Introduction to Futures & Options Markets for Livestock

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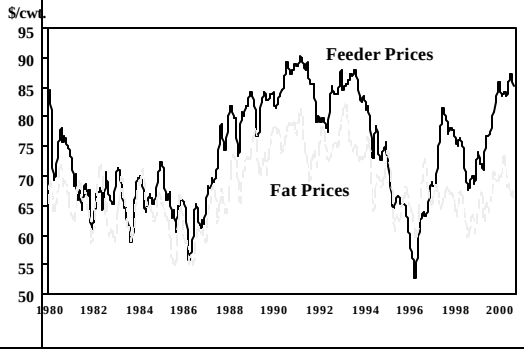
Marketing Your Cattle

- **Marketing: knowing "when" and "how" to *price* your cattle.**

"When"	"How"
■Prior to sale	■Cash Sale
■At time of sale	■Forward Contract
■Retain Ownership	■Futures Contract
	■Put Option

Feeder and Fat Cattle Futures



Cattle Futures Markets: *What Are They?*

- Auction Market for *Standardized* Forward Contracts (called *Futures Contracts*)
- Central Price Discovery Mechanism
- Commercial Users Manage Price Risk
- Speculators Invest with Hope of Profit

FORWARD CONTRACTS

A legally binding agreement between the seller (cow-calf producer) and the buyer (feedlot). The seller will deliver a specified **quantity** and **quality** of cattle to the buyer at a designated **place** and **date** for a pre-determined **price**.

- Contract must be settled through delivery.
- Easy to initiate and little or no costs to sign a contract.
- Guarantees a fixed price--for better or worse.

FUTURES CONTRACTS

A legally binding agreement between a buyer and seller to exchange a commodity at a later **date** for a particular **price**, **quantity**, **quality**, and **location**

- Futures contracts are publicly traded at a futures exchange
- The only term of the contract negotiated is the **price**.
- When the contract entered, neither the physical commodity nor money is exchanged between buyer and seller. **Both must post margin funds, however**.
- Contract settlement is **not** by delivery. Can be **cash settled** at expiration or **offset** prior to expiration.

FUTURES CONTRACT: Feeder Cattle

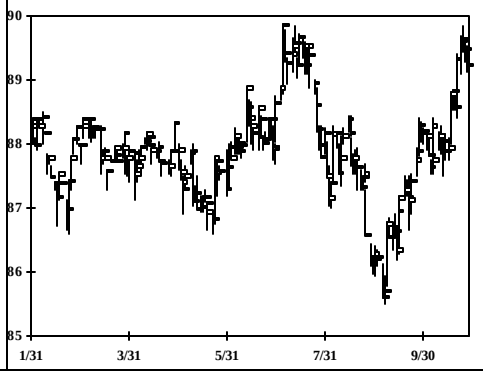
- **Exchange: Chicago Mercantile Exchange**
- **Quantity: 50,000 pounds (10,000 pound E-mini)**
- **Quality: 700-850 lb Medium Frame #1 and Medium-Large Frame #1 feeder steers.**
- **Contract Months: Jan, Mar, Apr, May, Aug, Sep, Oct, Nov**
- **Settlement at Expiration: Cash, against the CME Feeder Cattle Index™**

CME Feeder Cattle Index

CATTLE FUTURES PRICES October 27, 2000

Contract	Feeder	Fat
	----$/cwt.----	
Nov-00	88.55	
Dec-00		71.78
Jan-01	89.25	
Feb-01		73.43
Mar-01	88.55	
Apr-01	88.40	74.63
May-01	87.88	
Jun-01		71.28
Aug-01	87.75	71.30
Sep-01	87.80	

Jan 2001 Feeder Cattle Futures



FUTURES TERMINOLOGY

- Every contract has a buyer and seller
- The **buyer** is said to be **LONG** a contract
- The **seller** is said to be **SHORT** a contract
- The **LONG** (or buyer) has agreed to pay the set price for the commodity in the delivery month.
- The **SHORT** (or seller) has agreed to receive payment for the commodity in the delivery month.

USING FUTURES TO PRICE CATTLE

- **11/6/00** – Sell May-2001 Futures Contract to *price* cattle to be sold on May 1, 2001
- **5/1/01** – Sell cattle to buyer, receive payment.
- **2/15/01** – "Offset" the futures contract by Buying an equal number of May-2001 futures contracts.
- Payment of price difference:
  - Profit/Loss on Futures= Price Sold-Price Bought
- **Obligation in futures market is canceled.**

What Do I Need to Trade Futures?

- Commodity Brokerage Account
  - Application Forms.
  - Broker's Fee normally $50 per round-turn trade (range of $25-$75).
  - Margin funds.
- Commodity News Information
  - Montana Market Manager (Internet)
  - DTN
  - Newsletters

Margin

- **Initial Margin** - amount of money you must post to take a position in the futures market. Acts like a security bond.
- **Maintenance Margin** - Minimum balance that must be maintained.
- **Margin Call** - When margin balance falls below maintenance margin. Enough funds must be sent to bring margin balance back to initial margin.
- **Marketed-to-Market** – Payment of profits and losses at the end of each trading day.

Margins & Marking-to-Market

Sell 1 May-01 Feeder Cattle futures contract at $87.80. Initial margin=$675 and maintenance margin=$500

Day	Settlement Price	Profit	Margin Balance
1	$87.80	0	$675
2	$87.50	+$150	$825
3	$87.95	-$225	$600
4	$88.45	-$250	$350

=> Margin Call on Day 4 of $325 to bring margin balance to initial margin of $675.

Using Futures to Price Steers Sold in May

November 2000

- May 2001 Feeder Cattle Futures = 87.80
- Sell futures contract today, post $675/contract in margin and pay $50/contract in brokers fees.

May 2001

- Sell Steers in Cash Market (600-700 lb)
- Buy back May 2001 Feeder Cattle Futures
- Margin funds are returned to you.

Consider two cases for prices in May…

Calculating the Net Price

Lower Prices in May 2001

May Futures Price = 84.25

Local Cash Price in May = 91.50

Net Price = Cash Price + Profit on Futures.

= Cash Price + (Fut Price Sold-Fut Price Bought)

= 91.50 + (87.80-84.25)

= 91.50 + 3.55

= **95.05**

Calculating the Net Price

Higher Prices in May 2001

May Futures Price = 91.50

Local Cash Price in May = 98.75

Net Price = Cash Price + Profit on Futures.

= Cash Price + (Fut Price Sold-Fut Price Bought)

= 98.75 + (87.80-91.50)

= 98.75 + (-3.70)*

= **95.05**

***Futures loss of $3.70 per cwt is paid out over time through margin calls.**

FUTURES HEDGE:
The Formula

The Expected Net Price is...

Current Futures Price +
Expected Basis on Sale Date

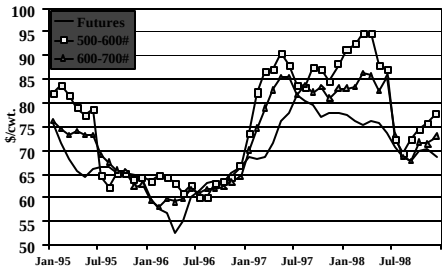
For our Example:

ENP = Current May Fut. Price + May Basis

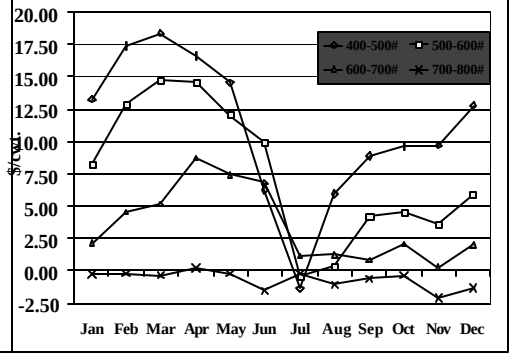
= 87.80 + 7.25 = **90.05**

- Does not matter whether the price level is higher or lower.
- Net Price only changes if the Basis is different then what was expected.

Feeder Cattle Futures Price and Billings Cash Price for 500-600# and 600-700# Steers.



Average Steer Basis for Billings, MT 1995-99.



Using Futures to Price Steers Sold in September, 2001

November 2000

- Sep-01 Futures = 87.80
- Expected Basis in Sep (600-700#) = $0.90

Expected Net-Price:
Current Sep-01 Futures +
Expected Basis
= 87.80 + 0.90 = 88.70

Consider two cases for prices in September

Calculating the Net Price in September

	Lower Prices	Higher Prices
Cash Price in Sep	82.00	92.20
Sep Futures	80.70	92.00
Basis in Sep	+1.30	+0.20
Sep Futures in Nov	87.80	87.80
Net-Price	**89.10**	**88.00**

(Sep Futures in Nov + Basis in Sep)

Option Contracts

Option contracts give the buyer the right (but not the obligation) to take a futures position at a set price.

There are two types of options:

(1) **Call Options** give the buyer the right to go long (buy) a futures contract.

(2) **Put Options** give the buyer the right to go short (sell) a futures contract.

OPTION TERMINOLOGY

- **Premium**--the amount the option buyer pays the option seller for the option.
- **Strike Price**--the price at which the buyer may obtain a short futures position (put) or long futures position (call).
- **Expiration Date**--the month when the option expires. Wheat options expire one month ahead of the futures contract.
- **Exercise**–when the option buyer converts the option to a futures position at the strike price. Can occur anytime prior to the option expiration date.

Feeder Cattle Put Option Premiums on October 27, 2000

Strike Price	Nov(88.55)	Jan(89.25)	Mar(88.55)
80	.	0.05	0.18
82	.	0.13	0.30
84	.	0.23	0.43
86	0.05	0.38	0.88
88	0.35	0.80	1.53
90	1.50	1.73	2.53

Prices and premiums are reported in dollars per cwt.

The Option Premium at Expiration

At expiration, an option will be worth the cash (intrinsic) value.

Cash Value for a Put Option

Strike Price – Current Futures Price (if positive)

Zero (otherwise)

Put Options and Insurance

- Put Options **insure** you against low prices.
- Like insurance, put options require a **premium** to the insurance provider.
- If the bad event occurs (lower prices), then you receive a payment from your put option increasing in value
- If the bad event doesn't occur, you receive no payment and lose the premium.

USING A PUT OPTION...

- A Put option sets a PRICE FLOOR or a MINIMUM net price
- The net price can be higher than the Price Floor if prices increase.

The Formula:

Price Floor = Strike Price + Basis - Premium

Net-Price = Cash Price + Option Profit

Example: Price Floor on Cattle to be Sold in March

November 2000

- Mar-01 Futures = 88.55
- Mar-01 88 Put Option = 1.53
- Expected Basis in March (600-700#) = +$5.10

Price Floor:

Strike Price + Expected Basis - Premium

= 88 + 5.10 – 1.53 = 91.57

Consider two cases for prices in March…

Calculating the Net Price

Lower Prices in March 2001

Mar. Futures Price = 83.25

Local Cash Price in Mar = 88.35

88 Put Option Premium = 4.75 (88-83.25)

Net Price = Cash Price + Profit on Put Option

= Cash Price + (Premium Sold-Premium Bought)

= 88.35 + (4.75-1.53)

= 88.35 + 3.22

= **91.57**

Calculating the Net Price

Higher Prices in March 2001

Mar. Futures Price = 90.50

Local Cash Price in Mar = 95.60

88 Put Option Premium = 0 (Fut>Strike)

Net Price = Cash Price + Profit on Put Option

= Cash Price + (Premium Sold-Premium Bought)

= 95.60 + (0-1.53)

= 95.60 – 1.53

= **94.07**

Example: Price Floor on Cattle to be Sold in March

November 2000

- Mar-01 Futures = 88.55
- Mar-01 86 Put Option = 0.88
- Expected Basis in March (600-700#) = +$5.10

Price Floor:

Strike Price + Expected Basis - Premium

= 86 + 5.10 – 0.88 = 90.22

Consider two cases for prices in March…

Calculating the Net Price

Lower Prices in March 2001

Mar. Futures Price = 83.25

Local Cash Price in Mar = 88.35

86 Put Option Premium = 2.75 (86-83.25)

Net Price = Cash Price + Profit on Put Option

= Cash Price + (Premium Sold-Premium Bought)

= 88.35 + (2.75-0.88)

= 88.35 + 1.87

= **90.22**

Calculating the Net Price

Higher Prices in March 2001

Mar. Futures Price = 90.50

Local Cash Price in Mar = 95.60

86 Put Option Premium = 0 (Fut>Strike)

Net Price = Cash Price + Profit on Put Option

= Cash Price + (Premium Sold-Premium Bought)

= 95.60 + (0-0.88)

= 95.60 – 0.88

= **94.72**

Put Option Comparison

Higher Strike Price	Lower Strike Price
Better "Insurance"	Worse "Insurance"
Higher Price Floor	Lower Price Floor
More Premium	Lower Premium
Use when Lower Prices Expected	Use when Higher Prices Expected