- how milk is priced 'one' (IDFA)

farmers

raw, unprocessed milk ⟶ min farm milk price based on the products (classes)

supply & demand

fed & state dairy programs

Class I ⟶ fluid milk products

Class II ⟶ 'soft' manu. products
e.g. cheese, sour cream.

class III ⟶ hard cheeses

class IV ⟶ butter & dry products

(weekly average wholesale market price trends

price also varies by location differential by USDA

Milk → Products

days / weeks / - - / years

DAIRY OVERVIEW

(1)

Dairy producer | Dairy Manufacturer | Dairy consumers

(production) (Manu - -) (Marketing)

price risk (volatility)

∴ futures contract | Options Contract → to ensure to meet break even cost

↓

Offer opportunities for processors and food companies to manage price risk involved in the processing & purchase.

Hedger → A trader or commodity producer who places a trade in order to protect against price fluctuations in commodities or financial instruments.

future contracts

CME Globex → transactions / electronic trading

options contracts → by hand or electronic

future & options on

Dry whey, class III milk, class IV milk, cheese, butter, Non fat Dry Mi

cheese + whey

Contract Size → 24 mont listing cycle

class III milk future	Dry whey	Butter
class IV milk future	Nonfat Dry Milk	Cheese
200,000 lbs	44,000 lbs	20,000 lbs

FEDERAL MILK MARKETING ORDERS

(2)

USDA initiative to help ensure that dairy farmers receive fair value for there milk.

Marketing Area & Marketing order

10 areas in US

- classified price plan
- a system of min prices
- terms of marketing order
- provision for adminstering the order

farmers: reasonable min price throuht year

consumers: adequate supply of milk thru out year

DAIRY PRICE REPORTING AND SETTLEMENT PRICES

AMS (Agricultural marketing services) survey

★ (NDPSR) → USDA website

UNDERSTANDING SUPPLY AND DEMAND : DAIRY

- Milk prod steadily increasing in US over years.

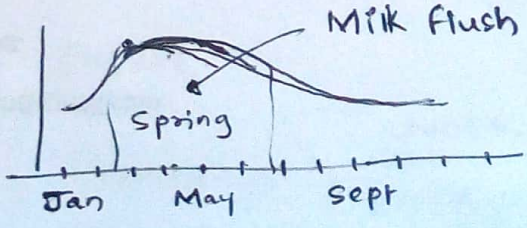
2016 → 212 billion lbs
9.3 million dairy cows

- better heard manage ment
- technological + genetic advancements

top 5 dairy prod → CA, WI, NY, ID, MI

raw milk produced 365 days /yr

summer: cow milk ↓ ∴ cooling system & milk ↑



(9)

Milk → perishable

: converted into cheese / butter --

(storable)

Demand & Supply

- Domestic & International economic condition
- Competing dairy Alternatives
- Health benefits of dairy Products

Non fat dry Milk & Whey (most demanded products)

- Energy / interest rate / currency

CME DAIRY SPOT MARKET

electronic market for 4 dairy products

(cheese, butter, drywhey, Non fat Dry Milk)

affect pricing of class III & IV Milk

- Inventory control

Future → contract to buy or sell the underlying asset for a specific price at a pre-determined time

spot market → ∽ market for immediate delivery

Basis = diff bet^n spot & future

spot - future

(generally -ve, ≡ Contango) → UNDER

if +ve, ≡ Backwardation → OVER. condition)

(1)

options → contract that give holder of instr the right to buy or sell underlying asset at a predetermined price

DAIRY BASIS : Help hedgers determine

- If they should use future or options to manage price risk.
- when to initiate, modify or close out a hedge position
- who they should buy dairy products from, or whoto sell to

Milk check.

Dairy Basis = Mail Box price − Class III milk future price

better correlation → better it is to strategize

farmer's milk → gross monthly price

milk check

butterfat	3.5 %
protein	3.1 %
other solids	5.9 %

→ Std levels

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current Basis = today's cash market price − nearby future price

Differed Basis = cash forward market price − future contract price

2 h 8.0

(B)

strengthening Basis (more +ve or less -ve Basis) → short hedger

Weakening Basis (more -ve or less +ve Basis) → long hedger.

Buying futures for protection against rising dairy prices

		Cash price	Nov Futures
Cheese price ↑			
(today)	May	$1.75	Long @ $1.75
	Nov	$2.00	Short @ $2.00

Cheese net selling price

cash price	$2.00
future gains	-.25
	$1.75

		Cash price	Nov Future
Cheese price ↓			
	May	$1.75	Long @ 1.75
	Nov	$1.50	Short @ $1.50

Here, hedger lost chance to make profit. But this is the trade off

lower price Vs price protection

Cheese net selling price

cash price	$1.50
future loss	+.25
	$1.75

Hedge Goal → cheese purchase rate $1.75

= hedge result

(This is managing risk)

(6) Selling futures : Hedge against falling dairy prices

Dairy mailbox price ↓	cash price	Nov futures
May	$17.00	short @ $17.00
Nov	$15.00	Long @ $15.00.
	cash loss = $2.00	futures gain = $2.00

mailbox price = net price received = payment received − marketing costs.

Dairy net sell price

cash price	$15.00
future gain	+ $2.00
	$17.00

Dairy mailbox price ↑	cash price	Nov futures
May	$17.00	short @ $17.00.
Nov	$19.00	Long @ $19.00

Dairy net sell price

cash price	$19.00
future loss	−$2.00
	$17.00

Establishing a ceiling price by buying dairy call options

buying futures → lock in purchase price

(loss in cash market = gain in future market & vice versa)

options → offers price protection + flexibility.

buying call options → establish max purchase price. (ceil)
+ opportunity to buy at lower price

e.g. today → Dec.

march class III milk future price = $15.50/CWT

expected purchase price = $16.00/CWT

(determined by manufacturer so that he can get profit)

Alternative

i) lock in purchase price of $15.50.
(long futures hedge)

ii) (long call options hedge)

- ceiling price
- potentially buy milk at a lower price.

call option → the right, but not the obligation, to buy futures at the option strike price.

December: buy march at the money call option

strike price	$15.50
premium	$0.50
max purchase price (ceiling price)	$16.00

(88)

If class III milk price ↑

march class III milk future price	=	$17.00
call strike price	=	-$15.50
call option value	=	$1.50
call premium	=	-$0.50
Net gain on call option	=	$1.00

(expected purchase price = $16.00)

If class III milk price ↓

march class III milk futures price = $14.00

(15.50 call options) (14.00 futures price)

max loss on call option hedge (on expiration) = $0.50

march futures price	$14.00
call option premium	$0.50
net purchase price	$14.50

- **Benefits of buying call options**
  - knows the cost of the option
  - max loss limited to option premium
  - establish ceiling price
  - potential to buy at lower price.

(9)

Establishing a floor price by buying dairy Put options

selling futures as a hedge against falling price

(Loss in cash market = gain in future market
& vice versa)

options → price protection + flexibility.

purchase put options → establish a minimum selling price (floor)
+ opportunity to sell at a higher price

e.g. today → Dec ∴ cheese exporter is planning to sell a portion of his inventory of cheddar in early spring.

April cheese futures price	$1.75
Expected selling price (for break even)	$1.70

Alternative i) (short future hedge)
lock in selling price of $1.75

ii) (long put options hedge)
- floor price
- potentially sell cheese at higher price

put option → the right, but no obligation, to sell futures at the option strike price

December : Buys at the money put option

strike price	$1.75
premium	- $0.05
min selling price	$1.70

(21)

If cheese price ↓

put strike price	$1.75
April cheese future price	-$1.60
put option value	0.15 ¢
put premium	-0.05 ¢
net gain	0.10 ¢

(net selling price = $1.70)

If cheese price ↑

April cheese futures price	$1.85
put option premium	-0.05
net selling price	$1.80.

(potentially selling cheese at higher price)

max loss on put option hedge : 0.05.

April cheese futures price	$1.85
put option premium	-0.05
net selling price	$1.80.

Benefits of buying put options

- knows cost of the option.
- maximum loss limited to option premium
- establish a floor price
- potential to sell at higher price.

DAIRY FUTURE STRATEGIES

- Intra-market calender spreads
- Intermarket ~~cal~~ spread
- commodity product spread
- dairy strips.

Dairy strip : - purchase or sell of series of dairy futures contracts

- representing upto 18 consecative months along the forward curve as a single transaction.
- price of the strip = avg of leg price
- facilitate planning operations and cash flows for producers and manufactures by allowing them to lock in a fixed price over a defined period.

Spreading : - simultaneously buy one futures contract & sell another.

- tends to involve less risk than outright futures position, also tend to have lower margin req.

Intra market calender spread : combi of long future position & short future position in the same dairy product but diff contract months

Inter market spread : simultaneously buying and selling 2 diff but related dairy futures with same contract month, in order to trade on relationship bet^n the two commodities

(N)

Commodity product spread : involves buying & selling of futures contracts based on raw commodity, Vs futures based on ~~futures~~ derived or processed commodities.

ESTABLISHING A DAIRY SELLING PRICE RANGE

prev/other

Short Hedging strategies
- sell futures to lock in a selling price
- buying put options for minimum selling price.

Buy put option (floor price) + sell call option (ceil price)

ESTABLISHING A DAIRY BUYING PRICE RANGE

prev

Long hedging strategies
- buying features to lock in purchase price
- buying call options for max purchase price

{ Upside

Buy call option (ceiling price) + sell put option (floor price)