ARE DAIRY FUTURES IN YOUR FUTURE?

GEOFF BENSON
Ag. & Resource Economics
North Carolina State University
US All Milk Price and Trend, 1989-2003

$/100 lb

US All Milk Price
Linear Trend

y = 0.0008x + 13.311
Milk Price Problems

- Volatile – large and unpredictable price swings cause cash flow problems
- Flat – long run average price is flat and profit margins are slim, on average
- Low profits, new investment, high debt, & large family living needs, also cause cash flow problems
Profitability & Cash flow → Quality of life → Profitability & Cash flow
The challenge

- Make a profit and manage “normal” cash flows at long run average prices
- Develop a strategy to survive during periods of low prices
I. Five Questions

- What are the most important risks your farm business is exposed to?
- How vulnerable is your farm business to volatile prices?
- What strategies are available to manage price risk?
- Do you have the right attitude?
- Do you have the time, knowledge and skills?
Managing Risk

- Understanding the sources of risk, risk exposure and impacts
- Setting priorities
- Understanding strategies and decision tools available and the potential reduction in risk, risk exposure and impacts
- Your attitude to risk
1. Sources of Risk

- Weather & other natural phenomena
  - Local
  - Regional, national, global
- Technology
- Societies attitudes & preferences
- Government and other institutions
- Individual human behavior
Risk Impacts

- Reduced production
- Lower prices
- Increased operating cost
- Increased investment costs
- Increased demands on the manager
Prioritizing Risk

<table>
<thead>
<tr>
<th>CHANCE</th>
<th>IMPACT</th>
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<tbody>
<tr>
<td>Very unlikely</td>
<td>Disastrous Impact</td>
</tr>
<tr>
<td>Small impact</td>
<td>Action required</td>
</tr>
<tr>
<td>Act if cost effective</td>
<td>Act immediately</td>
</tr>
<tr>
<td>Highly likely</td>
<td>Do nothing</td>
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</tbody>
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Cost Effective

$ IMPACT
Prioritizing Risk

- **RISK** -- the chance of loss or an unfavorable outcome or event
  - Anticipated
  - Unexpected
- **RISK EXPOSURE** -- The amount of loss if it occurs
- The financial consequences for the business
Prioritizing Risk

- You need to know your current financial health, past farm performance and trends
  - Profit
  - Cash Flow
  - Solvency
  - Farm & financial performance
3. Risk Mgt. Strategies

● Prevent low prices with futures, options, contracts?

● Ride it out?
  ➢ Draw on savings or borrow
  ➢ Restructure debt payments
  ➢ Adjust expenses, especially maintenance & new investments
  ➢ Add off-farm income or cut family living expenses
Cost:Benefit

- All risk management strategies involve costs and effectiveness varies among alternatives
  - Financial benefits & costs
  - Time, new knowledge and skills
  - Evaluate trade-offs
4. Attitude to Risk

- Risk averse – willing to accept a lower expected profit to avoid downside risk or will pay to reduce risk
- Risk preferer – NOT willing to accept lower profit or pay for risk reduction

⇒ Attitude to risk affects an individuals decisions in a given risk situation
Attitude & Expectations

- Futures and options are a tool to manage downside price risk and prevent the financial problems low prices will cause.
- It is unrealistic to expect that using futures and options will increase your average profit.
II. Dairy Futures & Options

- Fairly new & still evolving; volume & liquidity are changing
- Offered by Chicago Mercantile Exchange:
  - Class III milk (for cheese)
  - Class IV milk (for butter/powder)
  - Butter
  - Nonfat dry milk

Details at http://www.cme.com/prd/ag/
Class III futures are the most useful for us

- Most of the milk in the southeast is sold for fluid (Class I) uses and Class III has been the primary “mover” for class I prices
- Most of the trading volume is in the Class III contracts
Using Dairy Futures

Two uses:
- Price forecasting and planning
- Hedging your milk price
Class III Futures Prices on 10/21/03

$14
$13
$12
$11
$10
$9
$8

Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
Price Forecasting

1. Look at historical relationships between a futures price and your milk price
2. Add this difference to the futures price for a particular month
Monthly Difference Between Class III* and FO 5 Mailbox Price, Monthly, 1995-2003

Average = $2.44/cwt.

* Lagged 1 month
Example on 10/21/03

Class III futures

price in January = $11.73/cwt

+ Basis for January = $2.73

= Expected mailbox price in January = $14.46
Hedging & Speculating

- Producer sells a futures contract to protect against a price drop
- Processor buys a futures contract to protect against a cost increase
- Speculators try to outguess the market but provide “liquidity”
Hedging Strategies

- Milk is different – If you do nothing you get the average price paid by handler, + or -
- Fixed price (forward) contract with coop
- Hedge with futures
- Hedge with options
Futures Contract

- Forward contract = futures contract with Coop as broker
- Lock in a price on a certain volume of milk
  - By selling a contract for a specific month
  - By offsetting your position in the futures market by buying back an identical contract at or near the expiry date
  - At the expiry date the futures price = the cash market price
Futures Contract

- If the cash market price increases
  - The futures price increases
  - You must buy back your contract at a higher price than you paid
  - This offsets the higher cash price

- If cash market price falls
  - The futures price falls
  - You buy back a lower priced contract
  - This offsets the lower cash price
Example

- Your target for January’s mailbox price is $14.10/cwt
- The January basis for your mailbox price is $2.40/cwt
- The Class III price to hit your target is $11.70
- You sell a contract at $11.73
Result 1

- In January the actual cash price for Class III milk is down, at $10.73/cwt
- You buy your contract back at $10.73/cwt and make $1.00/cwt
- But your mailbox price is only $10.73 + 2.40/cwt. Basis = $13.13/cwt
- Total income is $13.13 + $1.00 = $14.43/cwt, so you hit your target
In January the actual cash price for Class III milk is higher, at $12.73/cwt.

You must buy your contract back at $12.73/cwt and lose $1.00/cwt.

But your mailbox price is $12.73 + 2.40/cwt. Basis = $15.13/cwt.

Total income is $15.13 - $1.00 = $14.43/cwt, so you hit your target!!!!
Futures Contract

- Locks in a price!
- Pay a commission
- May need to make margin calls to ensure you can cover your position -- Deposit cash in your trading account when the futures price moves above the price you locked in
Options

● The **right** (but not the obligation) to buy or sell a futures contract

● A “**put**” = right to sell & allows the producer to hedge

● A “**call**” = right to buy & allows the processor to hedge
Options

- An option is for a specific futures contract and a specific price.
- The agreed upon futures contract price is called the strike price.
- The cost of an option is called a premium.
- Premiums are established by public outcry pit trading, similar to the way futures prices are established.
Options

- There are a range of strike prices for each futures contract
- Premiums have 2 components:
  - Time value -- shrinks as the expiry date approaches
  - Intrinsic value -- related to the relationship between the strike and current price of the futures contract
Options

- In-the-money -- Underlying futures price is favorable compared to the strike price
- Out-of-the-money -- Futures price is unfavorable vs. strike price
- At the money
Example on 10/21/03

- January Futures = $11.73/cwt
- A January Put option for $11.75 had a 62 cent/cwt premium
- A Put option for $11.50 had a 49 cent premium
- A Put for $12.00 had a 77 cent premium
Example on 10/21/03

- Futures contract is for 200,000 lb of milk
- A $11.75 January put would cost $1,240 in premiums
- Price floor = $11.75 - $0.62 = $11.13/cwt.
Exercising Options

1. Producer buys a put and the market price falls
   - If the strike price is above the futures settlement price the in-the-money option is exercised (automatically) at expiry date
   - The producer gets this money to supplement the lower market price
Exercising Options

2. Producer buys a put and the market price increases
   - If the strike price is below the futures price at the settlement date the out-of-the-money option is worthless and is allowed to expire
   - Producer gets higher cash market price
Buying a Put Option

Range of Possible Prices

Net Cash Price

Premium

Price floor

Market price = futures price at settlement

Strike Price
Using Futures Tools

- Setting price targets
- Timing of decisions
- Quantities to be hedged
- Choosing among contracting, futures or options
Price Targets

- Full Cost of Production
- Cash Flow
  - Cash costs + or - debt service + or - family living?
- Price Enhancement – beat the market

BUT the target must be “reasonable” in light of past prices and price movements
Price Targets

- Know your financial health and performance
- Know your cost of production
- Know your cash flow needs
- Know your financial risk exposure at various price levels
- Know milk price history
Hedging

- Do not hedge expecting to increase your average milk price – the purpose is to reduce the financial impact of low prices by fixing a price or creating price floor
- The futures market may not provide an opportunity to hit your target
Class III Futures Prices on 8/21/03 & 10/21/03

![Diagram showing Class III Futures Prices on 8/21/03 & 10/21/03 with bars for Sep, Nov, Jan, Mar, May, Jul, and Sep, with prices varying from $8 to $15. The bars for 8/21/2003 are in green, and the bars for 10/21/2003 are in red.][1]
Basis

- **Strict definition:** The difference between the cash price at a particular location and the price of a particular futures contract for the same product.

- **Our definition:** The difference between the futures price and your price at the farm.
Basis

Which Milk Price?

- Federal Order Blend Price
- Gross Farm Price
- Mailbox price
Mailbox Price Basis

- Affected by many factors:
  - Federal order Class prices (4), Class use and the blend price(s)
  - Over order premiums
  - Coop re-blending
  - Premiums for fat, volume, quality
  - Deductions for hauling, promotion, coop retains, etc.
Problem

- There is no futures contract or contract month that correspond one-to-one with the price you would like to hedge
- FO minimum Class price formulas are complex but all are based on national surveys of wholesale prices for cheese, butter and nonfat dry milk
FO Prices

- The Class I and the Class II skim price are announced in advance, on the 23rd of the preceding month based on a two-week survey.
- Class II butterfat and Class III and Class IV prices are announced retroactively on the 5th of the following month based on a monthly survey of wholesale prices.
FO Prices

- FOs 5, 6 & 7 have high Class I use (65-90%)
- Focus on Class III futures, with a one month lag
  - Class III sets the Class I price most of the time
  - This months Class III market affects next months Class I price
FO 5 Basis based on Class III and Mailbox Prices, Monthly Average and Range, 1995-2003

$/Cwt.
Basis Risk

- Basis has been volatile
- Basis cannot be predicted with certainty -- may strengthen or weaken
- Calculate the basis history for your farm
Basis Risk

- Variability in historic basis patterns means you cannot lock in a price with futures or set a price floor with options with certainty or confidence.
- Options seem more useful than futures under our market conditions but can be pricey.
Pulling the Trigger

- Volatility means pricing opportunities come and go.
- Futures prices respond to:
  - Market fundamentals, so track key economic factors and understand their impact on prices
    - Supply factors
    - Demand factors
  - Technical trading driven by market psychology, so following price moves and interpreting patterns can help
What Next?

*Forward contracts, futures and options have a place on some farms*

- Learn more
- Trade paper
- Find a broker
Information Sources

- Market reports: USDA, trade publications, etc.
- Web sites
  - www.cme.com
  - www.aae.wisc.edu/future
  - www.usda.gov
  - www.usda.mannlib.cornell.edu
- Brokers & advisors
Paper trading

- It takes a while for most folks to get comfortable and willing to commit to a trade:
  - Formal management & marketing clubs
  - Informal groups of producers
  - Individual study
Finding a broker

- A broker who specializes in dairy futures is essential
  - CME web site
  - Coop management
  - Other farmers, friends, advisors
- Don’t be afraid to interview them!
- Develop a written marketing plan
III. Summary

- Futures prices are useful for price forecasting
- Use historic price relationships between your mailbox price and the Class III futures price as a guide
Summary

Futures & options can be used to hedge milk prices but:

- Is price risk your highest priority?
- If so, are futures and options the most effective price risk management tool?
- Do you have the financial information you need to assess risk exposure and set sound price targets?
- Do you have the appropriate attitude to implement a hedging strategy?
Summary

- Basis risk is a problem
  - Develop historic basis data for your farm
  - You won’t hit your target all the time
- Some family member must have the interest, time and skill to learn the ropes
- Find a competent broker you trust and can work with
- Develop a written marketing plan
“If it’s easy, fun or can be done from the seat of a tractor, there ain’t no money in it”

Anonymous Cowboy
Geoff Benson

- **Phone:** 919.515.5184
- **Fax:** 919.515.6268
- **E-mail:** Geoff_Benson@ncsu.edu
- **Web page:**
  
  http://www.ag-econ.ncsu.edu/faculty/benson/benson.html