Managing Price Risk

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Texas A&M AgriLife Extension

Marketing

What I hate…

- **What if I don't make a crop?**
- **As soon as I sell, the price goes up (*"leave money on the table"*)**
- **Margin calls**
- **Broker talks me into buying puts—always lose money**
- **Keep sending money to Chicago, never get any back**

What I love…

- **Hedging can pay even if you don't make a crop**
- **When you make a selling decision, you want to be wrong**
- **You want to make margin calls**
- **You want to lose money when you buy puts**
- **Your money comes back in the value of your crop**

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Marketing Strategies

Basics

1. Do Nothing
   - Cash sales at harvest
2. Fix Price Now
   - Cash forward contract
   - Hedge with futures contracts
3. Set a Price Floor
   - Options on futures contracts

Advanced

4. Set a Price Floor/Ceiling
   - Options

Marketing

1. Do Nothing

- If you do no pre-harvest pricing, you are a speculator in the cash market.
- You accept all the price risk between now and whenever you decide to sell.

2. Fix Price Now—Cash Contract

- Private negotiation in which the farmer and the merchant agree now upon a price of a commodity to be delivered in the future
- Advantages
  - Farmer and merchant lock in a price ahead of time
  - Helps eliminate the uncertainty caused by price fluctuations

2. Fix Price Now: Hedging with Futures Contracts

- Hedging is a position in the futures market that is opposite one's position in the cash market.
- Hedging is doing ***now*** in the futures market what you anticipate doing ***later*** in the cash market.
- Since futures and cash markets move together, any loss in the cash market is offset by gains in the futures market.

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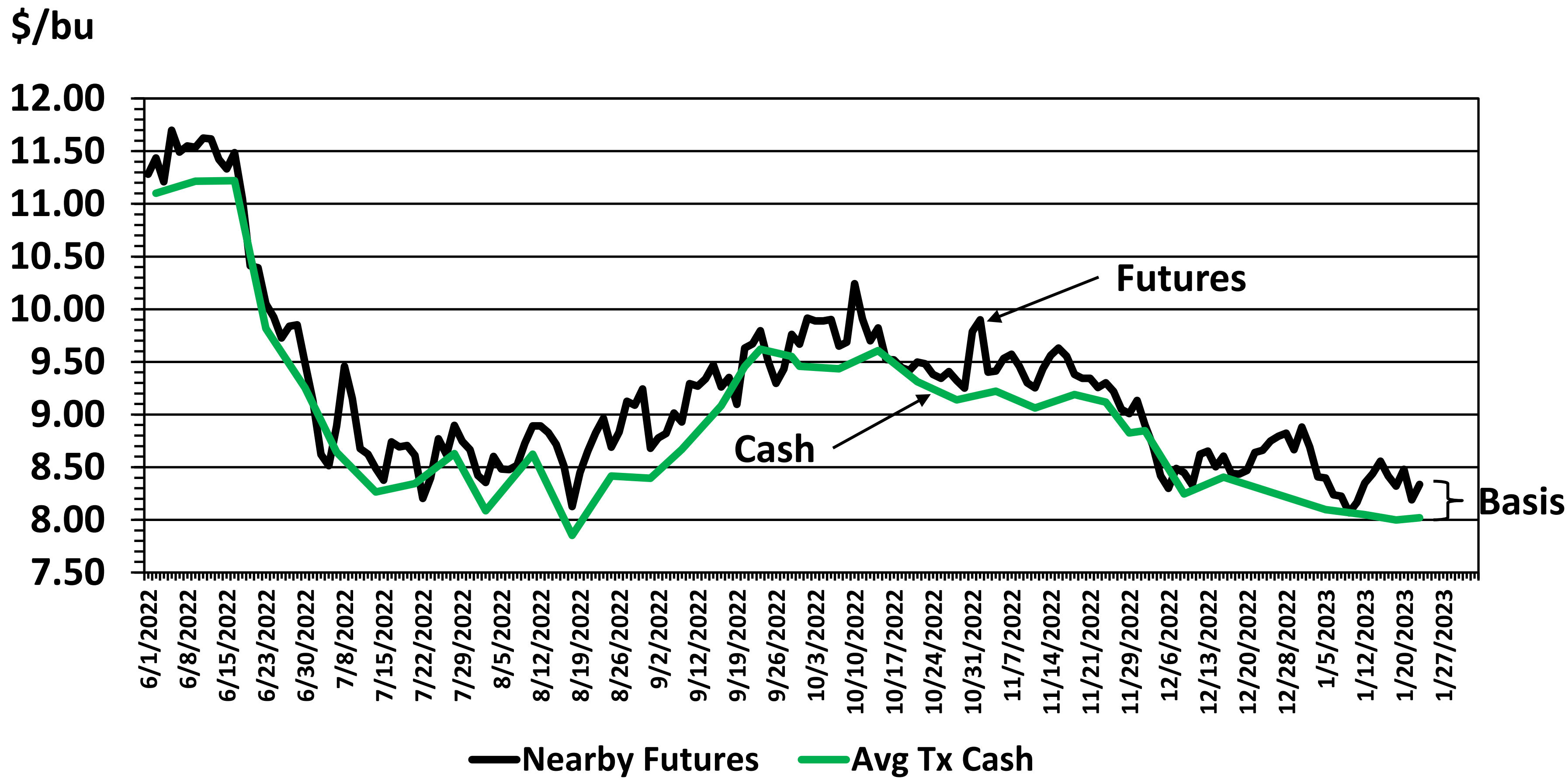
Nearby KC Wheat Futures, daily
Average Texas Cash Wheat, weekly



USDA, AMS, Market News: TX cash = average (area North of the Canadian River, Triangle Area from Plainview to Canyon to Farwell, area South of a Line from Plainview to Muleshoe)

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Basis

- The amount that the local cash price of a commodity is above or below the futures price for a particular month
- Impacted by transportation costs, storage and handling, interest charges, local demand

(basis = cash - futures)

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Basis and Expected Price

- Knowledge of local basis is necessary to translate a given futures price into a probable price for local delivery.
- The futures price adjusted for basis is the price the market is offering for your grain delivered at a local elevator during a particular month.

  (expected price = futures + basis)

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Futures Contract

- A standardized agreement (legally binding) to buy or sell a commodity specifying quantity, quality, maturity date, and delivery (place and time)
- The only non-established variable is price.

The Basics of Futures Market

Buy (or sell) a futures contract → Offset → Sell (or buy back) the futures contract

Delivery usually occurs in less than 1 percent of all contracts traded.

The Futures Price

- What buyers and sellers expect the price to be in a given future month based on currently available information
- The futures price is a statement of a commodity's value at a specific point in time at a particular location.

KC Wheat Futures Quotes

Hard Red Wheat Mar '23 (KEH23)

847-4 +13-6 (+1.65%) 09:00 CT [KCBT]

847-2 x 4 847-4 x 5

HARD RED WHEAT PRICES for Wed, Jan 25th, 2023

Find the latest Hard Red Wheat prices and Hard Red Wheat futures quotes for all active contracts below.

Intraday | Main View

Latest futures price quotes as of Wed, Jan 25th, 2023.

Contract	Last	Change	Open	High	Low
+ KEH23 (Mar '23)	846-6	+13-0	835-0	852-4	833-6
+ KEK23 (May '23)	840-4	+12-0	829-0	846-0	828-6
+ KEN23 (Jul '23)	833-2	+11-0	822-6	838-0	822-6
+ KEU23 (Sep '23)	834-2	+10-2	824-6	838-6	824-6
+ KEZ23 (Dec '23)	839-2	+9-0	837-6	843-6	836-4
+ KEH24 (Mar '24)	840-0	+10-0	839-2	840-4	838-4

Prices are reported in 1/8^{ths} of a cent, minimum price move = 2/8 or 1/4 cent

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Futures Market Participants

- Hedgers (transfer risk)
  - Buyers
    - Users of commodities seek protection from rising prices
  - Sellers
    - Producers of commodities seek protection from falling prices
- Speculators (assume risk)
  - Willing to accept price risk in order to make profits

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The Role of Speculators

Many contemporary [nineteenth century] critics were suspicious of a form of business in which one man sold what he did not own to another who did not want it.

--Morton Rothstein, Professor of History and Agricultural Economics, University of Wisconsin (1966)

Buy (or sell) a futures contract → **Sell (or buy back) the futures contract**

Margin Requirements

- **Money that you as a buyer or seller of commodities place on deposit with your broker to ensure contract performance**
- **Minimum set by exchange—specific amount set by the brokerage firm (typically 5-10%)**
- **Account is balanced at end of day,**

  'Marked to Market'

1 KC wheat contract = 5,000 bushels at $8/bu = $40,000 total value

Margin to trade = $3,740

Margin

- **Purpose: To assure performance, i.e., to guarantee that both buyers and sellers ultimately meet their contractual obligations**
- **Level of margin: depends on the price volatility of the commodity that underlies the futures contract**

Marked to Market

- **On paper, each person's account is balanced at the end of each day using the closing or settlement prices of that day.**
- **This determines whether or not you will receive a margin call.**

The CME Group ***increased margin requirements*** *for many of the energy futures contracts in hopes of calming market instability.*

--Successful Farming, 3/15/2022

Futures vs. Cash

- Cash contracts require negotiation of price, quality, delivery date, location, etc.
- Futures contracts vary only by price. All other conditions are set by the exchange.

Which Marketing Strategy is Best?

Cash

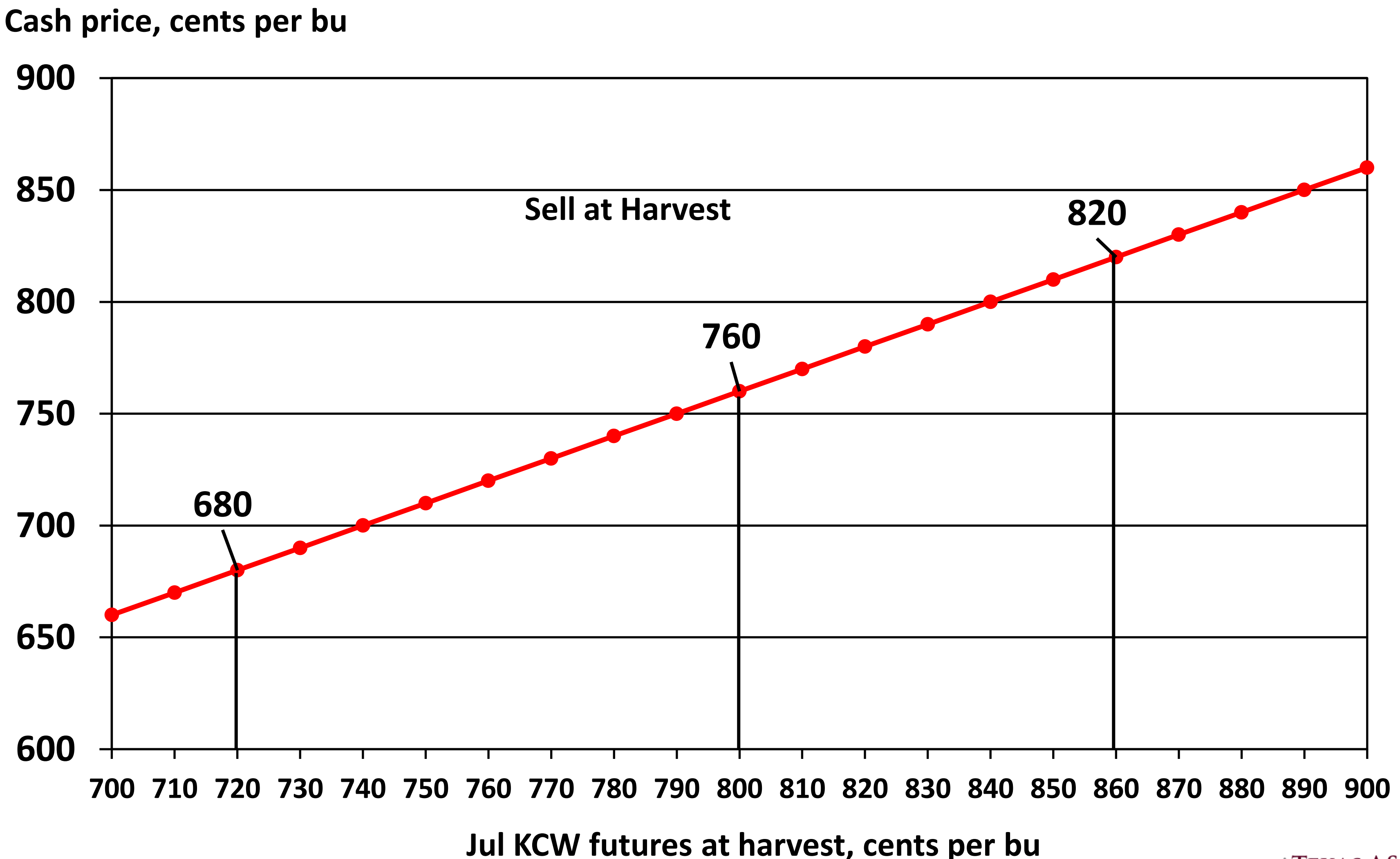
- Advantages
  - No margin calls
  - Locks in the basis
- Disadvantages
  - Must deliver physical commodity
  - Must deliver to a specific location

Futures

- Advantages
  - Not forced to deliver physical commodity
  - Not tied to a specific delivery location
- Disadvantages
  - Margin calls
  - Still have basis risk

1. Cash Sale at Harvest

Current Price July KCW: 816 (assume basis = -$0.40)



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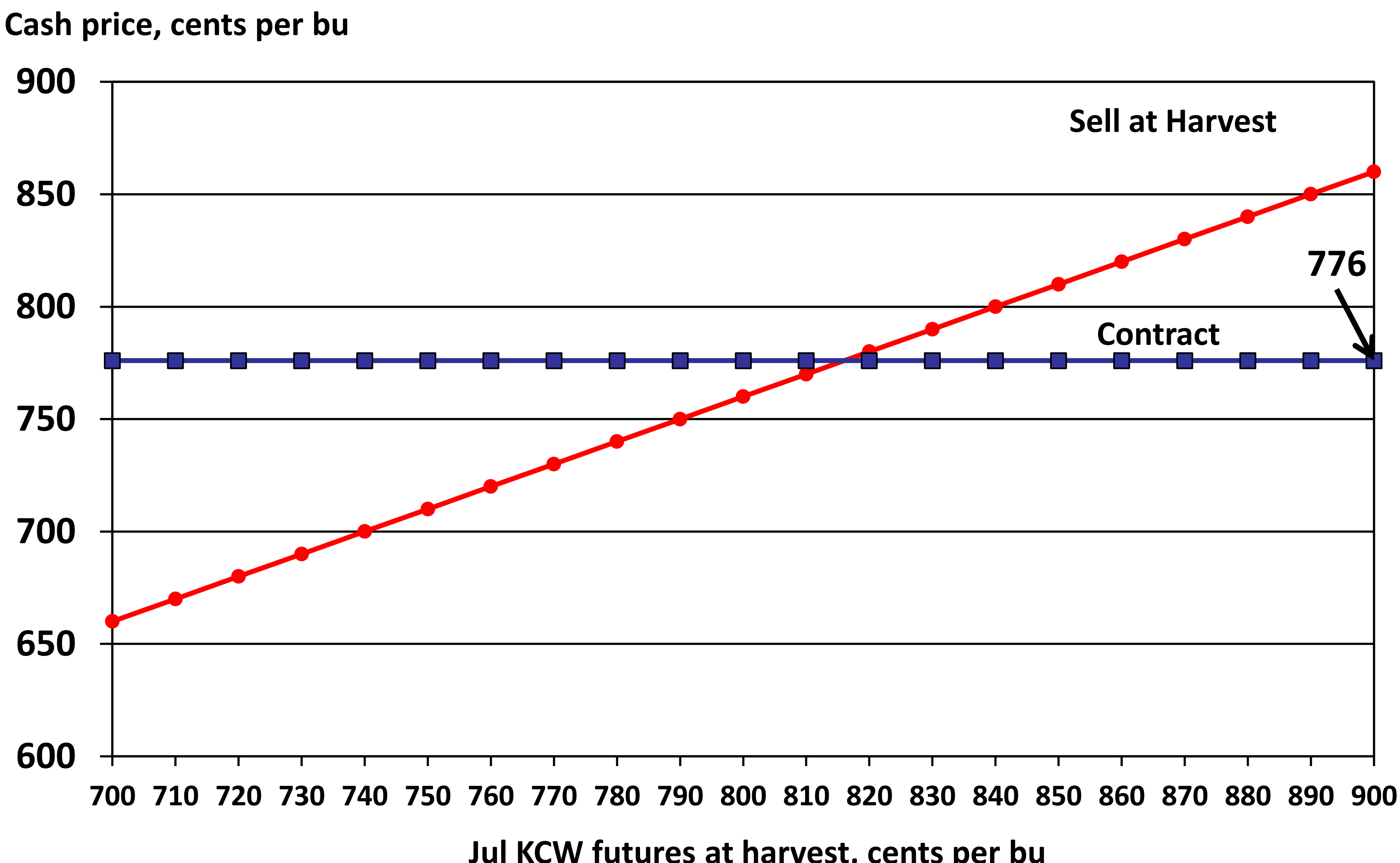
2. Cash Forward Contract
Current Price Jul KCW: 816 (assume basis = -$0.40)



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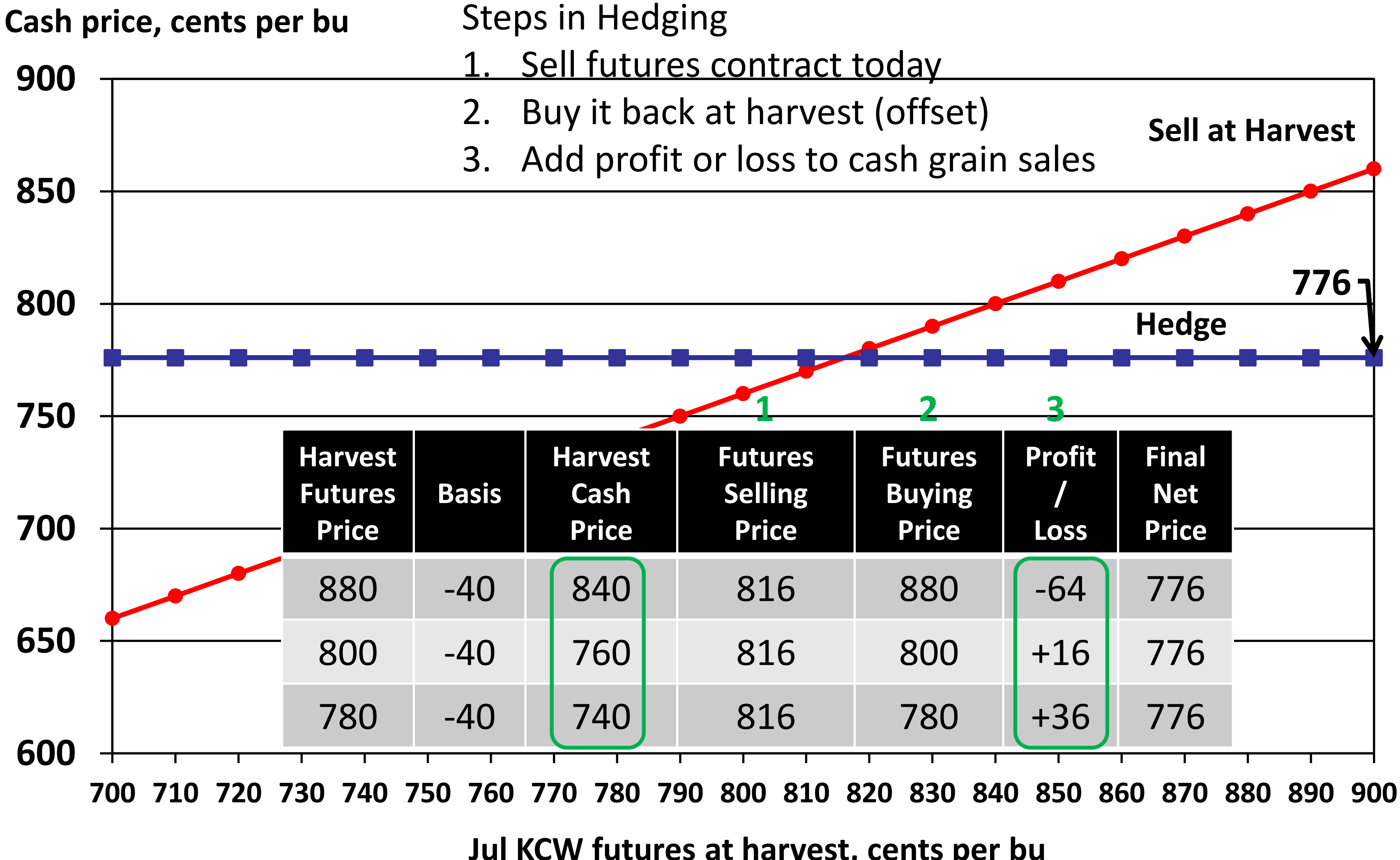
2. Hedge

Current Price Jul KCW: 816 (assume basis = -$0.40)

Steps in Hedging

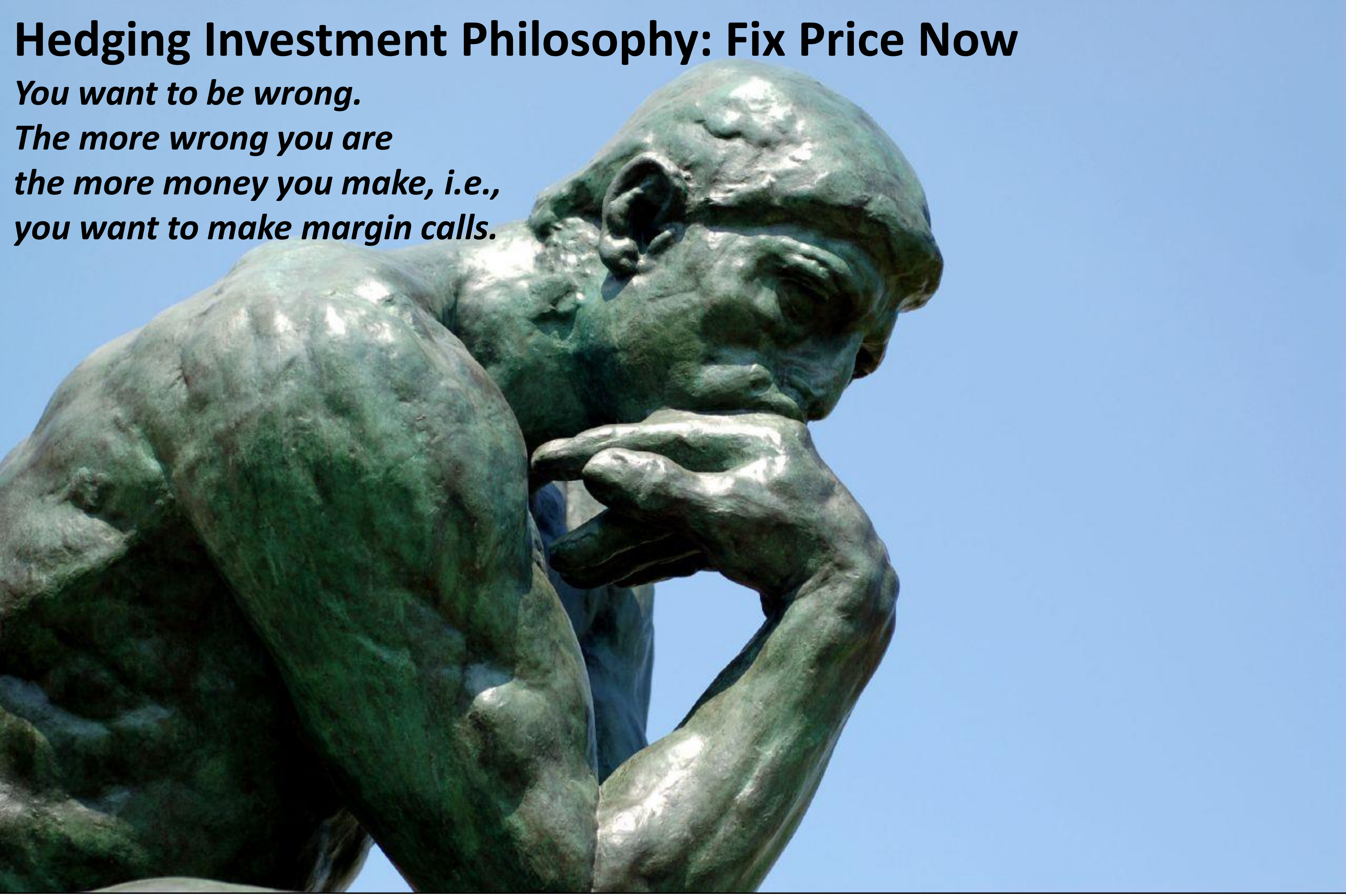
1. Sell futures contract today
2. Buy it back at harvest (offset)
3. Add profit or loss to cash grain sales



Harvest Futures Price	Basis	Harvest Cash Price	Futures Selling Price (1)	Futures Buying Price (2)	Profit / Loss (3)	Final Net Price
880	-40	840	816	880	-64	776
800	-40	760	816	800	+16	776
780	-40	740	816	780	+36	776

Hedging Investment Philosophy: Fix Price Now

You want to be wrong.
The more wrong you are
the more money you make, i.e.,
you want to make margin calls.



Wheat	KW	1/11/2023	Futures
prices in $/bushel		Current	$ 8.1650
		Harvest	$ 7.50
		Basis	$ (0.40)
Acres		1,500	
bu/acre		30	
est. production, bu		45,000	
pre-harvest mkt		0.5	
pre harvest bushels		22,500	
contract spec, bu		5,000	
contracts to hedge		4.5	
contract month		July	

Hedging with Futures Contracts								
	Pre-delivery	Sell Futures	5	July	KW	$8.1650		
	At delivery	Buy Futures	5	July	KW	$7.5000		
		Profit(loss)				$0.6650		$16,625.00
		Commission ($50/contract)						($250.00)
		Net profit (loss) from hedge						$16,375.00
		Basis at delivery				($0.4000)		
		Sell	45,000	bushels		$7.10		$319,500.00
		Net grain sales						$335,875.00
		Average price per bushel						$7.4639

What if you're right? $7.46

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Wheat	KW	1/11/2023	Futures
prices in $/bushel		Current	$ 8.1650
		Harvest	$ 9.50
		Basis	$ (0.40)
Acres		1,500	
bu/acre		30	
est. production, bu		45,000	
pre-harvest mkt		0.5	
pre harvest bushels		22,500	
contract spec, bu		5,000	
contracts to hedge		4.5	
contract month		July	

Hedging with Futures Contracts								
	Pre-delivery	Sell Futures	5	July	KW	$8.1650		
	At delivery	Buy Futures	5	July	KW	$9.5000		
		Profit(loss)				($1.3350)		($33,375.00)
		Commission ($50/contract)						($250.00)
		Net profit (loss) from hedge						($33,625.00)
		Basis at delivery				($0.4000)		
		Sell	45,000	bushels		$9.10		$409,500.00
		Net grain sales						$375,875.00
		Average price per bushel						$8.3528

What if you're wrong? $8.35

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Option Markets

- **An option is simply the right but not the obligation to buy or sell something at a predetermined price at anytime within a specific time period.**
- **Put option: Grants the buyer of the put option the right but not the obligation to *sell* a futures contract at a specified price within a specified timeframe (put--short position)**
- **Call option: Grants the buyer of the call option the right but not the obligation to *buy* a futures contract at a specific price within a specified timeframe (call--long position)**

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Buying and Selling Options

- Buying Option
  - When purchasing an option, the buyer must pay for it in full by the morning of the next business day.
- Selling Option
  - The writer of the option receives the premium paid and maintains a margin account with a broker.

Hard Red Wheat Jul '23 (KEN23)

832-0 -11-0 (-1.30%) 13:00 CT [KCBT]

832-0 x 9 832-4 x 8

OPTIONS PRICES for Wed, Jan 18th, 2023

Alerts Watch Help

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Options Type: American Options | Jul 2023 | Near the Money | Side-by-Side | Intraday | download

155 Days to expiration on **06/23/23** Implied Volatility: **28.90%** Price Value of Option point: **$50**

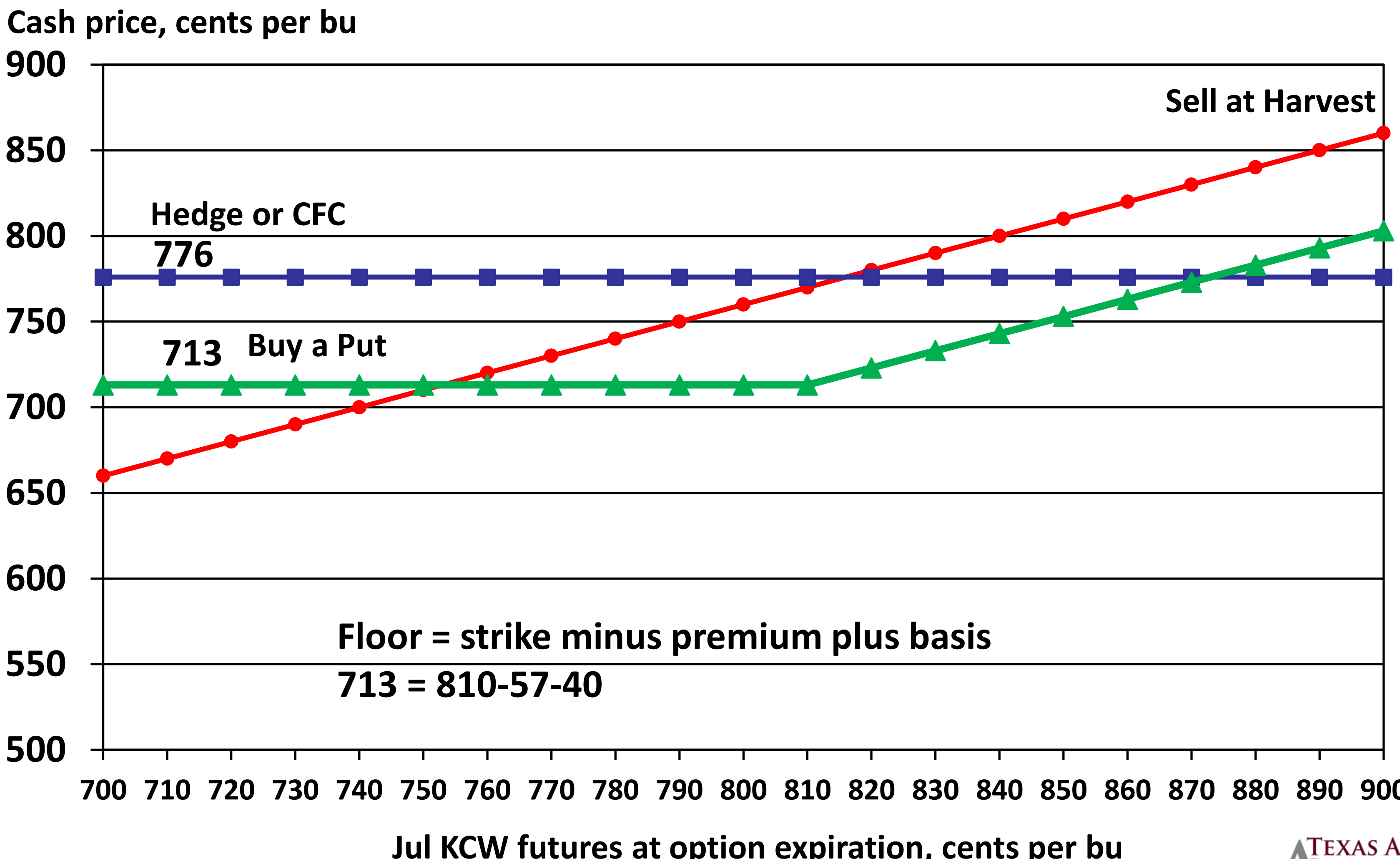
Calls	Strike	Puts
83-1	800	40-6
78-1	810	45-5
83-2	820	50-5
68-6	830	56-0
64-5	840	61-5
60-5	850	67-4
56-7	860	73-5

Futures price at option expiration	Value of an 830 put	Premium paid	Net price received Basis = -40
700	130	56	700 + 130 -56 -40 = 734
750	80	56	750 + 80 -56 -40 = 734
850	0	56	850 + 0 -56 -40 = 754
950	0	56	950 + 0 -56 -40 = 854

3. Set a Price Floor

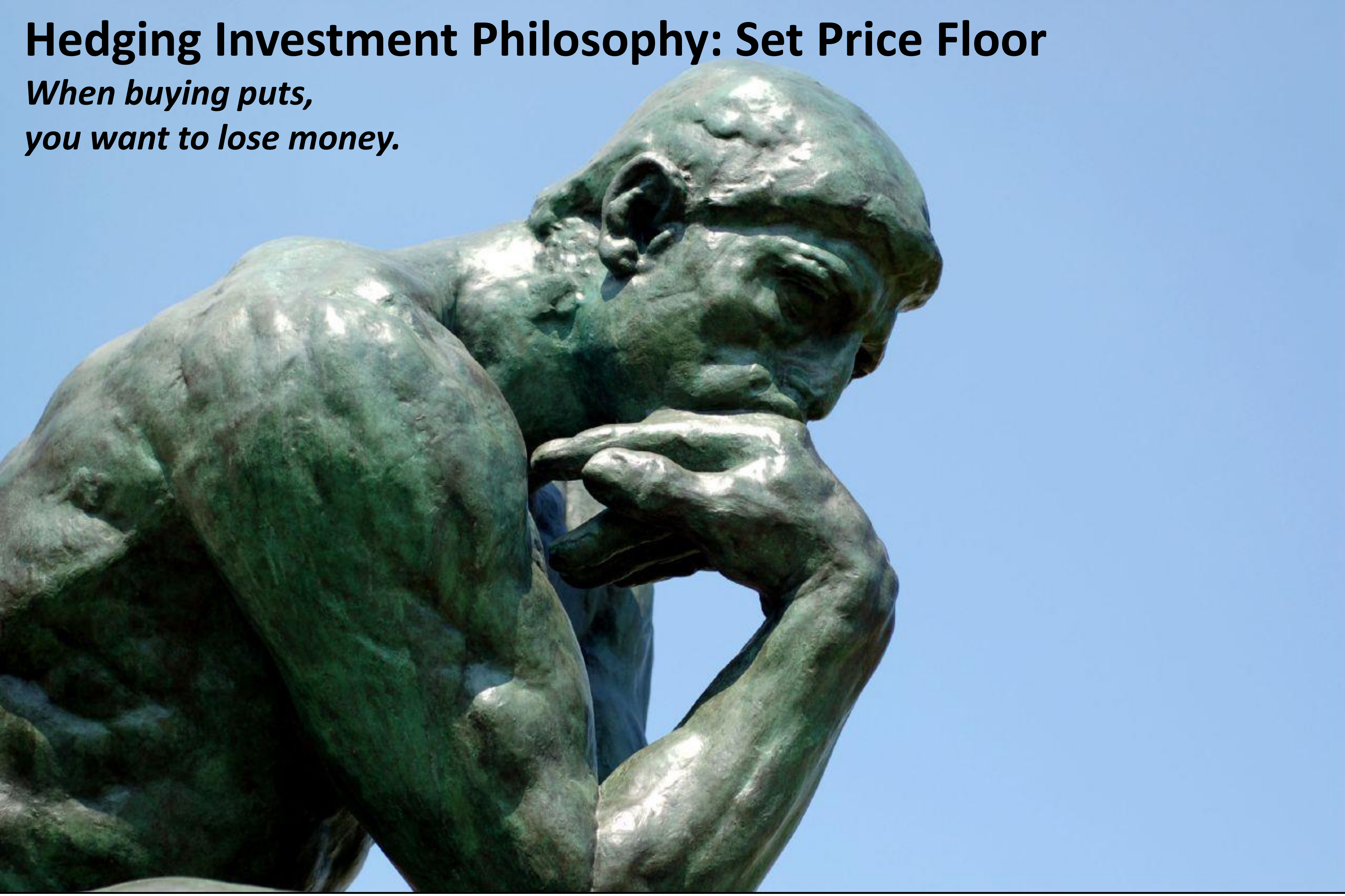
Current Price Jul KCW: 816 (assume basis = -$0.40)

Buy a put, 810 @ 57



Hedging Investment Philosophy: Set Price Floor

When buying puts,
you want to lose money.



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Wheat	KW	1/11/2023	Futures		Strike	Premium
prices in $/bushel		Current	$ 8.1650	At the money put	$ 8.10	$ 0.57375
		Harvest	$ 7.50	At the money call	$ 8.20	$ 0.59625
		Basis	$ (0.40)			
Acres		1,500			Pre-delivery	Futures price
bu/acre		30			Delivery	Futures price
est. production, bu		45,000			Basis	
pre-harvest mkt		0.5				
pre harvest bushels		22,500				
contract spec, bu		5,000				
contracts to hedge		4.5				
contract month		July				

Buying Puts								
	Pre-delivery	July	KW	trading at		$8.16500		
		Buy Puts	5	July	KW	$ 8.10	-$0.5738	($14,343.75)
	At delivery	July	KW	trading at		$7.50		
		Sell Puts	5	July	KW	$8.10	$0.6000	$15,000.00
		Profit(loss)					$0.0262	$656.25
		Commission ($50/contract)						($250.00)
		Net profit (loss) from trade						$406.25
		Basis at delivery				($0.4000)		
		Sell	45,000	bushels		$7.10000		$319,500.00
		Net grain sales						$319,906.25
		Average price per bushel						$7.10903

What if you're right? $7.11

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Wheat	KW	1/11/2023	Futures		Strike	Premium
prices in $/bushel		Current	$ 8.1650	At the money put	$ 8.10	$ 0.57375
		Harvest	$ 9.50	At the money call	$ 8.20	$ 0.59625
		Basis	$ (0.40)			
Acres		1,500			Pre-delivery	Futures price
bu/acre		30			Delivery	Futures price
est. production, bu		45,000			Basis	
pre-harvest mkt		0.5				
pre harvest bushels		22,500				
contract spec, bu		5,000				
contracts to hedge		4.5				
contract month		July				

Buying Puts								
	Pre-deliver	July	KW	trading at		$8.16500		
		Buy Puts	5	July	KW	$ 8.10	-$0.5738	($14,343.75)
	At delivery	July	KW	trading at		$9.50		
		Sell Puts	5	July	KW	$8.10	$0.0000	$0.00
		Profit(loss)					-$0.5738	($14,343.75)
		Commission ($50/contract)						($250.00)
		Net profit (loss) from trade						($14,593.75)
		Basis at delivery				($0.4000)		
		Sell	45,000	bushels		$9.10000		$409,500.00
		Net grain sales						$394,906.25
		Average price per bushel						$8.77569

What if you're wrong? $8.78

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Advantages and Disadvantages of Buying a Put Option

- **Advantages**
  - Acts as price insurance: locks in a floor price while letting you benefit from favorable price movements
  - No margin calls
  - Limited risk (the most you can lose is the premium)
  - No requirement to exercise
- **Disadvantages**
  - Cost; premiums in volatile markets are expensive
  - Pay premium up front
  - Still have basis risk
  - Option premiums may be an eroding asset
  - Option premium changes may not equal futures price changes

Risk Management Curriculum Guide, Texas A&M AgriLife Extension
https://agecoext.tamu.edu/resources/library/risk-management-curriculum-guide/
Self-study Guide to Hedging with Grain and Oilseed Futures and Options, CME Group,
https://www.cmegroup.com/trading/agricultural/self-study-guide-to-hedging-with-grain-and-oilseed-futures-and-options.html

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Cotton Incorporated

TEXAS FARM BUREAU

Master Marketer

Texas Wheat PRODUCERS

SOUTHERN EXTENSION RISK MANAGEMENT EDUCATION

Texas Grain Sorghum Producers

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