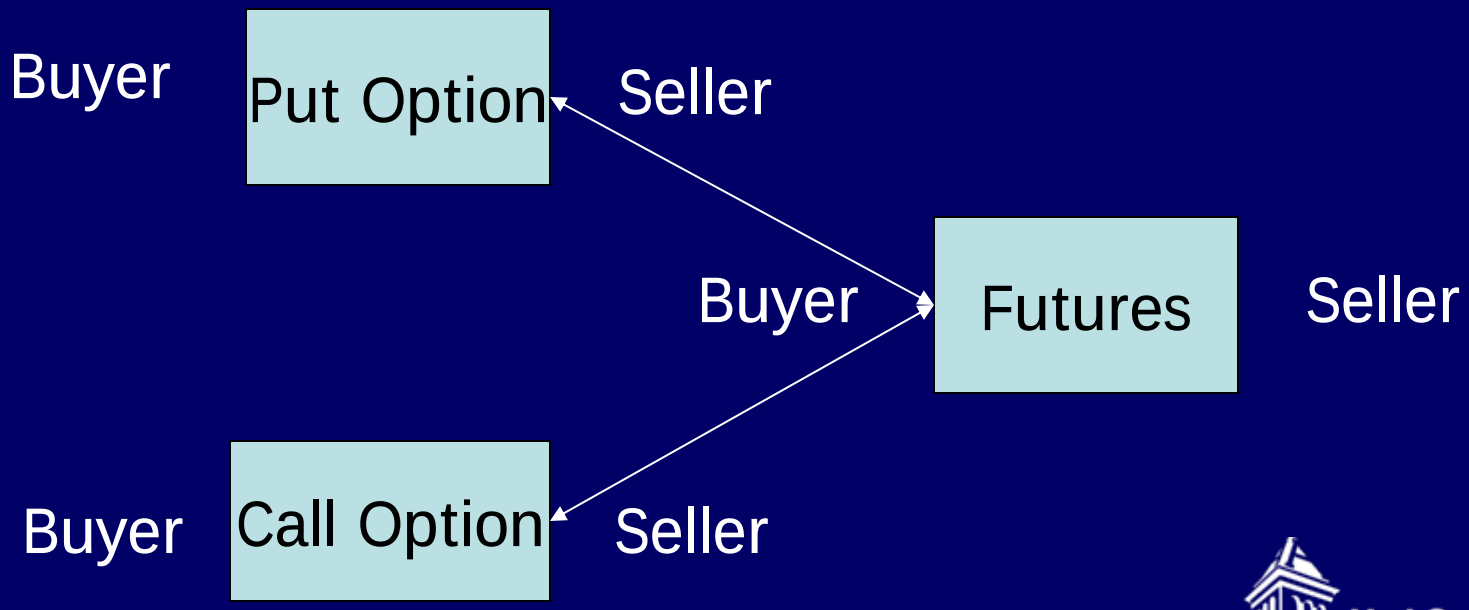
- Futures contracts are an obligation
  - Must deliver or offset
  - Liable for margin calls
  - “Locked into” a price
- Options on futures contracts are the right to take a position in the futures market at a given price called the “strike” price, but beyond the initial premium, the option holder has no obligation to act on the contract
  - Lock-in a price but can still participate in the market if prices move favorably
  - No margin calls
  - Pay a “premium” for the option (similar to price insurance)

Put and Call Options

- Put option: the right to sell a futures contract at a given price (right to a short position at a given (strike) price)
- Call option: the right to buy a futures contract at a given price (right to a long position at a given (strike) price)

Puts and Calls

- Call and put options are separate contracts and not opposite sides of the same transaction. They are linked to the Futures



Specifications on Options

- Underlying futures contract (delivery month and commodity)
- Strike price – the price at which the option can be exercised. The range of strike prices is predetermined by the exchange
- Premium price – negotiated in the “pit” at the exchange. The premium is paid by the person buying the option and is collected by the person selling (writing) the option after the option expires

Specification on Options Cont'

- Expiration date – during the last part of the month preceding delivery of the underlying futures contract, i.e., option on April LC expires during the last part of March
- Cash settled contracts have options that may expire during the delivery month, i.e., Mar FC options expire when the futures expire

Obligations/Rights of Option Buyers and Sellers

- Put Options
  - Buyers: can exercise the right to a short position in futures at the strike price anytime before the option expires. For this right, they pay the option premium.
  - Sellers (writers): must provide the option buyer with a short futures position if the option is exercised. Must meet margin calls if the underlying futures contract price moves below the option strike price. Receives the option premium after the option expires.

Obligations/Rights of Option Buyers and Sellers

- Call Options
  - Buyers: can exercise the right to a long position in futures at the strike price anytime before the option expires. For this right, they pay the option premium.
  - Sellers (writers): must provide the option buyer with a long futures position if the option is exercised. Must meet margin calls if the underlying futures contract price moves above the option strike price. Receives the option premium after the option expires.

What can one do with an option once he/she buys it?

- Let it expire (do nothing more with it)
  - Lose the premium that was paid
- Offset it: If one April LC put is purchased then can offset by selling one April LC put
- Exercise it (places in a short position (put) or a long position (call) in the futures market. The holder then has the same obligations as if a futures contract had originally been bought or sold)

Exercising an Option

- Exercising a put option into a futures position- Example: exercising a $86 put when the price for the underlying futures contract is $84/cwt. results in a short position with $2/cwt. equity.
- Exercising a call option into a futures position- Example: exercising a $3.00 call when the price for the underlying futures contract is $3.20/bu. results in a long futures position with a $0.20/bu. equity

Strike Price Relationship to Current Futures Price

Condition	Put Option	Call Option
SP < futures	Out-of-the money	In-the money
SP = futures	At-the money	At-the money
SP > futures	In-the money	Out-of-the money

Option Premiums Depend On . . .

- Intrinsic Value
  - Strike price relative to underlying Futures Price
- Time Value - time left to expiration
  - Longer time leads to more uncertainty
- Market Volatility

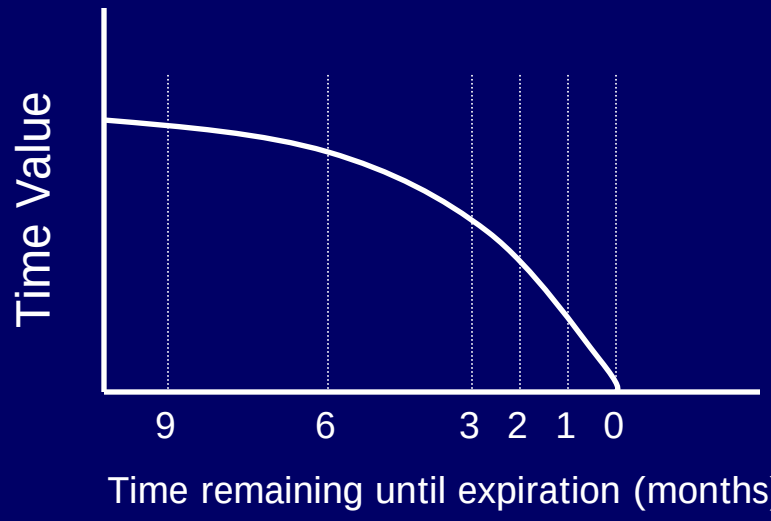
Intrinsic Value & Option Premiums

- The “intrinsic” value of an option is the amount by which an option is “in-the-money.” In other words, the equity that exists in the option.
- If the underlying futures price is $3.50/bu for wheat
  - a $3.60/bu Put option has an intrinsic value of $0.10/bu
  - A $3.70/bu Put option has an intrinsic value of $0.20/bu
  - A $3.50 or lower strike price Put option has $0 intrinsic value

  - A $3.40/bu Call option has an intrinsic value of $0.10/bu
  - A $3.30/bu Call option has an intrinsic value of $0.20/bu
  - A $3.50/bu or higher strike Call option has $0 intrinsic value
- The option premium will equal the intrinsic value + any time value

Determinants of Option Premiums

- Time value
  - Premium = intrinsic value + time value
  - The time value of an option decreases as the time to expiration approaches
    - Uncertainty decreases



Market Volatility & Option Premiums

- When market prices are rising or falling sharply, volatility is said to be high
- When markets are stable, volatility is said to be low
- High volatility increases the time value and therefore the premiums on options
- Low volatility decreases the time value and therefore the premiums on options

Option Quotes source: DTN

DAY SOYBEANS (Nov 2006)

Refresh

Last	Change	Open	High	Low	Volume
540'4s	2'0	539'4	544'4	539'0	452

Symbol: SX6 Go | Future Symbol Search | Symbol Lookup | Strike Range: Near-the-Money | Chart | Options | Futures Chain

Sep 2006 | Nov 2006 | Jan 2007 | Mar 2007 | May 2007 | Jul 2007 | SX6

Days Until Expiration: 43

Calls									Puts							
Symbol	Price	Chg	Open	High	Low	Volume	Open Int	Strike	Symbol	Price	Chg	Open	High	Low	Volume	Open Int
SX6C3000	240'4s	2'0	241'4	242'4	240'4	14	28	3000								
								4800	SX6P4800	0'4s	-0'1	0'4	0'4	0'4	3	413
SX6C5000	41'6s	1'6	---	---	---	0	4	5000	SX6P5000	1'3s	-0'2	1'6	1'6	1'2	8	4363
								5100	SX6P5100	2'5s	-0'4	2'4	2'5	2'4	2	24
SX6C5200	25'0s	1'3	---	---	---	396	375	5200	SX6P5200	4'5s	-0'5	5'0	5'0	4'2	31	5316
								5300	SX6P5300	8'0s	-0'7	6'6	8'0	6'6	20	753
SX6C5400	12'7s	0'6	12'0	14'0	12'0	30	2712	5400	SX6P5400	12'3s	-1'2	13'5	13'5	11'4	33	12063
SX6C5500	8'7s	0'4	9'4	10'0	8'7	3	2617	5500	SX6P5500	18'3s	-1'4	19'0	19'0	17'0	10	767
SX6C5600	6'0s	0'2	6'0	7'2	5'6	34	11880	5600	SX6P5600	25'3s	-1'6	26'0	26'0	24'2	13	14414
SX6C5700	4'1s	0'2	4'0	4'6	3'7	11	393	5700	SX6P5700	33'4s	-1'7	---	---	---	5	8
SX6C5800	2'7s	0'1	2'6	3'4	2'6	32	7197	5800	SX6P5800	42'1s	-1'7	42'0	43'0	40'4	16	10072
SX6C5900	2'0s	0'1	---	---	---	100	521	5900								
								6000	SX6P6000	60'4s	-2'0	61'0	61'0	58'0	15	11958

In the money At the money

Quotes generated on: Wed, Sep 13, 2006 5:19 PM CDT

A Closer Look at Intrinsic and Time Value

- Nov SB $5.40/bu
- Put Options on Sep 13

Strike	Premium	Intrinsic Value	Time Value
$5.20	$0.05	$0.00	$0.05
$5.30	$0.08	$0.00	$0.08
$5.40	$0.12	$0.00	$0.12
$5.50	$0.18	$0.10	$0.08
$5.60	$0.25	$0.20	$0.05

- You always pay the highest time value for the at-the-money option
- Since at expiration, the time value goes to zero for all options, the at-the-money option is really the most expensive

Option Quotes source: DTN

DAY FEEDER CATTLE (Jan 2007)

Refresh

Last	Change	Open	High	Low	Volume
113.425s	-1.375	114.650	114.650	113.350	54

Symbol: FCF7 Go | Future Symbol Search | Symbol Lookup | Strike Range: Near-the-Money | Chart | Options | Futures Chain

Sep 2006 | Oct 2006 | Nov 2006 | Jan 2007 | Mar 2007 | Apr 2007 | FCF7

Days Until Expiration: 133

Calls									Puts							
Symbol	Price	Chg	Open	High	Low	Volume	Open Int	Strike	Symbol	Price	Chg	Open	High	Low	Volume	Open Int
								104000	FCF7P104000	1.050s	0.200	1.000	1.000	1.000	1	113
								106000	FCF7P106000	1.300s	0.200	1.200	1.400	1.200	2	101
								108000	FCF7P108000	1.650s	0.250	---	---	1.900	5	109
								110000	FCF7P110000	2.050s	0.300	2.200	2.200	2.200	1	96
FCF7C112000	4.050s	-1.000	---	4.500	---	0	14	112000	FCF7P112000	2.650s	0.350	---	2.600	2.550	2	37
FCF7C114000	2.875s	-0.800	3.250	3.250	3.000	2	205	114000	FCF7P114000	3.450s	0.550	---	3.400	3.250	7	22
FCF7C116000	2.000s	-0.650	---	2.000	2.250	8	27	116000	FCF7P116000	---	---	---	---	---	0	0
FCF7C118000	1.300s	-0.400	---	---	---	4	80	118000								
FCF7C120000	0.800s	-0.250	---	1.000	0.950	22	107	120000								
FCF7C122000	0.450s	-0.150	---	0.550	0.600	2	12	122000								
FCF7C124000	0.200s	-0.100	---	0.300	0.500	0	420	124000								

In the money At the money

Quotes generated on: Wed, Sep 13, 2006 4:59 PM CDT

Futures Prices & Option Prices

- With the Soybean example, S futures had increased from the prior day
  - Soybean Put premiums declined
  - Soybean Call premiums increased
- With the Feeder Cattle example, FC futures had decreased from the prior day
  - Feeder Cattle Put premiums increased
  - Feeder Cattle Call premiums decreased

Futures Prices & Option Prices

- With the Feeder Cattle example, FC futures decreased $1.375
- Put option premium increases ranged from $0.20 to $0.55 with
- Call option premiums decreases range from $0.10 to $1.00
- The at-the-money and the in-the-money options are more sensitive to futures price changes than are out-of-the-money options
- This is know as Delta (how responsive option premiums are to future price changes)

Using Options to Protect Prices

- The next lesson will look at how producers can use put options to protect there selling price from price declines in the market
- Also purchasers of commodities can use call options to protect against rising prices