

Milk Pricing

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Milk is as an important human food because it is so versatile. It is consumed as an unadulterated beverage and as an ingredient in other beverages. In addition, many food products are derived from its components.

Because milk is perishable and can be a disease-carrying agent, special systems have been developed for marketing it. In 1937 the United States developed the federal order system for milk; some states also operate milk orders. About 64 percent of the milk produced and marketed in the United States moves through a federal milk marketing order, and an additional 18 to 20 percent is marketed through state marketing orders. The largest of the state orders is the California system. California produces almost 19 percent of the nation's milk.

Pooling

The development of milk marketing orders over the last 4 decades has been influenced largely by the cooperatives that market beverage milk, but the dairy cooperative movement really came into being to market the main products derived from milk, butter and cheese. About 80 percent of the milk marketed today moves through cooperatives. Cooperatives developed the practice of pooling. A cooperative pools the milk from many producers; each producer contributing milk into the pool receives an average price that is derived from the pool. In the order system this average price is referred to as the uniform blend price. The order determines a minimum uniform price for milk to be paid by all regulated processors. Producers who are cooperative members and those who are not both receive this minimum uniform price set by the order, plus any premiums the milk processor may pay milk suppliers.

Cooperatives represent their members, so processors deal directly with the cooperative rather than with individual producers. Order regulations recognize a cooperative as a single milk supplier. Cooperatives may sell milk to processors across many regions and regulated by many orders. Each order requires the cooperative to receive that order's uniform producer price. Cooperatives develop their own pool price to determine a uniform price to pay members from the co-op's total receipts.

Location and Form

Milk must be moved quickly from dairy to market because it is so perishable. For this reason processors became localized. Processors had to offer prices high enough to encourage suppliers to deliver milk to their docks. Product characteristics and local supply-demand conditions led to a natural pricing differentiation for raw milk.

Processors tended to specialize in different milk products. Beverage milk is the most perishable form, so its market was the most localized, with producer deliveries subject to weekly and seasonal demand. Beverage milk processors often had to pay higher prices to lure milk into their plants. Processors manufacturing other prod-

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ucts had the advantage of being able to store their manufactured products. Their products were less perishable and, in some instances, less subject to weekly and seasonal demand variability. Their product inventory was also slower to turn over. These nonfluid processors tended to locate in areas where milk supplies were substantial, so no location differential developed for milk used in manufacturing.

Classified Pricing

The concept of classified pricing developed informally, but was made part of the order regulations. All milk associated with a federal order is eligible for beverage use, but not all eligible milk is bottled. Some milk is used for other products. Only Grade A milk is regulated through a federal order. Classified pricing requires that Grade A milk, marketed to a processor regulated by an order, be valued as it is used. Milk sellers and beverage processors choose to keep the milk that goes into other products associated with the order so that its value goes into the pool and producers receive the uniform price for it. The uniform price paid to producers is the weighted average of the class prices. The weights are the amounts of milk associated with each use class. A very simple example (Table 1) will illustrate.

In this example, 10 million pounds of milk is marketed and its total value is \$1,407,000. The uniform price is \$14.07 per hundredweight.

Table 1. The uniform price.

Class	Price	Thousand cwts.	Thousand dollars
I	\$16.00	50	\$800
II	\$14.00	15	\$210
III	\$11.00	29	\$319
IV	\$13.00	6	\$78
Total		100	\$1,407
Uniform (average) price	\$14.07		

Class I Prices

In the federal order program, Class I milk is used as a beverage. Regulated Class I milk processors pay the Class I price for the milk they bottle. Since the federal order regulations are written to ensure an adequate supply of bev-

erage milk, the Class I price has a location differential added to both the skim portion and the butterfat portion of the Class I price. The Class I price is announced in advance of the month to which it applies.

The Class I skim price is the higher of an advanced Class III skim price or an advanced Class IV skim price. The advanced Class III skim price is based on a USDA survey of cheese and whey prices. The Class IV skim price is based on a USDA survey of nonfat dry milk prices. The Class I butterfat price is based on a USDA survey of butter prices. Surveys of the Class III and IV advanced skim prices and the Class I butterfat price are conducted during the first 2 weeks of the preceding month.

Class II Prices

In the federal order program, Class II milk is used to manufacture soft products such as frozen desserts and yogurt. Regulated Class II milk processors pay the Class II price for the milk they convert to these soft products. The Class II price is announced in advance of the month to which it applies. The Class II price is based on a USDA survey of nonfat dry milk prices and butter prices conducted during the first 2 weeks of the preceding month. There is a quality adjustment based on somatic cell count.

Class III Prices

In the federal order program, Class III milk is used to manufacture products such as cheese. Regulated Class III milk processors pay the Class III price for the milk they convert to these hard products. The Class III price is announced around the 5th of the month following the month to which the Class III price pertains. For example, on May 5th the April Class III price is announced. The Class III price is based on a USDA survey of cheddar cheese, butter, and dry whey prices. The survey covers the entire month to which the Class III price pertains.

The Class III price is the price linked to the milk futures contract traded on the Chicago Mercantile Exchange. At the expiration of each contract, the contract closeout price is forced to the announced Class III price. This process of forcing the closeout price to the Class III price is referred to as cash settling. Cash settlement takes the place of settling an open contract through performance of the contract obligation. As with Class II milk, there is a quality adjustment based on somatic cell count.

Class IV Prices

In the federal order program, Class IV milk is used to manufacture nonfat dry milk and butter. Regulated Class IV milk processors pay the Class IV price for the milk they convert to these products. The Class IV price is announced around the 5th of the month following the month to which the Class IV price pertains. The Class IV price is based on a USDA survey of nonfat dry milk prices and butter prices. The survey covers the entire month to which the Class IV price pertains. The Class IV price is adjusted based on somatic cell count and is linked to the Class IV futures contract traded on the Chicago Mercantile Exchange.

Producer Price

Of the eleven federal orders, four orders pay producers based on a uniform butterfat skim price derived as described in the discussion of classified pricing. Seven orders pay producers based on Class III component prices. The Class

III component prices for butterfat, true protein, and other solids are derived from USDA price surveys. (See the discussion of Class III prices above). In the component markets, producers receive a butterfat price for the pounds of butterfat sold, a true protein price for pounds of true protein sold, and an "other solids" price for the pounds of other solids sold. Additionally, producers receive a producer price differential (PPD). The PPD is quoted on a hundredweight basis and is paid on all the milk sold. The PPD captures the value of location and is the sum of milk used in Class I, Class II, and Class IV multiplied by the difference between the Class I price, the Class II price, the Class III price, and the Class IV price. A quality adjustment is added to the price if the somatic cell count is below 350,000 and subtracted from the price if the count is above 350,000. Table 2 illustrates the quality premium and the component and PDF portion of the producer price. Table 3 illustrates the calculation of the producer pay price using the information in Table 2.

Table 2: Producer price.

Component portion of the producer price				
Component	Price	Quantity	Value	
Butterfat	\$1.590	3.5	\$5.57	
True protein	\$1.630	2.99	\$4.87	
Other solids	\$0.099	5.69	\$0.56	
			\$11.00	
PPD portion of the producer price				
Class	Price	Difference	Class use	Value
Class III	\$11.00	\$ -	29%	\$ -
Class I	\$16.00	\$5.00	50%	\$2.50
Class II	\$14.00	\$3.00	15%	\$0.45
Class IV	\$13.00	\$2.00	6%	\$0.12
				\$3.07
Quality premium				
Producer SCC	Standard	Difference	Rate	Value
200	350	150	0.00064	\$0.10

Table 3. Producer pay price.

Producer pay price per cwt.	
Component	\$11.00
PPD	\$3.07
Quality	\$0.10
Cwt. price	\$14.17

Summary

The key elements to remember about current milk pricing are that most Grade A milk is marketed and priced within a regulated system. In a regulated marketing system, milk is classified and priced by use, not quality. The class prices are based on USDA product prices. Milk is pooled and a uniform price is paid to dairy producers.

For additional information:

- "Federal Milk Order Market Statistics." 1999 Annual Summary. AMS, USDA. September 2000.
- "Milk Production." NASS, USDA. February 16, 2001.
- "Marketing Operations of Dairy Cooperatives." Research Report 173. RBS, USDA. June 1999.

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