

Agricultural Commodity Marketing: Futures, Options, Insurance

Hedging Using the Futures Market

By: Dillon M. Feuz
Utah State University

Funding and Support Provided by:



Fact Sheets

- Selling Hedge with Futures
- Hedging of Livestock
- Buying Hedge with Futures

The Hedging Mechanism

- Concept: Participate in two markets where gains in one market are basically offset by losses in the other
- Basically concept of diversification
- Market 1: Cash cattle – asset (cattle) loses value as market prices decline
- Market 2: Short position in cattle futures – asset (futures contract) increases in value as market prices decline
- Purpose is to take advantage of “favorable” pricing opportunities before liquidating or acquiring the physical commodity

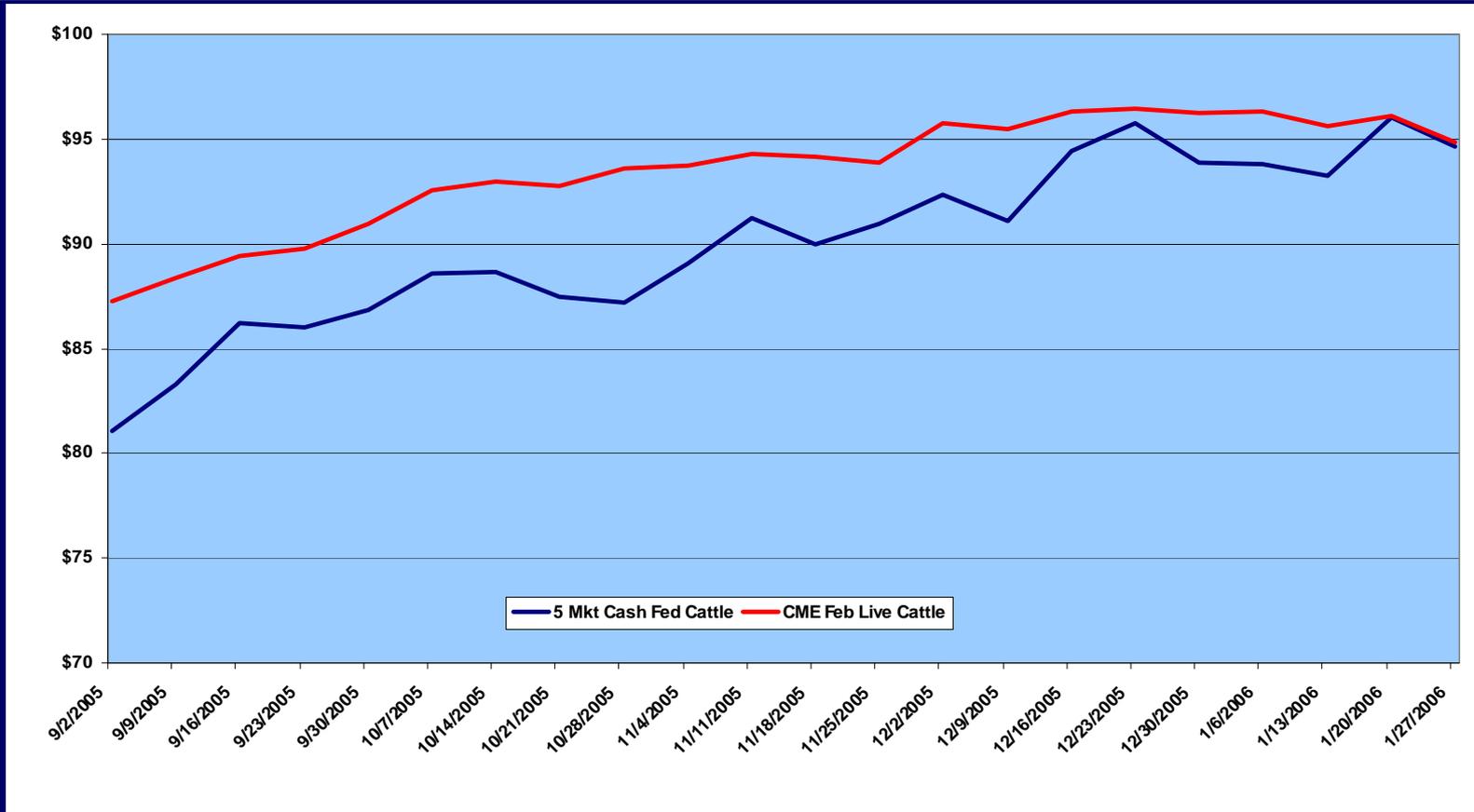
Concept of Hedging



Requirements for Hedging

- Prices in both markets (cash and futures) will respond to underlying forces of supply and demand in such a way that they will tend to move together and in the same direction
- Cash and futures market prices will tend to converge (become equal) as maturity of the futures contract approaches. Otherwise “arbitrage” will occur
- In most cash markets, convergence will be to a predictable difference, the expected BASIS

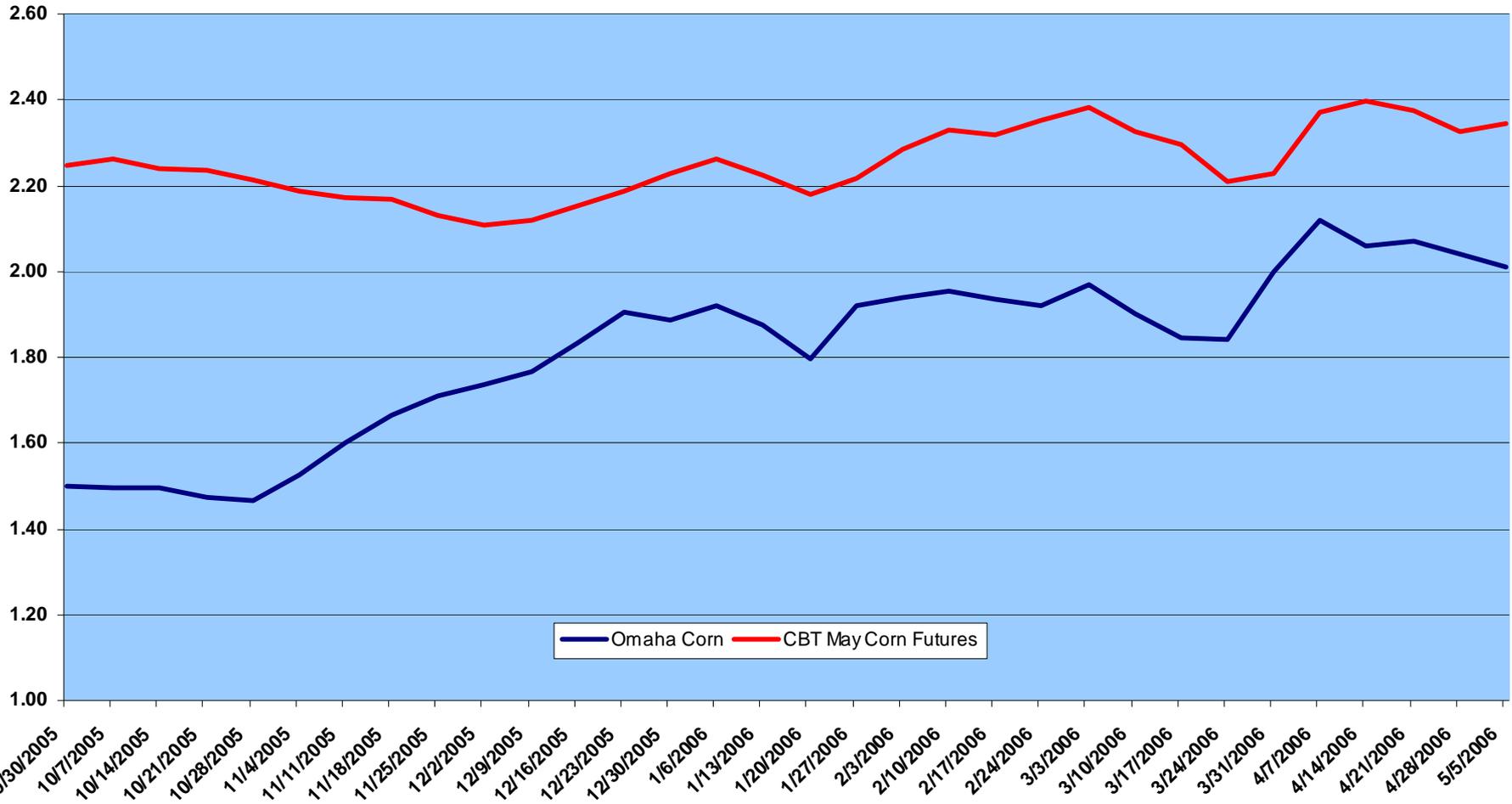
Convergence



The principle of convergence is one of the reasons why when hedging the contract closest to when the cash commodity is sold/bought should be used.

Convergence

Omaha Corn, Typical Basis -\$0.30



Convergence and Delivery

- Sellers can choose to deliver on a futures contract
- Buyers can choose to demand that the commodity is delivered
- This threat of delivery forces the cash market and the future market to converge
- Basis can be thought of as the cost of delivering
 - Primarily transportation costs
 - There are also some other costs associated with delivery

Convergence and Delivery

- A producer has sold 10 Dec Corn Futures contracts for \$3.50 per bushel
- Basis in his area is $-\$0.30$ per bushel
- If the current cash price is only \$3.00 per bushel, producer can choose to deliver on the contract
- A speculator in Chicago bought 10 Dec Corn Futures contracts
- He receives a notice that he will have to accept deliver of 10 contract of corn, 50,000 bushels
- He will try and get out of his position in the market buy selling 10 Dec Corn Futures
 - That selling pressure will lower the Dec Corn Futures
- The local elevator in the producers area needs more corn
- To get the producer to sell to him rather than deliver on the futures, he raises his price
- Dec Corn declines to \$3.40 and the local cash come up to \$3.10
 - Basis is as expected
 - The producer sells to local elevator and buys 10 Dec Corn Futures to offset his position in the futures market
- This is an over simplification, but many traders in the markets make this happen

Cash Settlement

- Under cash settlement contracts held to maturity are settled in cash rather than having commodity delivered.
- An index of cash prices is used to do this
- At maturity, “Winners” are paid difference between what they bought/sold futures contracts for and what the cash index price is. “Losers” provide this money.

Closing (offsetting) a position

- If buy/sell contract(s) they are offset by selling/buying a like number of contracts
- Buy 10 April Live Cattle futures contracts on August 29, 2005 for \$87.50/cwt.
- Offset by selling 10 April Live Cattle futures contract sometime before the April contract matures (3rd week of April 2006) at whatever the price is on the day you sell

Gains/Losses on Trades

- If sell to open a trade:
- Aug 29 sell 1 April LC contract @ \$87.50/cwt.
- Offset contract on Dec 15th by buying 1 April LC @ \$89.50/cwt.
- This implies a loss of \$2/cwt. ($\$87.50 - \89.50) or \$800 (400 cwt. * \$2)
- If price on Dec 15th had been \$85.50/cwt. The trader would have gained \$2/cwt ($\$87.50 - \85.50)

Gains/Losses on Trades Cont.

- If buy to open a trade:
- Aug 29 buy 1 April LC contract @ \$87.50/cwt.
- Offset contract on Dec 15th by selling 1 April LC @ \$89.50/cwt.
- This implies a gain of \$2/cwt. ($\$89.50 - \87.50) or \$800 (400 cwt. * \$2)
- If price on Dec 15th had been \$85.50/cwt. The trader would have lost \$2/cwt ($\$87.50 - \85.50)

Short Futures Hedge Problem Template

Date	Cash	Futures	Basis
Initial Date	Exp. Sale Price	Sell Futures Price	Exp. Basis
End Date	Sell Cash Price	Buy Futures Price	Actual Basis
		Gain/Loss	
Net Sale Price = Cash Price +/- Gain/Loss in futures			

Short Futures Hedge

Date	Cash	Futures	Basis
Dec 7	Exp. Sale \$70.57	Sell June LC \$69.07	Exp. \$1.50

Futures Hedge

Date	Cash	Futures	Basis
Dec 7	Exp. Sale \$70.57	Sell June LC \$69.07	Exp. \$1.50
May 19	Sell \$65.00	Buy Jun LC \$64	\$1.00
		5.07	
NSP = 65.00 + 5.07 = 70.07			

Futures Hedge

Date	Cash	Futures	Basis
Dec 7	Exp. Sale \$70.57	Sell June LC \$69.07	Exp. \$1.50
May 19	Sell \$73.00	Buy Jun LC \$71.50	\$1.50
		-2.43	
NSP = 73.00 – 2.43 = 70.57			

Long Futures Hedge Problem Template

Date	Cash	Futures	Basis
Initial Date	Exp. Purchase Price	Buy Futures Price	Exp. Basis
End Date	Buy Cash Price	Sell Futures Price	Actual Basis
		Gain/Loss	

Net Purchase Price = Cash Price -/+ Gain/Loss in futures

Long Futures Hedge

Date	Cash	Futures	Basis
Sep 7	Exp. Purchase \$3.20	Buy Mar C \$3.50	Exp. -\$0.30

Long Futures Hedge

Date	Cash	Futures	Basis
Sep 7	Exp. Purchase \$3.20	Buy Mar C \$3.50	Exp. -\$0.30
Mar 10	Buy Corn \$3.60	Sell Mar C \$3.90	Actual -\$0.30
		\$0.40	
NPP = \$3.60 - \$0.40 = \$3.20			

Long Futures Hedge

Date	Cash	Futures	Basis
Sep 7	Exp. Purchase \$3.20	Buy Mar C \$3.50	Exp. -\$0.30
Mar 10	Buy Corn \$3.00	Sell Mar C \$3.20	Actual -\$0.20
		-\$0.30	
NPP = \$3.00 - \$0.30 = \$3.30			

Hedging Summary and Risk

- A short hedger will receive the expected net price irregardless of whether futures prices move higher or lower
- However, if basis weakens, then the short hedger will receive a lower net price than expected
- If basis strengthens, then the short hedger will receive a higher net price than expected
- Hedging removes price level risk
- Hedging does not remove basis risk, local price risk relative to the market level

Hedging Summary and Risk

- A long hedger will pay the expected net price irregardless of whether futures prices move higher or lower
- However, if basis weakens, then the long hedger will pay a lower net price than expected
- If basis strengthens, then the long hedger will pay a higher net price than expected
- Hedging removes price level risk
- Hedging does not remove basis risk, local price risk relative to the market level