Pricing Milk

Product Classification

Class I
- Bottled Milk
- Buttermilk
- Eggnog

Class II
- Ice Cream
- Pkg. Cream

Class III
- Cheese
- Cream Cheese

Class IV
- Butter
- NFDM

What Determines Farm Price?

Commodity Prices:
- butter
- cheese
- NFDM
- whey

Component Values:
- butterfat
- protein
- other solids
- nonfat solids

Class Prices:
I, II, III & IV

Farm Prices:
- component prices
- milk composition
- end use
How Farm Prices are Determined

- Step 1—NASS survey for commodities
- Step 2—compute component values
- Step 3—compute class prices
- Step 4—compute PPD
- Step 5—pay farmers

Commodity Prices

- Conducted by NASS and determined by national surveys of processing plants
- Reported every Friday
- “because milk used in manufactured products obtains its value from the components of milk, it is the components that should be priced”
September 2002 Prices

- Announced Fri, Oct 4th
- Usually 5th of the following month
- Used NASS data for weeks ending 8/31, 9/7, 9/14, 9/21, & 9/28
- Component prices
  - Butter $1.9094
  - Nonfat dry milk $0.9634
  - Cheese $1.6573
  - Dry whey $0.2862

Step 2

Compute Component Values Based on Formulas

Compute Average Component Prices

- Butterfat = (Butter price – 0.115)/0.82
- Protein = ((Cheese price – 0.165) X 1.405) + (((Cheese price – 0.165) X 1.582) – Butterfat price) X 1.28)
- Other Solids = (Dry whey price – 0.14)/0.968
- Nonfat Solids = (Nonfat dry milk price – 0.14)/
Butterfat Price Calculation

- Butterfat Price ($/lb)
  \[(\text{Butter Price} - 0.115)/0.82\]

The $0.115 is the cost to make a pound of butter and the 0.82 is the fat content of butter.

Component Price Calculation

- Protein Price ($/lb)
  \[((\text{Cheese Price} - 0.165)*1.405) + ((\text{Cheese Price} - 0.165)*1.582) - \text{Butterfat Price}*1.28\]

The $0.165 is the cost to make a pound of cheese. The 1.405 and 1.582 are the cheese yields if an additional tenth of a pound of protein or butterfat is contained in milk. The 1.28 is the ratio of protein to butterfat in cheese.

Component Price Calculation

- Other Solids Price ($/lb)
  \[(\text{Dry Whey Price} - 0.14)/0.968\]

The $0.14 is the cost to make a pound of dry whey and the 0.968 is the pounds of solids in a pound of whey.

- Nonfat Solids Price ($/lb)
  \[(\text{Nonfat Price} - 0.14)\]

The $0.14 is the cost to make a pound of NFDM.
Resulting September Component Prices

- Butterfat $1.0099
- Protein $2.0646
- Other solids $0.0367
- Nonfat solids $0.7696

Step 3

Compute Class Prices

Compute Class III & IV Prices

- Class III Skim Price = (Protein Price X 3.1) + (Other Solids Price X 5.9)
- Class III Price = (Class III skim X 0.965) + (Butterfat Price X 3.5)
- Class IV Skim Price = Nonfat Solids Price X 9
- Class IV Price = (Class IV Skim X 0.965) + (Butterfat Price X 3.5)
Class III Price Calculation

- Class III Skim Milk ($/cwt)
  
  $ \text{(3.1 x protein price) + (5.9 x other solids price)}$

- Class III Milk ($/cwt)
  
  $ \text{(0.965 x Class III Skim Milk) + (3.5 x butterfat price)}$

*The 3.1 is the % protein in milk, the 3.5 is % butterfat in milk, and the 5.9 is the % other solids in milk*

Class IV Price Calculation

- Class IV Skim Milk ($/cwt)
  
  $ \text{(9 x monthly nonfat solids price)}$

- Class IV Milk ($/cwt)
  
  $ \text{(0.965 x Class IV Skim) + (3.5 x butterfat price)}$

*Component prices are $/lb. The 9 is % nonfat solids in milk, the 0.965 is pounds of solids in nonfat solids, and the 3.5 % of butterfat in milk*

September Class III & IV Prices

- Class III Skim $6.93
- Class III Price $10.22
- Class IV Skim $6.62
- Class IV Price $9.92
Step 4

Compute Producer Price Differential (PPD)

Where Does Milk Go?

- Manufactured products - 57%
  - cheese - 38%
  - butter - 7%
  - ice cream - 12%
- Fluid Products - 43%
- 52% of cheese produced in the West
- 40% of butter produced in the West
- 25% if ice cream produced in the West

Value of Northwest Pool

<table>
<thead>
<tr>
<th>Producer Milk</th>
<th>Pounds (mil)</th>
<th>Value (mil)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class I</td>
<td>179</td>
<td>$19</td>
</tr>
<tr>
<td>Class II</td>
<td>36</td>
<td>$6</td>
</tr>
<tr>
<td>Class III</td>
<td>250</td>
<td>$25</td>
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<tr>
<td>Class IV</td>
<td>216</td>
<td>$22</td>
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<tr>
<td>Gross Value</td>
<td>680</td>
<td>$73</td>
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<tr>
<td>Net Adjustments</td>
<td>($66)</td>
<td></td>
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<tr>
<td>PPD</td>
<td></td>
<td>$1.12/cwt</td>
</tr>
</tbody>
</table>
Example

- 100,000 lbs milk
- 3,500 lb fat (3.5% X 100,000)
- 3,000 lb protein (3.0% X 100,000)
- 5,700 lb other solids (5.7% X 100,000)

Example cont

- Fat Value = $3,535
  - (3,500 lb fat X $1.0099
- Protein Value = $6,194
  - 3,000 lb protein X $2.0646
- Other Solids Value = $209
  - 5,700 lb other solids X $0.0367
- Total Component Value = $9,937

Step 5 – Pay the Farmer

- Component Value = $9,937
- PPD = $1,120
  - 1,000 cwt X $1.12/cwt
- Other Receipts = $1000
  - Milk quality, volume
- Deductions = $1,500
- Net = $10,557
  - $10.56/cwt
August Milk Utilization and Price

<table>
<thead>
<tr>
<th></th>
<th>1 (NY)</th>
<th>6 (FL)</th>
<th>30 (WI/NM)</th>
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<tbody>
<tr>
<td>Class I</td>
<td>43.3</td>
<td>92.0</td>
<td>21.2</td>
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<tr>
<td>Class II</td>
<td>19.7</td>
<td>6.5</td>
<td>3.1</td>
</tr>
<tr>
<td>Class III/IV</td>
<td>37.0</td>
<td>1.5</td>
<td>75.7</td>
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<tr>
<td>Avg Price ($/cwt)</td>
<td>$12.16</td>
<td>$14.19</td>
<td>$10.20</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>33 (MI/MI)</th>
<th>124 (OR/WA)</th>
<th>126 (TX/NM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class I</td>
<td>36.7</td>
<td>26.3</td>
<td>45.0</td>
</tr>
<tr>
<td>Class II</td>
<td>7.1</td>
<td>5.3</td>
<td>13.2</td>
</tr>
<tr>
<td>Class III/IV</td>
<td>56.2</td>
<td>68.4</td>
<td>48.1</td>
</tr>
<tr>
<td>Avg Price ($/cwt)</td>
<td>$11.19</td>
<td>$10.86</td>
<td>$11.95</td>
</tr>
</tbody>
</table>

Class I Differentials

- **Old**
  - cost of transporting milk from Eau Claire, WI
    - $0.21/cwt/100 miles
    - $1.79/cwt in OR

- **New**
  - similar pricing structure as old, only less in most regions
  - $1.90/cwt in OR
  - Costs $3/1000 miles

Advanced Pricing Factors

- Dairies in AZ and SE are paid for fluid and fat
- Advanced pricing factors are calculated
  - Announced Friday before 23rd
  - Use two-week NASS product price averages
- Class I price
- Class II price
October Advanced Prices

- Use NASS data for weeks ending 9/7 and 9/14
- Compute weighted average prices:
  - Butter $0.9297
  - Nonfat dry milk $0.9080
  - Cheese $1.1427
  - Dry whey $0.1703

October Advance Component Prices

- Component formulas same as presented in previous section
  - Butterfat $2.2104
  - Protein $2.0488
  - Other solids $0.1398
  - Nonfat solids $0.8751

Compute Advanced Class Pricing Factors

- Class III skim = (Protein price X 3.1) + (Other solids price X 5.9) 
  - $6.64/cwt
- Class IV skim = Nonfat solids price X 9 
  - $6.91/cwt
- Butterfat Price = $0.9935
Compute Advanced Class II Prices

- Class II Butterfat Price = Butterfat Price + $0.007
  - $1.0169/lb
- Class II skim price = Advanced Class IV skim price + $0.70
  - $7.61/cwt
- Class II Price = (Class II Skim Price X 0.965) + (Class II Butterfat X 3.5)
  - $10.90/cwt

Compute Advanced Class I Prices

- Class I Butterfat Price = Advanced Butterfat Price + (Class I Differential/100)
  - $1.0125/lb
- Class I Skim Price = (higher of advanced Class III or IV skim price) + Differential
  - $8.81
- Class I Price = (Class I skim X 0.965) + (Class I Butterfat Price X 3.5)
  - $12.25

Class Price Summary

- Class I $12.25
- Class II $10.90
- Class III $9.92
- Class IV $10.22