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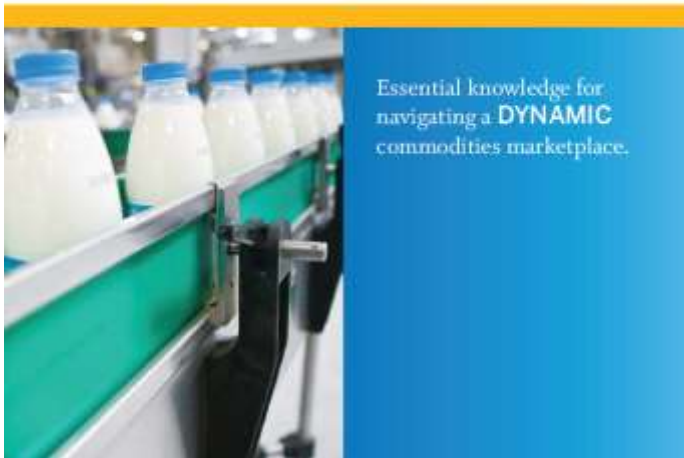
Hedging with Brokers *Using Futures or Options*

Hedging through brokers

CME Group

COMMODITY PRODUCTS

An Introduction to Trading Dairy Futures and Options



Missouri Dairy Resource Guide



- Home
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Milk Prices and Marketing

Low milk prices can stress the best dairy business plans. Methods of managing risk through milk marketing can work to reduce volatility. These links will help you to identify current milk prices, trends, and opportunities to manage price risks.

Milk Prices

- Missouri Milk Prices and Basis: [HTM or XLS](#)
- Basic Milk Pricing Concepts (Wisconsin)
- Basis and Its Importance (Penn State)
- Class III Milk: Futures and Options (CME)
- Class IV Milk: Futures and Options (CME)
- Butter: Futures and Options (CME)
- MILC Payments (USDA)
- Global Dairy Trade
- Factors That Affect Farm-gate Milk Prices (Penn State)

Risk Management

- Dairy Futures and Options Tutorial (Wisconsin)
- Introduction to Trading Dairy Futures and Options (CME)
- Put Options as Price Insurance (Kentucky)
- Options on Dairy Futures (Kentucky)
- Dairy Futures Contracts (Kentucky)
- Forward Contracting, Hedging, and Options (Penn State)
- Using Milk Futures to Lock In Profitability (Penn State)

Commercial Brokers

- eDairy, Inc.
- KDM Trading

Milk Price Outlook

- Bob Cropp's Monthly Outlook (Wisconsin)
- Dairy Outlook (Penn State)
- Understanding Dairy Markets (Wisconsin)

USDA Reports

- Milk Production (USDA-NASS)
- Dairy Outlook (USDA-ERS)
- Dairy Outlook Data (USDA-ERS)
- Dairy Imports and Exports (USDA-FAS)
- Dairy Programs and Service (USDA-AMS)
- Dairy Market News (USDA-AMS)
- Dairy Product Production (Cheese Mkt. News)

Milk Market Administrators

- Central (Northern Missouri)
- Southeast (Southern Missouri)

Milk Marketing Topics

- Southern Dairy Conference Proceedings

Where does hedging fit?

- As farms get larger and risk management becomes more critical, hedging becomes an important skill set to develop.
- Why would a Missouri dairy farm use a broker for hedging with futures and options?
 1. Farm bill margin insurance – delayed
 2. DFA Risk Management – members only
 3. LGM-Dairy – limited funding and bad timing

Hedging using “Futures”

- A hedge is taking a position in the futures market opposite the position you expect to have in the cash market.
- Start the milk hedge by selling a Class III milk contract on the futures market anytime for the next 18 months.
- Close the hedge by buying back your contract when you start shipping milk in that future month.
- Hedging allows you to lock in a Class III price by gaining in one market what you lose in another.

Milk Futures Traded on the CME

■ The CME Exchange

- Milk 200,000 lb.
- Class III
- Class IV

■ Features

- Quoted in dollars/cwt.
- Based on 3.5% butterfat
- Settlement in every calendar month
- Expiration one day prior to USDA announcement.
- Cash-settled at expiration to announced price (no need to worry about physical delivery)
- Futures converge at expiration to announced price

"Basis"

- Relationship between your actual monthly milk price and the announced Class III price
- Different federal marketing orders have different basis
- Producers may access basis from their milk check stubs, cooperative history, or estimate using Missouri basis history <http://dairy.missouri.edu/mkt/>
- Knowing the basis is important if you want to use futures and options effectively

Example

Farm price October 2013	21.17
LESS	
Announced Class III for October 2013	18.22
EQUALS	
Basis	2.95

"Basis"

Missouri Milk Prices and Basis

2013 | 2012 | 2011 | 2010 | 2009 | 2008 | 2007 | 2006 | 2005 | 2004 | 2003 | 2002 | 2001

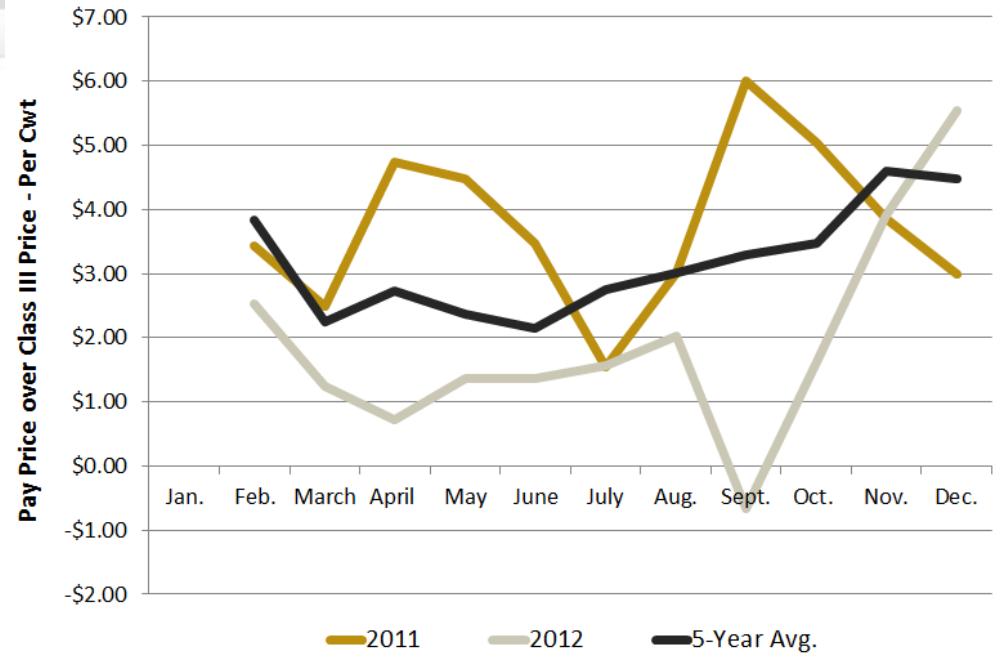
2013	Class Prices		Northern Missouri			Southern Missouri			Sold Payments
	Class II Price	Class IV Price	Uniform Price 3.0% BF Milk, August Co.	Base Class III Milk as 1% without Uniform Price	Mailbox Milk Price*	Uniform Price 3.0% BF Milk, September	Base Class III Milk as 1% without Uniform Price	Mailbox Milk Price*	Milk Income Loss Contract
Jan	\$18.14	\$17.63	\$18.57	\$0.43	\$19.50	\$20.10	\$1.96	\$19.98	\$0.12
Feb	\$17.25	\$17.75	\$18.11	\$0.86	\$18.87	\$19.65	\$2.40	\$19.35	\$0.52
Mar	\$16.93	\$17.75	\$17.87	\$0.94	\$18.51	\$19.30	\$2.37	\$19.00	\$0.75
Apr	\$17.59	\$18.10	\$18.17	\$0.58	\$18.71	\$19.40	\$1.81	\$18.87	\$0.70
May	\$18.52	\$18.89	\$18.65	\$0.13	\$18.82	\$19.49	\$0.97	\$18.74	\$0.74
Jun	\$18.02	\$18.88	\$18.80	\$0.78	\$18.45	\$19.91	\$1.89	\$19.13	\$0.22
Jul	\$17.38	\$18.90	\$18.62	\$1.24	\$18.23	\$20.17	\$2.79	\$19.63	\$0.00
Aug	\$17.91	\$19.07	\$18.92	\$1.01		\$20.41	\$2.50		\$0.00
Sep	\$18.14	\$19.43	\$19.17	\$1.03		\$20.70	\$2.56		\$0.00
Oct	\$18.22	\$20.17	\$19.25	\$1.03		\$21.18	\$2.98		
Nov									
Dec									
Avg.	\$17.81	\$18.66	\$18.61	\$0.80	\$18.73	\$20.03	\$2.22	\$19.24	\$0.35
Min.	\$16.93	\$17.63	\$17.87	\$0.13	\$18.23	\$19.30	\$0.97	\$18.74	\$0.00
Max.	\$18.52	\$20.17	\$19.25	\$1.24	\$19.50	\$21.18	\$2.98	\$19.98	\$0.75

Published by the University of Missouri Commercial Agriculture Program
Find more dairy resources at: <http://mcaey.missouri.edu>

Sources: National Federal Order Mailbox Prices
Milk Market Administrators (Central and Southeast)
USDA, FSA
University of Wisconsin

*Mailbox milk price refers to the net pay price received by dairy farmers for milk. This includes all payments received for milk sold and all costs associated with marketing the milk, including hauling. Price is a weighted average for the reporting area and is reported as the average fullfat test. Mailbox price does not include any Milk Income Loss (MILC) payments.

MU Southwest Center Historical Basis



The weighted average historical basis for the University of Missouri Southwest Center Dairy was **\$3.06/cwt** for the last three years (2010-2012)

Milk Futures Price Example

Date: Nov 18, 2013 Contract Month	Futures Settlement \$/cwt
January 2014	17.32
February 2014	16.95
March 2014	16.77
April 2014	16.74
May 2014	16.73
June 2014	16.81
July 2014	17.08
August 2014	17.12
Sept 2014	17.20
Oct 2014	17.23
Nov 2014	17.19
Dec 2014	16.99

Note: Milk futures contracts are traded for each month in the future. The only difference between contract months is the price and the date on which the contract is settled.

Price quotations from CME

Simplified Example: It is December 6, 2014.

**April 2014 Class III futures are trading at 16.75. You think prices will drop.
You sell one April 2014 Class III futures contract.**

**IN APRIL – PRICES DROP TO
\$14.75**

- April Class III (Actual) **\$14.75**
- Futures
 - Sold \$16.75
 - Bought \$14.75
 - Profit \$ 2.00
- Net Received \$16.75

**IN APRIL – PRICES RISE TO
\$18.75**

- April Class III (Actual) **\$18.75**
- Futures
 - Sold \$16.75
 - Bought \$18.75
 - Loss \$ 2.00
- Net Received \$16.75

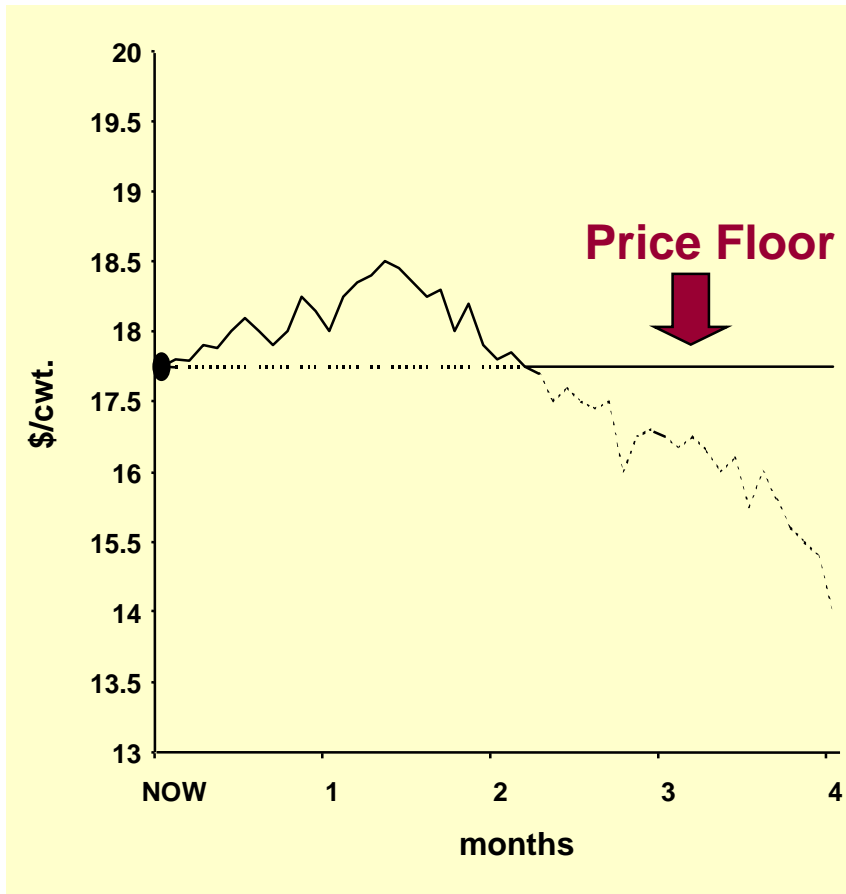
Hedging using “Futures”

- Best suited for larger dairies
 - 200,000 pounds milk per month minimum
 - Need to follow markets closely
- Must open a brokerage account with a commodity broker. (Hedging only)
 - Initial margin ~ 5% of contract value -- \$2,000
 - Maintenance margin if market moves against position
- Margin call fear factor

Hedging using “Options”

- An option is the right, but not the obligation to buy or sell a futures contract at a specified “strike” price.
- Dairy “Put” options are like buying an insurance policy against prices falling below a certain “strike price” where the premium is established minute to minute in the CME market.
- Put premiums get more expensive as:
 - The strike price gets higher
 - The underlying future month is further into the future
 - The volatility of the underlying futures contract increases

Major Advantages of Buying a Put Option:



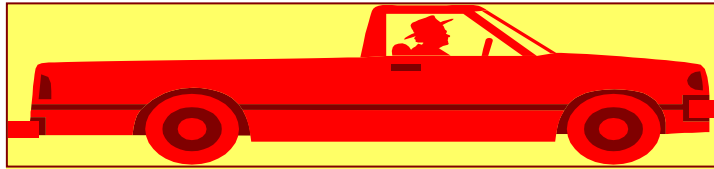
No need to change existing marketing channels,

Easy to understand,

Can establish a floor price for milk at anytime, AND

Can retain the ability to sell at higher prices

For Producers, a Put Option is Like an Insurance Policy

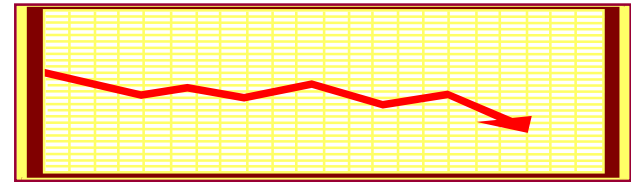


Truck Insurance

You consider buying truck insurance to protect against the RISK that the truck will have an accident.

You decide on an appropriate DEDUCTIBLE.

You pay a PREMIUM for your insurance.



Put Options

You consider buying a put to protect against the RISK that milk prices will fall.

You decide on an appropriate FLOOR PRICE.

You pay a PREMIUM for a put.

Milk Put Options

- Many put options at different prices called **STRIKE PRICES** are associated with each delivery month.
- Strike prices are established by the exchange (CME).
- Each put option (delivery and strike price) has a unique **PREMIUM**.

Class III Put Options Example: Nov 18, 2013

	<u>March</u>	<u>April</u>	<u>May</u>
Futures Prices	16.77	16.74	16.73
Put Option Strike Prices	Premiums \$/cwt	Premiums \$/cwt	Premiums \$/cwt
15.75	0.26	0.31	0.35
16.00	0.33	0.39	0.44
16.25	0.41	0.47	0.53
16.50	0.51	0.58	0.63
16.75	0.62	0.69	0.75
17.00	0.76	0.83	0.90
17.25	0.91	0.98	1.05
17.50	1.07	1.15	1.22
17.75	1.25	1.33	1.39
18.00	1.44	1.51	1.57

The Premium

- The cost of an option in dollars per cwt. as determined by open outcry.
- May vary throughout the day as futures prices change.
- Put premiums generally fall as futures prices rise and rise as futures prices fall.

Class III Put Options Example: Nov 18, 2013

	<u>March</u>	<u>April</u>	<u>May</u>
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16.25	0.41	0.47	0.53
16.50	0.51	0.58	0.63
16.75	0.62	0.69	0.75
17.00	0.76	0.83	0.90
17.25	0.91	0.98	1.05
17.50	1.07	1.15	1.22
17.75	1.25	1.33	1.39
18.00	1.44	1.51	1.57

The Premium (Cont.)

- Intrinsic value is the difference between futures price and strike price for “in-the-money” puts only.
- Time value is the amount of the premium above the intrinsic value.

Class III Put Options Example: Nov 18, 2013

March Futures Prices		= \$ 16.77	
Put Option Strike Prices	Premiums = \$/cwt	Intrinsic value	+ Time value
15.75	0.26	0.00	0.26
16.00	0.33	0.00	0.26
16.25	0.41	0.00	0.41
16.50	0.51	0.00	0.51
16.75	0.62	0.00	0.62
17.00	0.76	0.23	0.53
17.25	0.91	0.48	0.43

The Strike Price

- The price at which a put buyer has the right to sell milk futures.
- Are established by the exchanges at \$0.25/cwt. intervals.
- If below the futures price, put strike prices are:
Out-of-the-Money.
- If above the futures price, put strike prices are:
In-the-Money.
- If closest to the futures price, put strike prices are:
At-the-Money.

Class III Put Options Example: Nov 18, 2013

	<u>March</u>	<u>April</u>	<u>May</u>
Futures Prices	16.77	16.74	16.73
Put Option Strike Prices	Premiums \$/cwt	Premiums \$/cwt	Premiums \$/cwt
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16.50	0.51	0.58	0.63
16.75	0.62	0.69	0.75
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17.25	0.91	0.98	1.05
17.50	1.07	1.15	1.22
17.75	1.25	1.33	1.39
18.00	1.44	1.51	1.57

Calculating a Floor Price Using Puts

- An estimated floor price can be determined by considering:
 - Strike Price
 - Put Premium
 - Basis

Floor Price Calculation Example:
November 18, 2013

March Strike Price = \$16.75

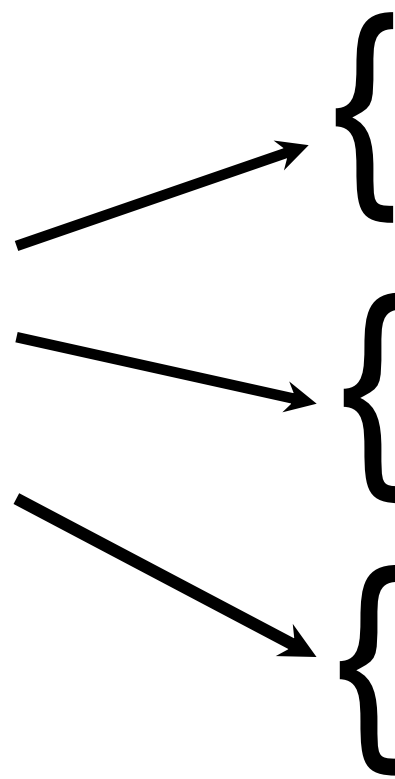
Put Premium = \$0.62

Basis = \$1.50

Strike Price	\$16.75
+Basis	+ 1.50
-Premium	- 0.62
= FLOOR PRICE	\$17.63

Choose Your Strike Price & Floor Price

Class III April Put Options Example: Nov 18, 2013	
Futures Prices	16.74
Put Option Strike Prices	Premiums \$/cwt
15.75	0.31
16.00	0.39
16.25	0.47
16.50	0.58
16.75	0.69
17.00	0.83
17.25	0.98
17.50	1.15
17.75	1.33
18.00	1.51



Strike Price 15.75
 Basis +1.50
Premium - 0.31
Floor Price 16.94

Strike Price 16.00
 Basis +1.50
Premium - 0.39
Floor Price 17.11

Strike Price 16.50
 Basis +1.50
Premium - 0.58
Floor Price 17.42

Compare floor prices and premiums against production costs of \$17.00

Note: Simple example ignores broker commission

Example using "Put Options"

- April strategy.
- Put Option Strike Price \$16.50
- + Typical Basis \$1.75
- – Put Option Premium (\$0.30)
- – Trading Costs (\$0.05)
- = Net Protection Level \$17.90
- – Cost of Production (\$17.60)
- = Net Minimum Profit \$0.30

Total Cost of an Option

- Total dollar cost of a buying a put option includes the premium per cwt. multiplied by the size of the contract.
- In addition, a commission is charged by brokers for filling option orders.

Example:

If the option premium is \$0.30/cwt then:






For 200,000 lb. put option contract (2,000 cwt), total premium cost is:

$$\begin{array}{r} \$0.30/\text{cwt} \\ \times 2000 \text{ cwt} \\ \hline = \$600 \end{array}$$

Opening and Closing a Put Option Trade

- To Open
 - Buy Pay the put option premium and commissions to broker.
- To Close
 - Do nothing A put option will automatically expire on the expiration date if it has no value.
 - Exercise Some put options may be exercised prior to expiration. All put options with value at expiration will be automatically exercised and the amount credited to your account.
 - Sell A put option may be sold at any time before the expiration date if it has value. Your broker will credit your account for the value of the put after a sale.

Review the mechanics of 4 methods

Method of insuring a margin	Where do I do this?	When do I do this?	How do I pay for it	How do I get paid?	Profitability & Cash Flow Impacts?
<i>Farm Bill Margin Insurance</i>	Local FSA Office	One time per year	Check	Every 2 months	Profit  Cash Flow 
<i>DFA Risk Management Services</i>	DFA Risk Manager	Normal office hours	Profit or loss on milk check	Profit or loss on milk check	Profit  Cash Flow 
<i>LGM- Dairy Insurance</i>	Insurance office	Last business Friday	Check at end of contract	Final indemnity payment	Profit  Cash Flow 
<i>Hedging via Brokers</i>	Your Broker	By phone <i>when</i> market open	Check to broker	Check from broker	Profit  Cash Flow 