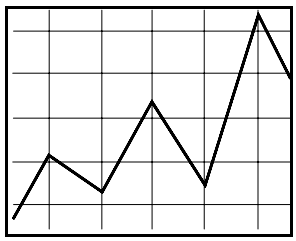
MARKETING AND POLICY BRIEFING PAPER



Department of Agricultural and Applied Economics, College of Agricultural and Life Sciences, University of Wisconsin-Madison
Cooperative Extension, University of Wisconsin-Extension

Paper No. 78D
January 2003

RETHINKING DAIRYLAND

Farm Level Milk Prices: Is Wisconsin Competitive?[1]

This paper supports leaflet No. 5 in the ***Rethinking Dairyland***, series of brief reports authored by faculty and staff in the University of Wisconsin College of Agricultural and Life Sciences. These reports document the current state of the Wisconsin dairy industry and evaluate factors that will influence its evolution. In this installment, we address the level of milk prices in Wisconsin, discussing a number of factors that may – or may not – justify higher milk prices in Wisconsin than in other states. We focus on whether the state's cheese industry may be losing its competitive advantage to the West, where milk prices are lower and milk production is growing, or whether there are economic reasons to support higher milk prices in Wisconsin.

Cheese consumption in the U.S. continues to increase. Per capita consumption reached nearly 30 pounds in 2000, up 21 percent since 1990. With rising population, total cheese sales were up 37 percent. More U.S. milk was used for cheese than for beverage purposes in 2001, 33 percent for beverage milk versus 37 percent for cheese on a milk equivalent, butterfat basis.

Wisconsin is the leading cheese producing state. But milk production in 2001 was 2 billion pounds less than it was in 1990. Greater cheese demand with no growth in milk production makes it increasingly difficult for cheese plants to procure enough milk to honor cheese customer orders and to operate their facilities at the most efficient capacity.

[1] Principal contributors to this paper are Bob Cropp and Ed Jesse, Department of Agricultural Economics, University of Wisconsin-Madison.

Excess capacity creates a highly competitive milk procurement market in Wisconsin. Dairy farmers benefit in the short run from higher milk prices. But scrambling for a limited supply of milk may also encourage Wisconsin cheese plants to relocate in other states where the milk supply is growing and milk prices are lower. This raises the question, "Is the cost of Wisconsin milk too high for cheese manufacturers to competitively market cheese nationally and to generate adequate plant operating margins for long term viability?

That question is not easy to answer. First, it is difficult to directly compare the cost of milk used for cheese across regions. Second, higher prices for cheese milk in Wisconsin may reflect higher values relative to other regions. In what follows, we look at various means of comparing milk costs between Wisconsin and California and Idaho, the fastest-growing states with respect to both milk and cheese production. We then examine factors that may enhance the ability of Wisconsin cheese plants to out-pay those in other regions.

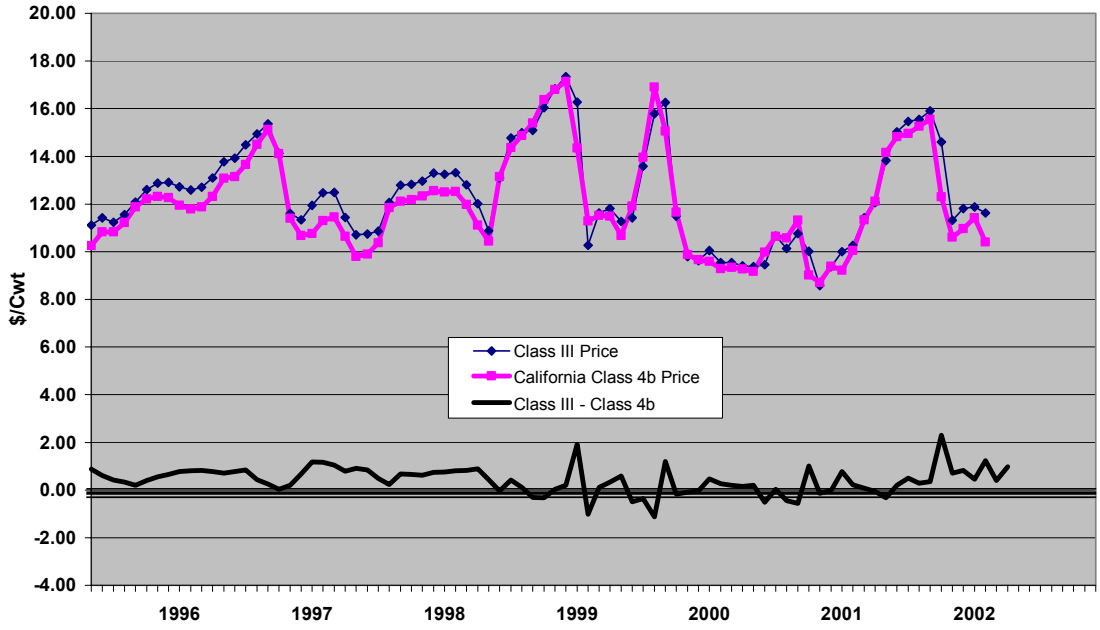
Regional cost of milk used for cheese

Most of the milk used to make cheese in the U.S. is priced administratively. Outside of California, federal milk marketing orders set minimum prices for Grade A milk according to use class – what products are made from the milk. Federal orders uniformly designate Class III as milk used for making hard cheeses. Since January 2000, the Class III price has been derived using a product price formula based on prices for cheddar cheese, butter, and dry whey. From May 1995 through December 1999, the Class III price was the Basic Formula Price, which was derived from the price of Grade B milk paid by manufacturing plants – principally cheese factories – in Minnesota and Wisconsin.

California uses a state milk pricing order that also uses classified pricing. Under the California order, milk used to make cheese is designated Class 4b. The Class 4b price is determined by a product price formula similar to what is currently used to determine the federal order Class III price.

For the period May 1995 through March 2002, the California Class 4b price was less than the Class III price in 63 months and higher in 20 months. For the entire 83 months, the 4b price averaged $0.37 per hundredweight less than the Class III price. The annual average difference was as high as $0.78 in 1997 and as low as $0.05 in 2000. It appears that the difference between the Class III price and California's 4b price may have narrowed since 1999. However, the average difference increased to almost $1.00 per hundredweight during the six months ending March 2002.

Federal Order Class III Price
versus California Class 4b Price



The BFP used to set Class III prices prior to January 2000 was a competitive pay price for Grade B milk while the 4b price was a component formula derived price. This distinction explains some of the differences between the two series in earlier years. Specifically, cheese plants in Minnesota and Wisconsin tended to pay more for Grade B milk than could be justified by cheese prices.

Now that both the Class III price and California's 4b price are derived from product price formulas, differences reflect the specific product prices, yields, and make allowances used in the formulas. Most notable, California uses Chicago Mercantile Exchange (CME) cheese prices in the 4b formula while federal orders use National Agricultural Statistics Service (NASS) survey cheese prices in the Class III formula. The NASS cheese prices average a few cents per pound higher than CME prices. Moreover, Class III accounts for the value of whey solids recovered in cheese making while 4b does not.

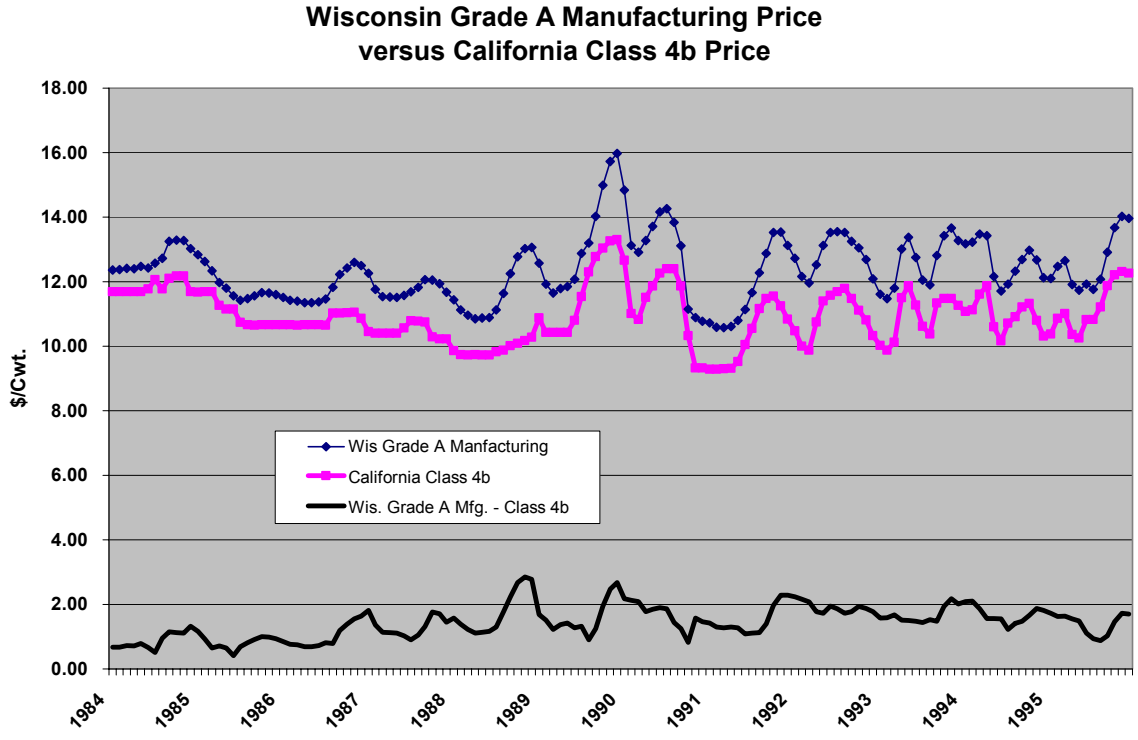
While it is instructive to compare the BFP/Class III prices with California's 4b price, the comparison understates the differences in pay prices. About 95 percent of Wisconsin's milk supply is Grade A, and Wisconsin cheese plants pay premiums for Grade A milk above the Class III price. California plants do not, in general, pay more than the 4b price for milk used for cheese.[2]

[2] In the future, as planned California cheese plant capacity comes on line faster than its growth in milk production, some premiums are likely to surface in the state.

Part of the enhanced value of Grade A milk used for cheese relative to the Class III price is attributable to federal order pool "draws." Pooled manufacturing plants that use all of their milk in Class III receive payments from their order's producer settlement fund to account for the difference between the weighted average value of all milk in the pool (uniform price) and the lower Class III value. Adjusting for this draw yields an estimate of the cost of Grade A milk used for manufacturing.

The Agricultural Marketing Service of USDA (AMS) estimated a Grade A Manufacturing Price series for Wisconsin for 1984-1995. The series was calculated by subtracting the pool draw from the actual monthly pay prices for plants that used all or most of their milk for Class III. Since the amount of milk used in classes other than Class III was very small for these plants, the effect of over-order premiums (see below) on the plants' pay prices was minimal.

The Wisconsin Grade A Manufacturing Price was consistently higher than the 4b price. The difference averaged $1.43 per hundredweight over the 12-year period during which the series was published. While dated, the comparison emphasizes that Wisconsin milk for cheese commands a premium relative to California cheese milk.

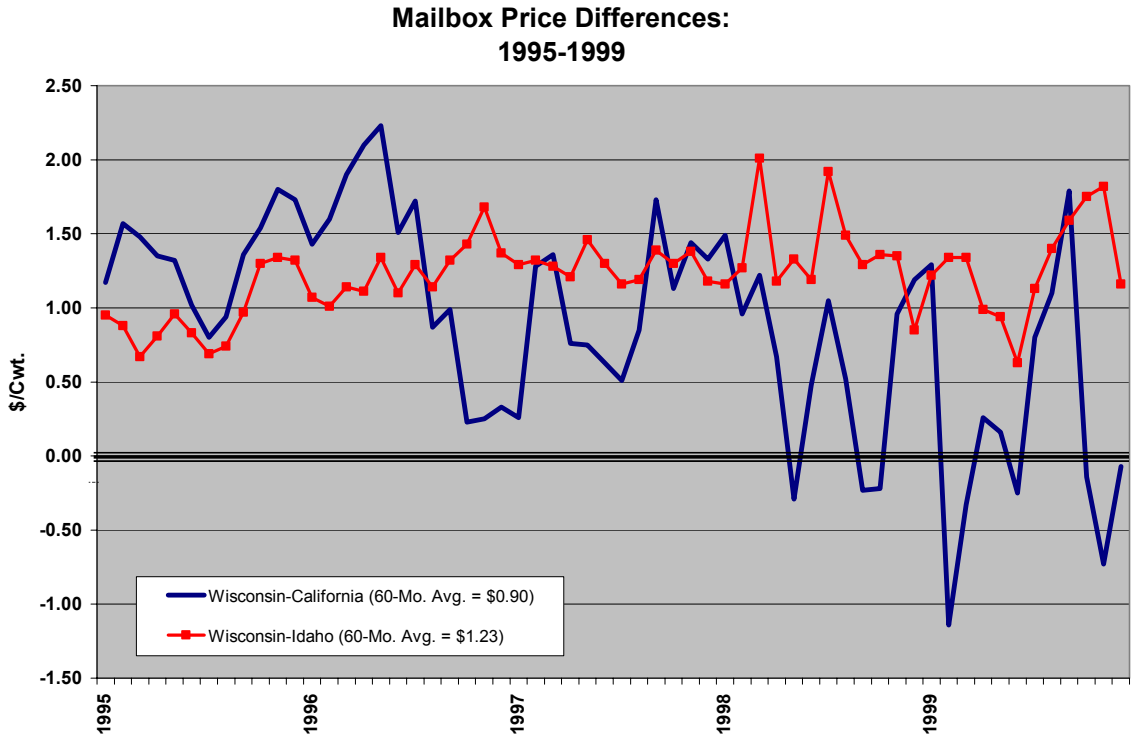


Another way to compare the cost of cheese milk is by using "mailbox" milk prices, which have been reported by AMS since 1995 for federal milk order markets and for the state of California. Mailbox prices account for all of the premiums and deductions that apply to dairy producers' milk checks (with the exception of cooperative patronage refunds). Consequently, they represent a net milk value at the farm. Mailbox prices are not

adjusted for marketing order pool draws. Thus, they do not accurately reflect the cost of milk to cheese makers. But they do allow a consistent comparison of farmer pay prices across regions.

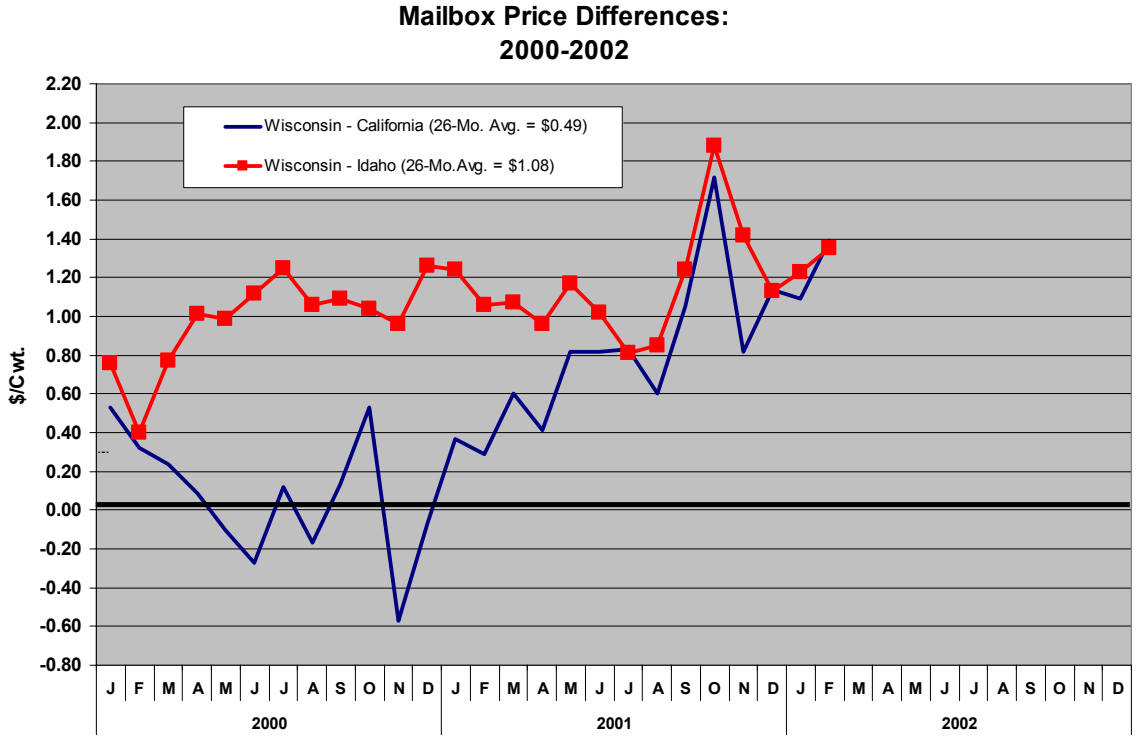
Wisconsin, California and Idaho have similar milk utilization patterns, so mailbox prices contain roughly equivalent values for milk used for higher-priced uses relative to Class III or Class 4b. From 1995 through 1999, AMS reported mailbox prices for 23-24 federal orders plus California. Wisconsin was the principal supply state for the Chicago order, and Idaho for the Southwest Idaho-Eastern Oregon order. During this 60-month period, mailbox prices in California were lower than the Chicago order for all but 9 months. The higher California prices occurred when cheese and milk prices were extremely volatile during 1998 and 1999.

Mailbox prices for the S.W. Idaho-E.-Oregon order were lower than the Chicago order for all 60 months. For the entire period, California mailbox prices averaged $0.90 per hundredweight lower than the Chicago order. Mailbox prices for the S.W. Idaho-E. Oregon order averaged even lower, $1.23 per hundredweight under the Chicago order.



In January 2000, several changes to federal orders were implemented. The number of orders was reduced from 31 to 11 through consolidation of marketing areas. Wisconsin became the major source of milk for the Upper Midwest order and Idaho for the Western order. The BFP was eliminated as the Class I price mover and replaced by the "higher of" the advanced Class III or Class IV price. Component pricing formulas for Class III

and Class IV prices were adopted that closely resembled formulas used to derive California's 4a and 4b prices.



Mailbox price relationships following these change were somewhat different from before. For the period January 2000 through February 2002, the California mailbox price was higher than Wisconsin for 5 months, all in 2000. Cheese prices were severely depressed relative to butter and nonfat dry milk prices in 2000, making California's manufactured product mix (more butter and nonfat dry milk than Wisconsin) relatively more valuable. Since 2001, the spread between Wisconsin and California mailbox prices has been growing. In part, this reflects the May 2001 butter-nonfat dry milk "tilt" in Commodity Credit Corporation purchase prices, which devalued nonfat dry milk relative to cheese. Since January 2000, California mailbox prices have averaged $0.49 per hundredweight under Wisconsin.

Idaho milk is utilized in about the same way as Wisconsin milk. The order changes in 2000 did not alter relative mailbox prices for the two states. Since January 2000, Idaho mailbox prices have been consistently lower than Wisconsin, averaging $1.08 per hundredweight under through February 2002.

Milk Prices versus Milk Value

Regardless of the method of comparison, milk costs to Wisconsin cheese plants appear higher than for cheese plants in California and Idaho. Higher prices could be offset by higher values. Do Wisconsin cheese plants enjoy some unique operating advantages that enable them to pay higher prices for milk than milk prices in the West? We will look at several possible factors in an attempt to answer this question.

Reputation, Quality, and Variety

Wisconsin has a long tradition as the cheese state. Cheese carrying the Wisconsin label could command a higher retail price. Wisconsin continues to enjoy a high reputation for quality cheese. However, with 60 percent of the cheese now being used either in foodservice (43 percent) or in food processing (17 percent), this advantage is diminished somewhat. Most of the food service and food processing use is commodity cheeses – Cheddar and Mozzarella. Customers for commodity cheese demand a competitive price for reliable quantities of high quality cheese that meets unique needs. Wisconsin is no longer the chief supplier of commodity cheeses.

Wisconsin cheese makers need to compete with high-volume western cheese plants for wholesale commodity cheese accounts. Wisconsin's reputation as a reliable supplier of quality cheese in quantities demanded by relatively large food service and food processing firms will be threatened unless the state's milk supply increases and allows an expansion in cheese production.

Wisconsin produces more cheese varieties than any other state. The state's specialty cheese business is growing rapidly. Specialty cheese plants are able to capture higher valued markets that generate favorable plant operating margins. This enables them to pay dairy producers very competitive prices. But it is unlikely that production of higher-valued specialty cheeses will increase to the point of absorbing more than 5-7 billion pounds of Wisconsin milk. If Wisconsin is to continue to be a major player in U.S. cheese markets, the bulk of the state's production will likely be in the form of commodity cheeses.

Cheese Yields

A second factor underlying higher value for Wisconsin milk could be higher cheese yields per hundredweight of milk. Cheese yields are related to milk composition, principally butterfat and protein, and milk quality as measured by somatic cell count.

Federal milk marketing order data for 2001 show a true protein test of 3.02 percent for the Upper Midwest order, exactly equal to the average for all orders. However, Upper Midwest protein was lower than the Western order (3.06 percent) and California (3.08).

The Upper Midwest average butterfat test in 2001 was 3.72 percent compared to 3.67 percent for all orders, 3.61 percent for the Western order, and 3.65 percent for California. Milk quality is similar with an average somatic cell count of 344,333 for the Upper Midwest order versus 349,563 for all orders that used somatic cell premiums/penalties.

Looking only at raw milk composition, Wisconsin has a slight advantage in cheese yields over Idaho and California. The table below uses the Van Slyke cheese yield formula for cheddar cheese with varying moisture content.[3] The 34 percent moisture content would represent barrel cheddar cheese destined for processed cheese products, while 38 percent would be common for "table" cheddar. Butterfat recovery is fixed at 93 percent, and true protein recovery at 82 percent (casein equivalent to 82 percent of true protein).

The relatively higher butterfat in Wisconsin milk more than compensates for relatively lower protein in the cheddar cheese formula. The yield advantage for Wisconsin milk is 0.03 pounds per hundredweight over California milk and 0.12 over Idaho milk

Theoretical Cheese Yields for Milk Based on State Milk Compositions

State (Marketing Order)	*Percent Protein*	*Percent Butterfat*	*Casein to Fat Ratio*	*Cheddar Cheese Yield, Lbs/Cwt.*		
				34% Moisture	*36% Moisture*	*38% Moisture*
Wisconsin (Upper Midwest)	3.02	3.72	0.67	9.64	9.94	10.26
Idaho (Western)	3.06	3.61	0.70	9.52	9.82	10.14
California	3.08	3.65	0.69	9.61	9.91	10.23

The ideal casein-to-fat ratio for high-quality cheddar cheese is about 0.70. Average Wisconsin milk is borderline low (0.67), indicating the need to either remove fat or add protein to achieve an optimal ratio. Such "standardization" of cheese milk with nonfat dry milk or condensed skim milk is common in Wisconsin. But this does not necessarily suggest a competitive disadvantage. Supplemental protein in the form of nonfat dry milk is currently in abundant supply and inexpensive because the dairy price support program encourages excess production of nonfat dry milk.

Further tilts in relative purchase prices of butter and nonfat dry milk could make standardization even less expensive. However, nonfat dry milk production capacity in the West is being rapidly replaced by cheese processing capacity. It is questionable whether favorably priced out-of-state milk protein will continue to be available to Wisconsin cheese makers as planned Western cheese expansion comes on line.

[3] The specific formula is:
Yield/Cwt. = 1.09*(.93Butterfat % + .82True Protein % - 0.1)/(1-% Moisture/100).

Whey Values

The value of milk used for cheese is enhanced by additional milk value from the by-products of cheese making, mainly whey proteins and lactose. Plants that do not standardize their cheese milk with skim milk solids may also produce whey cream as a byproduct.

Larger Wisconsin cheese manufacturers typically process all of their whey. Small cheese plants usually do not process their own whey, but market it to larger cheese plants or specialized whey processing facilities. A decreasing number of plants dispose of their whey by land spreading.

Less is known about whey processing in Idaho or California. USDA does not report whey production in Idaho separate from the western region. California produces a substantial volume of whey products. But the California state milk pricing order does not include a net value to cheese plants for the nonfat solids in whey in calculating the 4b price on grounds that most California cheese plants do not derive value from whey.

Data on the proportion of whey that is processed into value-added by-products by state or region are not readily available. Some estimates can be derived from data complied in USDA, NASS, *2000 Dairy Products Summary*.[4] Comparing relative market shares of cheese production to corresponding shares of dry whey production indicates that Wisconsin cheese plants are processing more of their whey than plants. It is also apparent from the data that California is processing whey in higher valued forms.

Market Shares of Cheese and Whey Products, 2000 (Percent of U.S. market)

State or region	Cheese Production			Dry Whey		Whey protein concentrate	Lactose
	Total	American	Italian	Human use	Animal use		
California	18.1%	17.4%	22.6%	12.1%	NA	29.7%	NA
Wisconsin	26.6%	24.9%	27.6%	27.1%	36.6%	17.2%	18.5%

Source: USDA,NASS, *Dairy Products 2000 Summary*, April 2001.

Wisconsin accounted for 27.1 percent of the dry whey for human use compared to only 12.1 percent for California. But Wisconsin's share of dry whey for animal use was 36.6 percent. California's share of whey protein concentrates was 29.7 percent compared to just 17.2 percent for Wisconsin.

[4] The summary for 2001 does not report production of whey derivatives (whey protein concentrate and lactose) by state or region.

Very little whey is discarded in Wisconsin compared to other states. But Wisconsin's processed whey products tend to be in low value added forms, especially dry whey. Western cheese plants do not process as large a percentage of their whey, but their whey products tend to be higher-valued. So in conclusion, it is doubtful whether whey product values give Wisconsin cheese plants more revenue than their western competitors.

Plant Operating Costs

Do Wisconsin cheese plants have lower plant operating costs than cheese plants in the West? That's hard to say because regional cheese plant operating cost data are not readily available. Some information was made public in the hearings conducted by USDA to formulate a pricing formula for Class III milk. Those hearings relied on two plant cost surveys to set make allowances – the Rural Business Cooperative Service survey of 6 cheese plants operated by dairy cooperatives and the California Department of Agriculture's audited cheese plant survey. Unfortunately, the wide range in operating costs shown in the surveys and different accounting methods make it impossible to discern regional differences.

Wisconsin cheese plants very likely have, on the average, low plant investment costs per unit of milk received or product sold. That is because no major new cheese plants have been built in the state since about 1986. In contrast, many plants have invested in modern processing and packaging technologies that reduce variable operating costs. So in the short run, cheese plants with depreciated facilities could experience relatively low processing costs. But in the long run, Wisconsin needs to invest in new cheese plants to capture economies to scale and remain competitive with other regions.

There are indications that Wisconsin cheese plants may have lower energy, utility, and labor costs than the West, especially California. A 1991 study concluded that Wisconsin enjoyed about a $2.00 per hour advantage in hourly labor costs. Electricity rates were about 70 percent higher in California and natural gas rates were 50 percent higher. Water costs were comparable, but California had much higher sewage rates.[5]

Representative Cheese Plant costs

	Wisconsin	California
Labor, $/Hr.	9.28	11.40
Electricity, $/Kwh	.0430	.0719
Nat. Gas, $/Therm	.330	.445
Water, $/1,000g.	.84	.93
Sewage, $/1,000g.	.58	1.46

[5] Buekeboom, Ronald and E.V. Jesse, *Regional Competitive Advantage in the U.S. Cheddar Cheese Market*, Marketing and Policy Briefing Paper No. 38, Department of Agricultural Economics, University of Wisconsin-Madison, November 1991.

There are substantial economies to scale in cheese making. The 1991 study noted above indicated that cheese manufacturing costs for plants with daily capacity of 500,000 pounds of milk were $1.00 per hundredweight (about 10 cents per pound of cheese) higher than plants with daily capacity of 1 million pounds of milk. Western plants are, on average, significantly larger than Wisconsin plants. Consequently, operating cost advantages due to lower labor and utility costs may be more than offset by scale-related disadvantages.

Cheese Volume per Plant, 2000

	Wisconsin	California	Idaho
Mozzarella:			
Plants	35	25	NA
Prod. (Mil. Lbs.)	681.9	634.2	
Mil. Lbs./Plant	19.5	24.4	
Cheddar:			
Plants	66	21	8
Prod. (Mil. Lbs,)	721.3	468.5	268.9
Mil. Lbs./Plant	10.9	22.3	33.6

Source: USDA,NASS, *Dairy Products 2000 Summary*, April 2001.

Comparing apples to apples, cheese plants of similar size and age located in Wisconsin would appear to have some operating cost advantages over western plants. But an apples to apples comparison is not valid given that cheese plants in the west are larger and newer.

Milk Utilization

Class prices and utilization determine the amount of money in a federal order pool available to pay out to dairy producers. The higher the percentage of Class I sales and the higher the Class I price, the more money available. Through market-wide pooling, dairy farmers shipping to order-regulated plants benefit from market-wide Class I sales even though their milk may be used exclusively for manufacturing. Regulated cheese plants are accountable to the federal order pool for the Class III value, and receive a payment per hundredweight from the pool for the difference between the market-wide average value of milk (uniform price) and the Class III value. So Wisconsin cheese plants could pay a higher price for milk if the Class I prices and utilization applicable to Wisconsin were higher than competing cheese states.

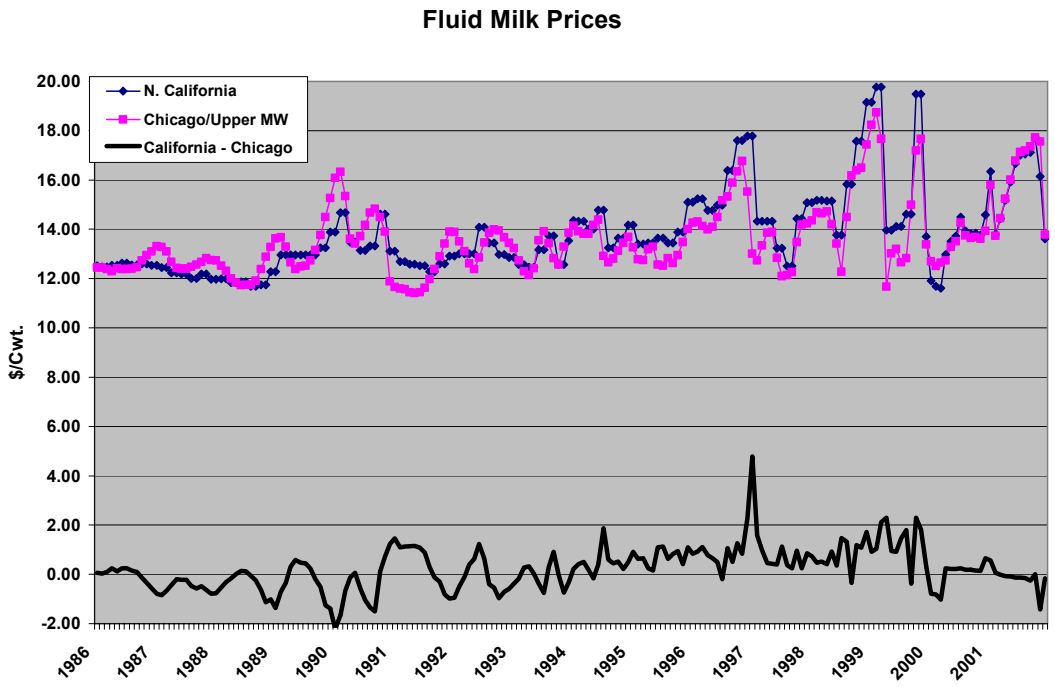
All federal milk marketing orders have the same Class IV, Class III and Class II prices. Different Class I differentials added to the same Class I mover makes for different Class I prices among orders.

Class I differentials are specified for each county in the U.S. In the Upper Midwest order, Class I differentials decrease with distance from Chicago, and range from $1.60

per hundredweight in northern Minnesota to $1.80 per hundredweight near Chicago. Class I differentials in the Western order range from $1.60 per hundredweight in most of Idaho to $1.90 per hundredweight in Utah. So the federal order system provides Idaho with a slightly higher Class I price, at least in the principal consumption areas.[6] But Class I utilization in the Upper Midwest and the Western orders is about the same (17.5 and 25.1 percent, respectively, in 2000). Therefore, this slight price difference is not significant in affecting the ability of cheese plants to pay dairy producers.

California's milk pricing and pooling system works similarly to the federal order system. However, California uses a quota arrangement to allocate pooled receipts from the higher-valued use classes. Only quota holders are eligible to receive pool revenues for Class 1, which elevates their average returns relative to the market-wide pooling used in federal orders.

Since 1986, the California Class 1 price has averaged 22 cents per hundredweight higher than the federal order Class I price applicable to Wisconsin (Chicago from 1986 to 1999 and Upper Midwest since 2000). California's fluid milk utilization is also quite close to that of the Upper Midwest, 19.0 percent versus 17.5 percent in 2000. So neither higher fluid milk prices nor higher fluid milk utilization appear to underlie higher producer pay prices in Wisconsin compared to California.



[6] The principal consumption points are Chicago for the Upper Midwest order ($1.80 Class I differential) and Salt Lake City for the Western order ($1.90 Class I differential). Information is not available to calculate weighted average differentials that reflect handler receipts in each "zone" (areas of the marketing area with different Class I differentials). But the difference in the weighted average differentials would be less than the 10 cents per hundredweight indicated for the base differentials.

Over-Order Premiums

Over order premiums are payments for milk above minimum federal order prices that are negotiated between a group of dairy cooperatives (marketing agency-in-common) and milk buyers (handlers). These premiums are mainly on Class I milk, but some premiums may be negotiated on Class II milk.

Significant over order premiums are negotiated by cooperatives in the Upper Midwest order. From 1998 through 2001, annual Class I premiums averaged $1.75 to $1.88 per hundredweight for Chicago and $0.89 to $1.33 per hundredweight for Minneapolis. For the Western order (Salt Lake City) Class I over order premiums averaged less than $0.30 per hundredweight over this period. According to the California State Department of Agriculture, negotiated premiums above the state order prices are rare.

Over-order premiums can benefit dairy farmers affiliated with participating cooperatives by providing additional Class I milk revenues over and above the pool draws received by the cooperatives. But premiums may also harm nonparticipating cheese plants who compete with those cooperatives. Nonparticipating cheese plants must pay comparable milk prices to maintain their supply, but they do not have access to the participating cooperatives' over-order premium revenue.

For several reasons, it is not clear how much over-order premiums enhance the pay price of Wisconsin cooperatives.

- Premiums cannot be directly compared between or even within markets. For example, transportation credits are included in the over order premiums in the Chicago market to compensate for milk transportation costs. These credits are not included in the Minneapolis premium. Also, over-order premiums may decline with distance from the center of the market.

- Dairy cooperatives not only negotiate an over order premium on Class I milk, but also commit themselves to "full-supply" contracts with handlers. That means the cooperative agrees to accommodate the daily milk needs of the handler, delivering different volumes of Grade A milk on different days of the week and during different seasons of the year and diverting any Grade A milk in excess of the handler's needs to manufacturing use. Variation in delivery volumes disrupt manufacturing schedules and may increase operating costs within milk plants operated by cooperatives.

- Over-order premiums are paid out only to those dairy cooperatives that perform, that is, actually ship Grade A milk for Class I purposes. Some dairy cooperatives in the Chicago market do not participate in the marketing agency-in-common claiming that compensation for performance returns less net value to the milk than keeping the milk to make cheese in their own plants.

- In addition to balancing fluid milk needs, cooperatives provide other services to fluid processors. These services include milk quality assurance, milk testing and writing producer milk checks. Costs for these types of service activities vary but can easily total $0.30 to $0.50 per hundredweight.

- Dairy cooperatives do not control 100 percent of the Class I market needs and not all handlers agree to the negotiated price. There are Grade A milk suppliers who may offer handlers Grade A milk at a price lower than the negotiated price. Some handlers may also procure Grade A milk directly from dairy producers at a premium, but yet at a lower price than the cooperatives' negotiated price. These handlers are then in a position to offer packaged milk at a very competitive price to retail stores and other outlets. Handlers that agreed to the over order premium are now at a disadvantage in competing for these outlets. This practice forces the cooperatives to pay back to handlers as competitive credits a portion of premiums collected. Competitive credits vary from year to year, but have been as high as $0.25 to $0.30 per hundredweight.

After subtracting costs for services and competitive credits from the over order premium, the net premium is then pooled among all of the member-producers of a given cooperative. These cooperatives may have no more than 20 to 30 percent of their members' milk allocated to the Class I market. Pooling across all milk receipts may reduce the amount of the premium actually paid out to producers to a few cents per hundredweight. For the Western order, where over order premiums are small, all of the premiums are likely applied against service costs incurred by the cooperatives.

Pooling on Distant Markets

The amended federal orders that took effect at the beginning of 2000 made it easier for milk handlers regulated under one order to affiliate some of their producers with another order. This allows handlers in a market with low Class I utilization and a low Class I price to garner the benefits of a higher weighted average price in another market. Moreover, these benefits can be had without incurring much additional transportation costs, as most of this pooled milk does not have to be actually shipped to qualify for the higher price.

Wisconsin dairy cooperatives and some investor owned firms pooled their producers' milk on six different federal orders during 2000. The Upper Midwest order was the principal market, absorbing 15.4 billion pounds or about 74 percent of Wisconsin's Grade A milk. Another 4.4 billion pounds, or 21 percent, was associated with the Central order. In fact, Wisconsin accounted for 27 percent of the milk in that order, more than any other state. The third most important order for Wisconsin's milk was the Mideast order accounting for 1.0 billion pounds of milk or about 5 percent of Wisconsin's Grade A supply.

Pooling in distant orders adds revenue to Wisconsin's milk because of different Class I differentials and Class I milk utilization among the orders. Using the principal pricing points in each order, the Class I differentials in the Central and Mideast orders are $2.00 per hundredweight, just $0.20 higher than the $1.80 per hundredweight for the Upper Midwest order. But, the Class I utilization in 2000 for the Mideast order was 47.4 percent and for the Central order 30.4 percent compared to just 17.5 percent for the Upper Midwest order.

With these differences in utilization, the weighted average milk value across all classes was $12.09 per hundredweight for the Mideast order in 2000, and $11.28 per hundredweight for the Central order. This compares to $10.55 for the Upper Midwest order. Thus, Wisconsin plants can obtain a larger pool draw by affiliating producers with the Mideast and Central orders than by affiliating all of their producers with the Upper Midwest order. They will incur limited hauling costs to "qualify" their producers' milk, and they can keep most of it home to make cheese.

Some Wisconsin dairy processors have added value to their producers' milk via distant order pooling. But many smaller firms are not in a position to pool milk outside their order, and thus may be at a pay price disadvantage to those who are.

Whether distant pooling underlies higher producer pay prices in Wisconsin as compared to other states is hard to judge. Dairy cooperatives in other states are also pooling milk in distant orders. Producer milk in California and Idaho has been pooled under the Upper Midwest order.

Further, it is uncertain whether these rather liberal pooling provisions will continue. Federal order hearings have been held to address pooling provisions.[7] Proposals have been introduced that would require more producer milk associated with another order to be actually shipped to the order. This would make it less attractive for Wisconsin to associate milk in distant orders because the milk is needed to make cheese to meet customer obligations.

In addition, the incentive for distant pooling was greater during 2000 and up until the butter/powder tilt effective May 31, 2001 than since then. During 2000, while cheese prices were severely depressed and generating low Class III prices, the relatively high support price on nonfat dry milk along with favorable butter prices maintained a relatively high Class IV price. The advanced Class IV price was the mover of Class I prices all of 2000 and early 2001. Class I prices were isolated from surplus milk production and depressed cheese prices. This situation provided a major incentive for Wisconsin dairy cooperatives and some cheese plants to associate some of its producers with distant orders. The 2001 butter/powder tilt, along with improved cheese prices moved Class III and Class IV prices closer together and increased the possibility of the advanced Class III price being the mover of Class I. If another butter/tilt is implemented, the incentive for distant pooling may be further reduced.

[7] Based on one such hearing, USDA recently ruled that California milk, which is priced under its state order, can no longer be pooled under a federal order.

Summary

There is clear evidence that cooperatives and investor owned firms that operate cheese plants in Wisconsin pay higher prices for Grade A milk than do Western cheese plants. Unless Wisconsin cheese plants are able to either generate higher revenues from the sale of cheese or operate their plants at greater efficiency than their Western competitors, these higher producer pay prices are not sustainable in the long run. Wisconsin cheese plants must generate competitive net operating margins in order to invest in modern plant and equipment.

Wisconsin cheese plants have been able to obtain some premiums that reflect their long-standing reputation as a reliable supplier of high quality cheese. But these premiums have diminished as a greater proportion of cheese moves as commodity cheese via food service and food processors, and as tight milk supplies have made it difficult for the state's cheese plants to honor customer orders. An exception is the growing specialty cheese sector in the state, which serves unique and higher-valued markets.

Wisconsin cheese plants do not enjoy better milk composition or higher milk quality when compared to the national average and are at a disadvantage to western states with respect to average protein in milk. Whether milk composition puts Wisconsin at a serious disadvantage to the West is debatable. Cheese makers in the state have been able to exploit large supplies of low-priced nonfat dry milk to balance low protein with high butterfat.

In the long run, Wisconsin dairy farmers must produce the composition and quality of milk required for efficient cheese production. Milk composition influences cheese yield per hundredweight of milk and associated cheese making cost. Therefore, improved milk composition and milk quality will enhance both the value of producer's milk and the efficiency of cheese plants.

Wisconsin cheese plants in the short run may be experiencing competitive operating costs due to fully-depreciated brick and mortar and lower energy and labor costs as compared to the West. But new investment in brick and mortar will be required to be competitive in the long run.

Neither higher federal milk marketing order Class I prices nor higher Class I milk utilization give Wisconsin cheese plants additional revenue to pay higher prices for milk as compared to the West. Class I over-order premiums in the Upper Midwest may slightly enhance the ability of some cooperatives to pay higher milk prices than indicated by cheese values. But because of the very competitive nature of milk procurement in the state, cheese plants who do not have access to over-order premium revenue need to match the pay prices of those that do. Therefore, over order premiums may actually raise milk costs to these cheese plants but without any additional revenue from their cheese operation. Dairy producers benefit in the short run from these competitive pay prices, but the long run viability of the state's cheese manufacturing industry may be jeopardized by low operating margins.