Changes in Pricing Reconstituted Milk Under Federal Milk Marketing Orders:
A Look at the USDA Preliminary Recommended Decision*

by

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* The views expressed are those of the authors and do not necessarily reflect the position or policy of the United States Department of Agriculture
ABSTRACT

The effects of current and proposed Federal milk marketing order pricing rules for reconstituted milk are examined. The context is a hypothetical North-to-South milk shipment. Based on average total milk acquisition costs, reconstituted milk is cheaper than bulk fluid imports under the proposed pricing provisions.
Changes in Pricing Reconstituted Milk Under Federal Milk Marketing Orders: A Look at the USDA Preliminary Recommended Decision

On March 29, 1990, the Secretary of Agriculture announced that the United States Department of Agriculture (USDA) would hold a national hearing to "... determine whether reasons exist to change current Federal milk orders." Four main issues were to be considered: 1) Class I pricing provisions, 2) multiple base point pricing, 3) pricing reconstituted milk, and 4) Class II pricing.

Concurrently, the Administrator of the Agricultural Marketing Service (AMS) invited interested parties to submit proposals relating to the four major issues by May 30, 1990. The Notice of Hearing was issued in July. The hearing, lasting from September 5, 1990 until November 20, resulted in about 10,000 pages of transcript, 237 exhibits, and some 3,000 pages of Officially Noticed documents. The USDA's preliminary recommended decision on milk order changes was published in the November 22, 1991 Federal Register (FR 56 58972). This paper focuses on the current rules for pricing reconstituted milk under Federal milk marketing orders and the preliminary recommended changes to those rules offered by the USDA.

Background

Each Federal milk marketing order is a legal instrument setting out milk marketing rules for a specific geographical area. Because they obligate milk handlers to follow specified marketing rules, the orders must clearly identify who is a handler and the explicit terms of the handler's obligation(s).
Despite being an important marketing tool, the direct effects of orders on some aspects of milk marketing are limited. Consider what orders can and cannot do. Each Federal milk marketing order contains provisions that:

1) Establish a classified pricing system;
2) Establish the minimum prices to be paid in each class;
3) Establish a system determining uniform price payments to producers;
4) Disseminate market information; and
5) Define the administration of the order.

Federal orders cannot:

1) Control production;
2) Restrict individual producers' marketings of milk;
3) Guarantee farmers a market with any buyer;
4) Establish sanitary or quality standards;
5) Guarantee a fixed price to producers;
6) Set a ceiling on producers' prices; or
7) Set wholesale or retail milk or dairy product prices.

A primary function of each milk marketing order is to price milk received by regulated (pooled) handlers under the order. Only Grade A (fluid grade) milk is regulated under orders. In addition to pooled Grade A milk, pooled handlers also generally receive "other source milk" which may be obtained in various forms, e.g. bulk fluid and concentrated liquid milk, packaged fluid milk products, and manufactured dairy products in various forms. Another pooled handler in the same order, a handler pooled on another order, or an unregulated handler (outside of
Federal orders) are common other sources. Note these other sources are not Grade A milk producers.

A handler regulated under an order is likely to sell fluid (beverage) milk and possibly other dairy products made with milk from both local (in-order) and other sources. The handler is obligated to pay into the local producer-settlement fund the order minimum class prices on all milk received from pooled producers.

When a handler receives milk from both local producers and other sources, it is necessary to allocate, or assign, the milk to the handler's various uses. The present allocation of receipts of milk and milk products derived from other sources (imported) tends to ensure that, with certain exceptions, as much local milk as possible receives the minimum Class I price. In other words, local Class I milk is not displaced in fluid uses by imported milk. All local pooled producers then receive a marketwide uniform blend price based on the announced minimum class prices and the utilization of local producer milk in each class.

Federal milk marketing orders do not prohibit plants from producing reconstituted fluid milk or milk products to satisfy their needs. However, "down allocation" and "compensatory payment" provisions currently govern the pricing of reconstituted milk. Some proponents of changes in the orders have argued that the rules for pricing dried products or concentrated liquid milk for reconstitution prevent reconstituted fluid milk from becoming a viable alternative to either
local milk supplies or bulk fluid milk shipped from other areas during the "short" season.

The simple question is: How would USDA's preliminary recommended decision regarding the pricing of reconstituted milk change the economics of using such milk as an alternative source of supplemental fluid milk supplies in markets where and when it is needed? While the question is simple, the answer requires a close reading of current and recommended order pricing rules for reconstituted milk—not the simplest of tasks.

**Current and Recommended Pricing Rules for Reconstituted Milk**

The preliminary recommended decision classifies changes in pricing reconstituted milk under Federal milk market orders in two broad categories: 1) pricing of milk reconstituted from concentrated liquid milk products such as reverse osmosis (RO) milk, and 2) pricing of milk reconstituted from manufactured milk products such as nonfat dry milk (NFDM).

RO is a filtration process wherein milk is concentrated by forcing whole milk through a semi-permeable membrane. Under the USDA's preliminary recommended decision, the case of liquid concentrated milk products derived from the RO process is clear—they are to be treated the same as is bulk fluid milk. The case of manufactured products, such as reconstituting fluid milk from nonfat dry milk, is more complex.

The USDA does not recommend an outright elimination of the concepts of down allocation and compensatory payments provisions; they are modified.
The modifications are intended to address concerns expressed at the hearing that the current pricing of reconstituted milk under the orders prevents its economic viability as an alternative to imported bulk fluid milk in deficit (either long- or short-term) markets.

Pro-rata allocation of concentrated milk receipts to classes of use replaces down allocation if any of the receipts represent reconstituted milk distributed in properly labeled containers. Concentrated milk receipts include both nonfluid and concentrated fluid milk products. The preliminary recommended decision provides for different pricing methods for the two types of concentrated milk receipts. If the distribution criteria for reconstituted milk are not met, current down allocation remains in place.

Fluid concentrated milk is priced in the source market based on its use in the destination market. Handlers in destination markets, where fluid milk prices are likely to be higher, may have an opportunity to benefit from reduced hauling costs associated with shipping the concentrated fluid milk forms.

The pricing of nonfluid milk receipts used in Class I reflect the time lag likely to occur between nonfluid product manufacture and its reconstitution into fluid products. Two nonfluid milk receipt pricing options are provided. The handler who reconstitutes can make a payment to the order under which he or she is regulated of the difference between the order Class I and Class III prices minus $1.00 (unless the difference is less than $1.00). The second option allows the reconstituting handler to elect to make a payment to the producer-
settlement fund of the order where the nonfluid ingredients were originally made equal to the difference between that order's Class I and Class III prices. Neither option will apply if the distribution criteria for reconstituted milk are not met and the compensatory payment would remain the same as under the current order provisions.

A hypothetical example of a regulated handler's costs of obtaining and providing milk under alternative pricing mechanisms, a "what if?" analysis, is one approach for evaluating the effects of the recommended pricing rule changes. This approach does not, standing alone, address questions related to the response of production, quantities shipped, minimum classified prices in the various milk orders, or over-order payments to changes in the pricing rules. However, it has been used as a component of an analysis of the potential impacts of reconstituted milk on regional milk prices, utilization, and production (Hammond, Buxton, and Thraen).

An Illustrative Example

When reconstituted milk pricing is discussed, it is generally in the context of North-South relationships, i.e. deficit regions or marketing orders in the Southern United States import milk to meet their fluid milk needs and reconstituted milk is one of the alternatives (Scheik and Babb, Whipple). The area of interest is usually further restricted to areas east of the Rocky Mountains, a natural barrier to shipments of an East-West nature.

Consider the following hypothetical situation; a regulated handler (plant) in the Georgia order must import milk to meet local demands at
certain times during the year. A regulated supplier of the needed milk is found in the Southern Michigan order. The importing plant operates at the following average class utilization rates; Class 1--85 percent, Class 2--12 percent, and Class 3--3 percent. The plant pays the Georgia order average minimum class prices and prevailing over-order payments. The supplier faces the Southern Michigan order average prices and over-order payments. No particular assumptions concerning the supplier's utilization rates are required for the analysis.

Those familiar with milk shipments in the United States will recognize this hypothetical case mirrors an actual situation. We chose not to use the more commonly discussed case of milk shipments from Wisconsin to the Florida markets. There are two pragmatic considerations for this selection. First, the recommended decision includes provisions to establish three classes of milk in Florida markets where there are currently only two, and secondly, there is some belief that over-order and give-up charges in the Chicago order do not present a true picture of the economics of milk movements to and from the area.

We examine only the skim milk value in our hypothetical illustration. Since butterfat is in excess supply relative to fluid use needs in all markets, there is no need to import cream for reconstitution. We also divert from the more common analytic approach of examining only minimum prices by using a "proxy prevailing" price approach. The difference between the announced cooperative Class 1 price and the Federal order minimum Class 1 price in the chosen orders serves as a proxy for over-order prices.
It is important to recognize the prevailing over-order and give-up charge structure in the industry since they embody, to the shipping plant, additional revenues for providing milk, and to the receiving plant, added costs of procurement. These charges may offset or outweigh advantages one form of milk may have over another on the basis of only input (milk) cost and transportation.

A spreadsheet was constructed following the format of Hammond, Buxton, and Thraen which includes the following alternatives for the plant in Georgia: 1) obtain all milk needs locally, 2) import bulk fresh milk, 3) import nonfat dry milk for reconstitution, and 4) import reverse osmosis (RO) concentrated fluid milk products for reconstitution. In addition to these four alternatives, two "new" cases for milk reconstituted from nonfat dry milk, and one new RO case are examined. The new cases represent our reading of the preliminary recommended decision's pricing rules. Under current order provisions, RO milk is treated as a product for reconstitution which can be down allocated and subject to compensatory payments.

We focus on the following question: When a handler imports milk to meet local needs, what are the marginal costs associated with imported milk supplied by each of the alternative milk sources as defined under current and recommended order pricing rules. Costs to the handler are divided into local (base) milk supply costs and marginal milk costs; a total average acquisition cost is derived. It is a comparison of these acquisition costs that provides the basis for evaluating whether reconstituted milk is any better positioned, in terms of cost, as an
alternative to bulk fresh milk imports under the recommended pricing changes than under current rules.

The cost of locally acquired milk in Georgia is the same, on a per cwt basis, under both current and USDA recommended Federal order provisions. The proxy prevailing class prices (skim value) in the Georgia order are multiplied by the quantity in each class to obtain a total local cost. This total cost is then divided by the quantity obtained locally.

The marginal cost of imported milk per cwt is determined according to the type of alternative source considered. Bulk fluid skim milk imports are priced at prevailing skim milk class prices in the Southern Michigan order plus a transportation charge of $.35 per cwt per 100 miles. Reconstituted milk from nonfat dry milk is priced at the cost of the powder used to obtain a cwt of skim milk plus a $.05 per pound shipping cost plus a $.10 per cwt reconstitution cost. In the case where Class I value is returned to the producing order, the amount in Class I in Georgia is priced at the Southern Michigan Class I skim value plus transportation and reconstitution charges. Milk reconstituted from RO products is priced at prevailing skim milk class prices in Southern Michigan plus a transportation charge of $.175 per cwt per 100 miles plus a processing charge of $.37 per cwt of reconstituted skim milk.

Under current and proposed pricing provisions, the compensatory payments that might apply are calculated according to the stated regulations.

Results and Conclusions
Table 1 shows the results of analyzing our hypothetical situation under various Federal milk marketing order pricing provisions for
reconstituted milk. The results are conditioned by several factors. Chief among them are:

1) the utilization rates of the importing plant,
2) the assumed distance from the supplier to the importer (750 miles),
3) the assumed costs of products to be reconstituted (9 pounds of nonfat dry milk per cwt of fluid skim milk), and transportation of both fluid and product forms of milk,
4) the skim milk value estimate,
5) the proxy over-order payment, and
6) the minimum Class prices in each order.

The view of some order system critics, that current federal milk marketing order pricing rules disadvantage reconstitution relative to importing bulk fluid milk, is partially supported. In the proxy prevailing price framework, reconstituted milk from RO products, with down allocation and compensatory payments, is slightly more costly to the Georgia plant than imported bulk fluid milk, about $.03 per cwt. However, milk reconstituted from nonfat dry milk is $.16 per cwt less.

Those claiming that minimum prices should be utilized for such an analysis might be somewhat surprised by the results. In the case of RO milk, the average cost is about $.02 per cwt above the cost associated with importing bulk skim milk. The average cost of skim milk reconstituted from nonfat dry milk is less by $.07 per cwt ($11.65 versus $11.71).
The recommended decision's changes for both nonfat dry milk and RO sources of skim milk all result in average skim milk costs to the Georgia plant less than imported fluid milk, by about $0.10 to $0.20 per cwt under prevailing prices. The cost savings in the case of minimum order prices are in the same range. It would appear that a major concern of critics, that reconstituted milk prices are not competitive with imported bulk fluid milk prices, has been addressed.

The case of RO milk under recommended rule changes is particularly interesting. The cost-based attractiveness of RO milk as an alternative for necessary milk supplies ($14.39 versus $13.19 per cwt) is not at issue, however, consumer acceptability may be. Studies indicate that the RO process does not alter the taste and nutrient character of milk (Fleming and Hamm). Educating consumers about RO milk may be necessary in order to overcome preconceived notions concerning the product.

The "snapshot" analysis is not the whole story. The decisions described here may take place in many firms across a wide geographic area. The decision-making processes of milk producers, cooperatives, processors, and handlers are not likely so direct as hypothesized. Only a small portion of the prevailing over-order and give-up charge structure of the industry has been considered. The advantages of reconstitution shown by the analysis could be offset or even overwhelmed by the day-to-day decisions of shippers and handlers responding to local and national milk market conditions and the dairy policy environment.
Table 1. Calculating the effects of recommended changes in pricing skim milk from alternative sources in the Georgia marketing order when shipping skim milk from the Southern Michigan order. 1/  

<table>
<thead>
<tr>
<th>Alternative Sources for Marginal Milk Requirements</th>
<th></th>
<th></th>
<th></th>
<th>Alternative Source Milk Under Recommended Decision 2/</th>
<th></th>
<th></th>
<th></th>
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<td></td>
<td>Local</td>
<td>Import bulk</td>
<td>Import NFDM</td>
<td>Import RO as Other Source 3/</td>
<td></td>
<td>Import NFDM</td>
<td>Import RO as Other Source 3/</td>
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<tr>
<td></td>
<td>fresh</td>
<td>fresh</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quantity imported (cwt) 4/</td>
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<td>100</td>
<td>100</td>
<td>100</td>
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<td>Quantity used in plant 4/</td>
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<td>1000</td>
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<td>Source of milk (cwt)</td>
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<td>900</td>
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<tr>
<td>Local</td>
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<td>100</td>
<td>100</td>
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<td>100</td>
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<tr>
<td>Allocation (cwt)</td>
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<td>765.0</td>
<td>850.0</td>
<td>850.0</td>
<td>765.0</td>
<td>765.0</td>
<td>765.0</td>
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<tr>
<td>Class 1: local</td>
<td>850.0</td>
<td>765.0</td>
<td>850.0</td>
<td>850.0</td>
<td>765.0</td>
<td>765.0</td>
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<tr>
<td>Class 1: other</td>
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<td>0.0</td>
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<td>85.0</td>
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<tr>
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<td>108.0</td>
<td>23.0</td>
<td>23.0</td>
<td>108.0</td>
<td>108.0</td>
<td>108.0</td>
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<tr>
<td>Class 2: other</td>
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<td>27.0</td>
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<td>97.0</td>
<td>12.0</td>
<td>12.0</td>
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<tr>
<td>Class 3: local</td>
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<td>27.0</td>
<td>27.0</td>
<td>27.0</td>
<td>27.0</td>
<td>27.0</td>
<td>27.0</td>
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<td>Class 3: other</td>
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<td>3.0</td>
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<tr>
<td>Total Milk cost (dollars)</td>
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<td>1226</td>
<td>10132</td>
<td>1226</td>
<td>10132</td>
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<td>10132</td>
<td>11258</td>
<td>11258</td>
<td>10132</td>
<td>10132</td>
<td>10132</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Class 2: local</td>
<td>108.0</td>
<td>23.0</td>
<td>108.0</td>
<td>23.0</td>
<td>108.0</td>
<td>108.0</td>
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<tr>
<td>Class 2: other</td>
<td>23.0</td>
<td>108.0</td>
<td>23.0</td>
<td>108.0</td>
<td>23.0</td>
<td>108.0</td>
<td>108.0</td>
</tr>
<tr>
<td>Class 3: local</td>
<td>27.0</td>
<td>27.0</td>
<td>27.0</td>
<td>27.0</td>
<td>27.0</td>
<td>27.0</td>
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<tr>
<td>Class 3: other</td>
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<td>3.0</td>
<td>3.0</td>
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<td>3.0</td>
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<tr>
<td>Base cost per cwt 5/</td>
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<td>12.72</td>
<td>12.72</td>
<td>12.72</td>
<td>12.72</td>
<td>12.72</td>
<td>12.72</td>
</tr>
<tr>
<td>Average Cost to Georgia plant for skim milk 5/</td>
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<td>12.86</td>
<td>12.70</td>
<td>12.89</td>
<td>12.63</td>
<td>12.67</td>
<td>12.77</td>
</tr>
</tbody>
</table>

1/ Assume plant is operating with utilization rates of: Class I= 85%, Class II= 12%, and Class III= 3%.
2/ Butter-powder option (1) represents paying Class values back to the order supplying the powder. Option (2) represents the modified compensatory payment regulation. Both product options and the RO alternative have pro-rata allocation of the imported reconstituted milk.
3/ RO is not explicitly a part of current order pricing rules, under the recommended decision its pricing has been defined. It is not clear that any over-order could be collected as assumed in the example under our current scenario.
4/ The quantities of imported skim milk and plant use are for exposition only. We assume no fat components are shipped.
5/ These are "minimum prevailing" prices and costs (See Text).
(Skim value equals 3.5 percent whole milk cwt price minus $4.10)

NOTES:
The following costs have been assumed:

- $0.05 Transport cost per pound of powder (long haul).
- $1.01 Powder cost per pound.
- $0.35 Transport cost of fluid milk per cwt per 100 miles.
- $0.175 Transport cost of RO concentrated milk per cwt per 100 miles.
- $0.10 Reconstitution cost for powder per cwt.
- $0.37 RO processing (removing and replacing water) per cwt.

Minimum class prices per cwt in orders (1990 yearly average):

**Receiving Order-- 3.5 percent whole milk**

- $16.17 Class 1 minimum per cwt in Georgia.
- $12.82 Class 2 minimum per cwt in Georgia.
- $12.21 Class 3 minimum per cwt in Georgia.

**Shipping Order-- 3.5 percent whole milk (Includes a $.10 per cwt Detroit delivery charge)**

- $14.84 Class 1 minimum per cwt in Southern Michigan.
- $12.92 Class 2 minimum per cwt in Southern Michigan.
- $12.31 Class 3 minimum per cwt in Southern Michigan.

$1.05 Average "minimum" proxy over-order in Southern Michigan.  

$0.47 Average "minimum" proxy over-order in Georgia.
References


