THE DISAPPEARANCE OF THE GRADE B MILK MARKET— A MATTER OF POLICY CHOICE?

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ABSTRACT

The rapid conversion of U.S. dairy farmers from Grade B to Grade A milk production could eliminate Grade B milk for manufacturing as the basis for all U.S. milk prices. This paper suggests that classified pricing and pooling policies under Federal milk marketing orders are direct factors causing this conversion. A policy to lower Class I price differentials in Federal orders while increasing Grade B support prices could maintain a viable manufacturing milk market and thereby maintain the Minnesota-Wisconsin Grade B price as a viable basis for determining all Class I prices. This policy could be followed under existing orders, probably without creating disorderly marketing conditions.

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SUMMARY

At current Class I milk price levels, a rapid conversion to Grade A milk production is underway, raising the possibility that the Grade B market, the basis for Federal milk pricing, will be eliminated. Class I prices are the minimum prices that handlers must pay for Grade A milk used as a fluid beverage. Under the Federal milk marketing order program, minimum Class I milk prices are set at a fixed differential above the prices paid for Grade B milk in the Minnesota-Wisconsin area.

Grade A milk production has increased dramatically but the amount of milk used as a beverage has advanced slowly. Grade A milk not used as a fluid but rather diverted into manufacturing ice cream, cheese, butter, and other dairy products increased from about 24.3 billion pounds in 1967 to over 42 billion pounds in 1977. Grade B milk is used only in manufacturing dairy products.

The Class I price differential under the Federal order program promotes market security and stability in the U.S. milk market. But, when set too high, the differential promotes production of Grade A milk beyond that needed for the fluid market. The amount of the differential is based on transportation costs and other factors including an incentive to maintain adequate supplies of fluid milk. When the differential is higher than justified by such costs, Grade B producers are encouraged to convert to Grade A production, especially if they have already incurred many of the costs of doing so, such as installation of bulk handling systems. Such technology is often encouraged for Grade B systems by milk handlers seeking marketing efficiencies. The added Grade A production is not needed for fluid use and most is diverted to manufacturing uses.

Lowering the price differentials would reduce the returns to Grade A dairy farmers and reduce or eliminate the economic incentive for many Grade B dairy farmers to convert to Grade A. The lower differential would generally reduce fluid milk prices to consumers. The lower industry returns due to reducing the differential could be offset by raising the support price for manufacturing milk. This policy alternative could benefit both Grades A and B producers and help maintain a viable Grade B manufacturing milk market. The alternative would also maintain the Minnesota-Wisconsin Grade B price as the mover for all Class I prices.

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INTRODUCTION

Two grades of milk--A and B--are produced on U.S. dairy farms. Grade A is produced under higher farm sanitation standards than is Grade B. Any Grade A milk may be sold or used as a fluid beverage. Either Grade A or B may be used for nonfluid uses, such as the manufacture of cheese, butter, nonfat dry milk, and ice cream.

Class I milk (milk used as fluid) prices, under the Federal milk marketing order program, are set at a fixed differential above the prices paid for Grade B milk in the Minnesota-Wisconsin (M-W) area. A rapid conversion to Grade A production is now underway, raising the possiblity that the Grade B market, the basis for milk pricing under Federal milk marketing orders, will be eliminated. This paper explores the impact of Federal pricing and pooling policies on this conversion, questions the need for a higher proportion of Grade A produced when most of the added supplies would be diverted to manufacturing uses, and discusses the effect on producers and consumers of lowering the Grade A differential and raising the Grade B price above support levels to help maintain balance between the Grade A and B markets. The paper considers whether the total conversion to Grade A milk is inevitable or still a matter of public policy choice.

Grade A milk production has increased dramatically despite relatively small increases in the amount of milk used as a fluid beverage. Grade A milk not used for fluid but diverted into manufacturing uses increased from about 24.3 billion pounds in 1967 to over 42 billion pounds in 1977 (table 1). The conversion has been especially dramatic in Minnesota and Wisconsin where a large proportion of the remaining Grade B milk is produced. In 1977, 66 percent of the milk produced in Wisconsin was Grade A, compared with only 44 percent in 1967. In Minnesota, the proportion of Grade A increased from 19 percent in 1967 to 49 percent in 1977. All milk in the United States will become eligible for fluid use if these trends continue, despite the fact that less than half of the milk will likely be used for fluid. 1/

If Grade B milk were no longer produced, some important changes in milk pricing would be needed. Under the present Federal milk marketing order program or by individual State control, the minimum prices handlers must pay for milk used as fluid (Class I) is approximately a fixed differential above the price paid for Grade B milk by manufacturing plants in the Minnesota-Wisconsin area. A new basis for setting minimum Class I prices under Federal orders would be needed if the Grade B market disappeared.

1/ In the Federal milk marketing order system, the amount of Grade A milk in excess of fluid use plus an assumed 25-percent reserve increased from about 13 percent in 1955 to 20 percent in 1975 (app. table 1).

Table 1--Fluid use of Grade A milk compared to nonfluid use

Year	Whole milk sold to plants and dealers	Percent fluid grade	Approximate Grade A milk 1/	Used as fluid milk 2/	Grade A milk not used as fluid milk
	Billion pounds	Percent	------- Billion pounds -------		
1967	109.4	69	77.3	53.0	24.3
1968	108.8	70	78.0	53.7	24.3
1969	108.5	72	79.8	54.0	25.8
1970	110.0	73	82.0	54.3	27.7
1971	112.2	76	86.9	54.7	32.2
1972	114.0	77	89.6	55.8	33.8
1973	109.8	77	86.0	55.6	30.4
1974	110.3	79	88.6	54.3	34.3
1975	110.3	80	89.8	56.0	33.8
1976	115.6	81	95.1	56.1	39.0
1977	118.4	82	98.6	56.2	42.4

1/ Calculated by multiplying whole milk sold to plants and dealers by the percent fluid grade and adding the milk and cream retailed by farmers.

2/ Product pounds sales of "individual beverage milk" and "individual cream and specialty products." U.S. milk used for fluid on a fat solids basis differs somewhat from these figures, but shows a greater increase in excess Grade A milk.

Source: Milk: Production, Disposition, and Income, Economics, Statistics and Cooperatives Service, U.S. Department of Agriculture, various issues; Agricultural Statistics, U.S. Department of Agriculture, various issues; Dairy Situation, Economics, Statistics, and Cooperatives Service, U.S. Department of Agriculture, DS-369 (March 1978) and previous issues.

An important question addressed by this paper is: Why do farmers continue to convert from Grade B to Grade A milk production when essentially all the additional Grade A milk must be diverted into manufacturing uses at manufacturing milk prices? Is this conversion related to Government policy and/or other economic or institutional factors? Should all milk produced be Grade A? Grade A milk is not necessary for manufacturing butter, nonfat dry milk, cheese, and ice cream under current sanitary regulations. If health hazards exist when Grade B milk is used to make these manufactured dairy products, then direct steps could be taken to change specific sanitary regulations requiring all products to be made from Grade A milk. This is a separate issue from milk pricing and is beyond the scope of this paper.

MILK PRICING UNDER FEDERAL ORDERS

The size of the Class I price differential varies from one market to another but generally is higher the further the market is located from Eau Claire, Wisconsin. Grade A milk not used for fluid consumption is diverted into manufacturing uses at about the M-W milk price. This two price policy for Grade A milk is usually referred to as classified pricing.

In each Federal order, the total revenue from fluid sales at the higher Class I price and manufacturing sales of Grade A milk at the lower M-W price is pooled and distributed back to Grade A milk producers as a blend price. Dairy farmers producing

only manufacturing grade milk (mostly located in the North Central States) receive only the manufacturing price for their milk. 2/

Classified pricing of milk and pooling of returns under Federal milk marketing orders is a separately administered program from the program to support manufacturing milk prices. However, decisions under each program affect the other. For example, all minimum Class I milk prices under Federal orders are automatically increased when the manufacturing milk price support is increased since there is approximately a constant differential between the two prices. On the other hand, a higher Class I price differential under the Federal order program would increase the amount of Government purchases required to support the manufacturing milk price at a given level. Although the programs affect one another, the conversion to Grade A milk is more directly related to the Federal order program than to the price support program.

FEDERAL ORDER PRICING THEORY AND THE DISAPPEARANCE OF GRADE B MILK

Under market conditions free of distortion resulting from government regulations and/or monopoly power, the supply area shipping milk to the fluid market would tend to be differentiated from the supply area shipping milk to manufacturing plants. This would be expected because it is more expensive to transport 100 pounds of whole milk than it is to transport the approximately 4.61 pounds of butter and 8.96 pounds of nonfat dry milk (or 10 pounds of cheese) that can be made from 100 pounds of whole milk. For example, if the price of whole milk delivered to the central city were a' in figure 1, then the farm value of the milk (a' less transportation cost for whole milk) at increasing distances from the central city could be represented by lines labeled F in figure 1.

If fluid demand in the central city could be supplied from milk produced in zone A (OA miles surrounding the central city), then milk produced beyond OA miles in zones B, C, and D would be used for manufacturing dairy products. The farm value of milk for both fluid use and manufacturing use would be equal (price a) at the fringe of the fluid milk supply zone OA miles from the central city. Beyond OA miles, the farm value of milk would decline much less per mile because transporting dairy products manufactured from 100 pounds of milk costs less than transporting 100 pounds of whole milk. Therefore, the value of milk beyond OA miles from the central city could be represented by lines labeled M in figure 1. 3/ Manufacturing plants would tend to locate in the rural areas beyond OA miles as manufactured products would be much more expensive in the central city if whole milk were transported to the central city before being manufactured into dairy products.

The tendency for differentiation of supply zones is apparent since dairy farmers located in zone A would receive a higher price for shipping milk to the fluid Class I market while dairy farmers in zones B, C, and D would receive a higher farm price for shipping milk to rural manufacturing plants.

An important point from the above discussion is that an observed differential must exist between milk prices paid by fluid milk bottlers for whole milk delivered to the central city and the milk prices paid by manufacturing plants located in rural areas. This differential represents transportation costs and is required to get whole

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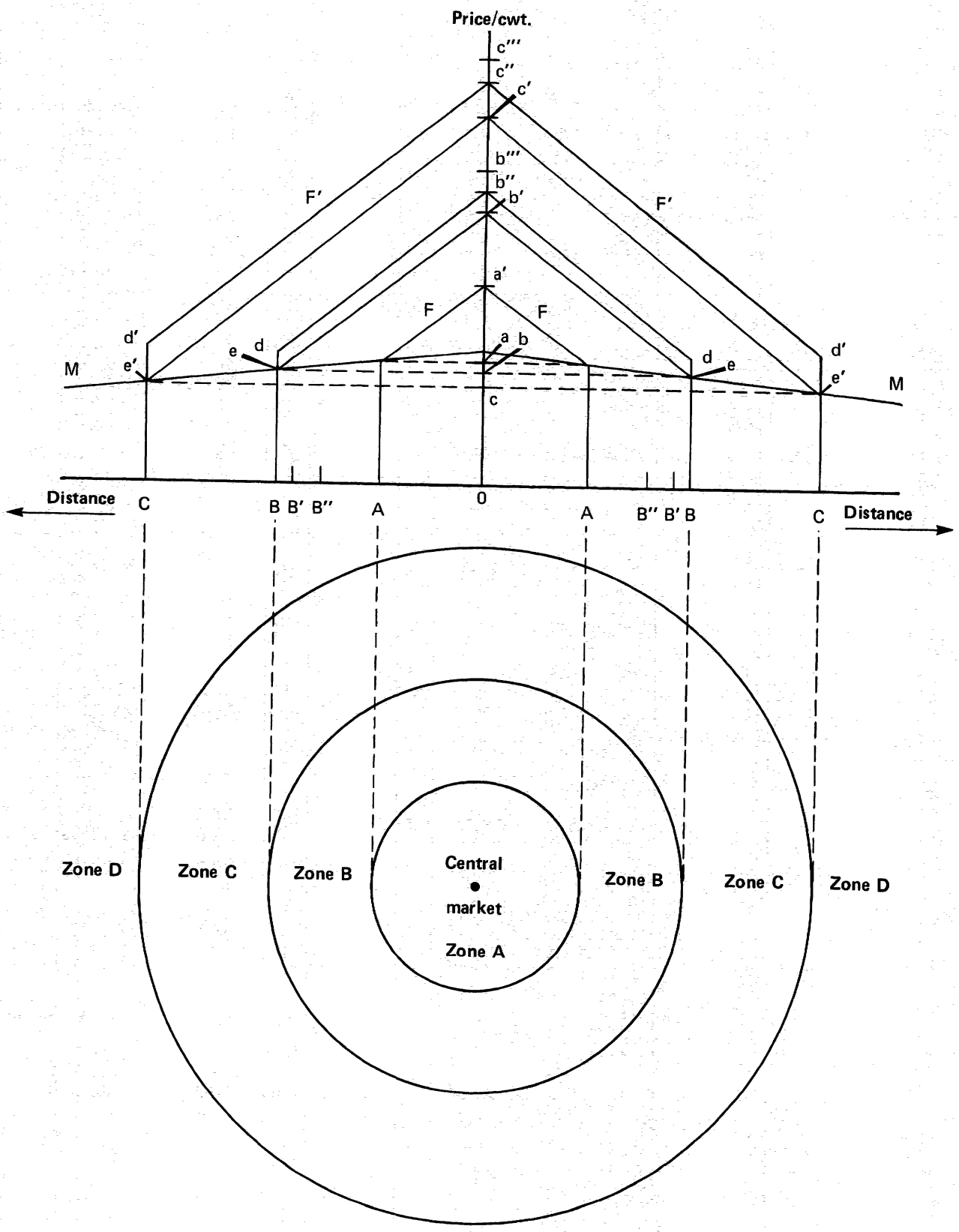
2/ The U.S. manufacturing milk price averages approximately 10 cents lower than the M-W price.

3/ The diagram in figure 1 showing concentric circles is a simplifying assumption, but accurate in implication. In reality, transportation costs are influenced by factors other than distance, such as intensity of milk production within the zones, access of farms to highways, etc. The main conclusions of this paper are not altered by this simplifying assumption.

Figure 1. Relationship between Class I differentials and the fluid milk supply zone.



milk to move into the city for fluid use. This transportation differential is justified simply because Class I prices are measured at plants in the central city while manufacturing milk prices are measured at plants in the outlying areas. 4/

Market Security

The marked seasonal variation in milk production, which does not coincide with seasonal variations in fluid demand, would tend to shift the fringe of the supply area from one time of the year to another. If fluid milk is needed from OA miles during the high production months of the year, then milk from OB miles may be required for fluid needs during the low production months of the year (fig. 1). The difference in fluid milk price (FOB) in the central city and the manufacturing milk price at the fringe of the fluid supply area would tend to be less during the flush or high milk production season (a'a) than during the low milk production season (b'b).

Farmers in zone A would primarily supply fluid milk to the central city while farmers in zones C and D would primarily supply manufacturing milk plants in rural areas. Farmers in zone B would tend to supply the fluid milk market during the low production season and the manufacturing milk market during the higher production season. In a nonregulated market, dairy farmers in zone B, individually or through their cooperatives, probably would find it difficult to shift their milk back and forth from the fluid to the manufacturing market as seasonal and day-to-day variations in fluid supply and demand might warrant. Dairy farmers, either directly or through their cooperatives, would face some pressure to be reliable suppliers of manufacturing plants upon whom they must rely as outlets for their milk during at least part of the year. Shifting their milk from manufacturing plants to the fluid market, only later to be cut off from the fluid market and forced to return to the manufacturing outlets, could stimulate resistance on the part of manufacturing plants to take the excess milk or even build capacity to handle the excess Grade A milk produced in zone B. Under these conditions, dairy farmers could be faced with very uncertain milk markets.

Market Stability

The requirement that milk must be Grade A before it can be used as fluid presents additional complications in marketing milk. To encourage Grade A milk production to meet fluid demand throughout the year, farmers in zones A and B would need to expect a higher price for their milk if it were Grade A than if it were Grade B. The fluid milk price in the central market would be expected to rise from b' to b" in figure 1 to cover the added cost of producing Grade A milk. This would be a second cost justified component of a Class I milk price differential. Producers within OB miles from the central market could then be paid a higher price than what they would expect to receive if their milk were Grade B rather than Grade A. Clearly, all producers close to the central city have a locational advantage since transportation costs are less. 5/ These producers would be better off in terms of price to produce Grade A milk rather than Grade B. The problem of covering the added cost of producing Grade A milk compared to Grade B milk is primarily an issue for those producers at the fringe of the fluid supply area. In a nonregulated free market situation, their problem is two-fold:

4/ Milk in the central city has had location utility added to it by being transported into the central city. Therefore, it is worth more than milk still on farms in the rural areas.

5/ Production costs likely are higher the closer to the city market a farm is located. In part, this would reflect the capitalization of the location advantage into higher values of inputs, such as land. In part, it could reflect competition for land for nonfarm uses.

(1) Can they expect to be compensated for the added costs of producing Grade A milk even when their milk is needed for fluid use during the low production season?

(2) What price would they expect during the high production season when milk for Class I use is needed only from supply zone A?

If producers in zone B were unwilling to produce Grade A milk, then milk supplies for the central market would become very tight during the low production season, causing fluid milk prices to rise relative to manufacturing milk prices. This Class I price increase relative to the manufacturing milk price could be substantial.

The implication of the above discussion is that classified pricing and pooling of milk helps stabilize fluid milk prices. Under this policy, the Class I price would be set at b" over the entire season, requiring either regulation or market power. 6/ All milk produced in zones A and B would be pooled. There would be no incentives through seasonal changes in the Class I differential for producers in zones A and B to reduce the seasonal variation in milk production. 7/ The proportion of milk used and shipped to the fluid market would bring a Class I price (b" in fig. 1) while the Grade A milk not needed for the fluid market (primarily from zone B) would be diverted into manufacturing uses at the lower manufacturing price along M. All producers in the supply zones A and B would then receive a blend price or average value of the pooled milk zoned back to the central city according to transportation costs. Since all Grade A milk produced each year in zones A and B cannot be utilized as fluid, the average blend price paid producers would be less than the Class I fluid milk price.

Cost of Serving the Fluid Market

Farmer cooperatives and proprietary handlers which divert milk from their manufacturing plants to serve the fluid market must operate their plants at less than full capacity. This tends to increase the cost per unit of manufactured product produced in these plants. On the other hand, the fluid processors could annually purchase all milk from farmers in zones A and B and assume the expense for balancing Grade A milk supplies with fluid demand by diverting the excess Grade A milk into manufactured products. Regardless of who performs this function of balancing fluid demand and supply of Grade A milk, an additional cost is incurred which must be recovered and reflected in the fluid milk price (b"' minus b" in fig. 1). Having milk available for the fluid market when it is needed adds a "timing" value to the milk used as fluid. Fluid processors would need to cover the added expense associated with balancing, whether they pay a cooperative or do it themselves. This would be a third cost justified component of a differential between the price of whole milk delivered to the central city and the price paid by manufacturing plants in the rural areas.

Without the present classified pricing and pooling program under Federal milk marketing orders, this seasonal balancing problem would likely be reduced substantially in terms of the number of producers and amount of milk involved (size of zone B in fig. 1). The market mechanism that would be expected to allocate milk from zone B to either the fluid or the manufacturing market would theoretically be the seasonal

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6/ This implies that the Class I price differential would be constant over the entire year. There would, of course, continue to be seasonal ups and downs in both Class I and manufacturing milk prices.

7/ Market orders have attempted to use seasonal pricing plans designed to help reduce the marked seasonal variation in milk production for Grade A farmers shipping milk to the Federal order.

variation in the market determined fluid milk price differential. This variation would be from aa' during the high production months to bb' during the low production months and would be in addition to the likely seasonal variation in the manufacturing milk price. This seasonal variability in fluid milk price relative to the manufacturing milk price would provide a price incentive for dairy farmers located in zone A (and probably part of zone B) to maintain milk production during the low production months so they could take advantage of the relatively high prices in the fluid market during those months. In the longer run, this seasonal variation in the price of milk used as fluid relative to the manufacturing milk price would tend to reduce the expected seasonal variation in milk production by farmers in the fluid supply zone A. This implies that zone B, where milk is needed for the fluid market for only part of the year, would tend to be reduced in size. That is, the amount of milk that must shift between the fluid and manufacturing markets from one part of the year to another would be reduced.

Present Market Characteristics

The market insecurity for dairy farmers in zone B of figure 1, who cannot sell their milk in the fluid market year-round, is reduced under the present classified pricing and pooling provisions of Federal orders. All dairy farmers in zones A and B pool their returns from all fluid Class I sales with the sales of milk that is not needed for fluid but diverted into manufacturing. All dairy farmers share in the total pool and, therefore, share in the costs of marketing excess Grade A milk. This has the effect of spreading the market risk of producers in zone B to all producers in zones A and B, and individual producers in these zones are indifferent whether their milk is used as fluid or as manufacturing since they receive the blend price. Therefore, classified pricing and pooling under Federal milk marketing orders increase market security for producers--primarily those producers at the fringe of the fluid milk supply zone whose milk is needed for only part of the year.

Classified pricing and pooling to provide greater market security and Class I price stability, as described above, result in an equity question for producers near the fringe of the fluid supply area OB miles from the central city market. Some dairy farmers near this fringe of the supply area would, like their neighbors, want to participate in the pool and receive the blend price that would be higher than the manufacturing price.

This would put pressure on the administrators of a classified pricing and pooling program to increase the Class I price in the central city above b'". Because the milk from Grade A dairy farms OB miles from the central market would rarely be used for fluid, their Grade B neighbor-farmers would want to know why they too couldn't join the pool. This equity question would always exist regardless of the size of the Class I differential until the Class I price differential would be raised high enough so all farmers, without regard to location, could participate in the pool.

In summary, the Class I differential bb'" in figure 1 is made up of a transportation component (bb'), an additional cost of producing Grade A milk component (b'b"), and the added cost for balancing plants to manufacture excess Grade A milk only when it is not used in the fluid market (b"b'").

Increased Farmer Returns

The above classified pricing and pooling approach to market security for producers in zone B and Class I fluid price stability would increase returns to all Grade A producers in zones A and B for two reasons:

(1) There would be no expected seasonal decline in the Class I fluid price relative to the manufacturing price (equivalent to bb' minus aa' in fig. 1).

(2) Classified pricing of milk beyond cost justified price differences is a form of price discrimination. 8/

This would encourage milk production in zones A and B and discourage fluid consumption which, in turn, would decrease the needed fluid supply from OB to OB' in figure 1.

If stability of fluid milk prices and market security are the major objectives of classified pricing, then Class I milk prices would be set above manufacturing milk prices so that Grade A farmers receive a blend price sufficient to maintain, but not exceed, the requirements of the fluid milk market. That is, prices would be set based on supply and demand conditions for Grade A milk in that market. The supply of Grade A milk would need to be large enough to meet fluid demand during the low production months. A total conversion of all Grade B to Grade A milk represents more Grade A milk than is needed to meet fluid market needs while suggesting that the Class I milk price differentials are above cost justified levels. In his classic study on classified pricing of milk, Edmond Harris recognized that "...classified pricing is consistent with the achievement of a more orderly and more stable means of marketing milk." He continued by saying that the application of classified pricing "...represents a deliberately limited application of the discriminative possibilities of classified pricing with a view to long-term marketing stability. Discriminative pricing is applied only to facilitate the orderly marketing of seasonal surpluses or any other temporary abnormalities of supply." Harris said that, if classified pricing were used to achieve only market stability and security, "There would be no tendency towards expansion of supplies beyond the effective demand requirements of the market." 9/

Increasing the price differential between fluid and manufacturing milk beyond that differential consistent with market security and stability (bb'") can further increase the returns to Grade A dairy farmers and create incentives for additional farmers to convert from Grade B to Grade A milk production.

Implications of Price Discrimination

If the fluid milk price in the central city were raised from b"' to cc"', the farm value of fluid milk (Class I price less transportation cost) would be illustrated by lines labeled F' in figure 1. This would greatly expand the fluid supply zone to include producers in zone C, much beyond zones A and B needed to meet fluid demand. There would be several effects:

1. There would be increasing returns to producers in the original zones A and B. They could be expected to increase production which, along with lower fluid consumption because of higher Class I prices, would reduce the needed supply zone to OB".

2. Producers in zone C, who had been in a strictly manufacturing milk supply zone before the higher differentials, would have the price incentive to participate in the fluid market pool and to convert to Grade A milk

8/ Total revenue to the dairy industry would be higher with fluid milk prices higher than prices for milk used for manufacturing (classified pricing) as long as demand for milk consumed as fluid is less elastic than the demand for milk consumed in manufactured products.

9/ Harris, Edmond S., Classified Pricing of Milk, Some Theoretical Aspects, TB-1184, Agricultural Marketing Service, U.S. Department of Agriculture, April 1958, pp. 66-67.

production. They could, with higher differentials, join the pool and receive a blend price higher than the manufacturing milk price along line M.

3. The increase in Grade A milk production in zones A and B combined with Grade B milk converting to Grade A in zone C would increase the amount of Grade A milk produced relative to fluid needs of the market. Diverting an increased proportion of the Grade A milk into manufacturing uses would put downward pressure on the producer's blend price. To keep the blend price from falling because of lower Class I utilization, the Class I differential would have to be increased (compared with e'd' in fig. 1).

The Class I differential, if raised above the level needed to encourage fluid milk from the fringe of the supply area needed to supply the fluid demand of the central market, would then have a fourth price discrimination component. If milk produced in zones A and B of figure 1 is adequate for fluid needs (including the seasonal reserves), then the component c'''c minus b'''b could be attributed to price discrimination. This would then be a fourth component of the differential c'''c in figure 1.

If higher returns to Grade A dairy farmers through price discrimination were a policy goal, classified pricing could be used to achieve that goal. However, such a policy would be expected to result in excess Grade A milk production.

The projected total conversion of Grade B to Grade A milk is the major evidence that classified pricing under Federal milk marketing orders has set Class I differentials above those needed for price stability and market security. The profitability of Grade A milk production relative to Grade B milk production has encouraged overproduction of Grade A milk relative to fluid demand. This result was also clear to Harris. He pointed out that increasing the Class I differential will initially increase the blend price to Grade A dairy farmers. This higher price would tend to encourage more Grade A milk production by expanding production on Grade A farms and by Grade B farmers converting to Grade A production. The higher fluid milk prices would also discourage fluid milk consumption. The combined increase in production and decrease in consumption of Grade A milk would result in a larger amount of excess Grade A milk to be diverted into manufacturing use. 10/

In effect, then, raising Class I differentials provides additional incentive for many Grade B producers to convert to Grade A so that they can share in the higher returns from fluid sales. Such conversion and resulting increases in Grade A milk production due to higher Class I differentials would tend to dilute the increase in the blend price as the proportion of Grade A milk actually used in the higher priced fluid use declines.

Intermarket Prices

Figure 1 represents a single city market or consuming population center surrounded by an agricultural area in which milk is produced. The theoretical considerations discussed above are applicable to the many central U.S. population centers. The Class I milk price in any city market could not exceed the Class I price in an alternative supply area plus the transportation cost between them. Otherwise, milk would be transported from the surplus to deficient markets. This puts an upper limit on the Class I price in any market. Given the assumptions that enough Grade A milk could be produced in zones A and B to meet fluid demand plus a reserve for the local market represented in figure 1, the expected Class I price would be about b''' and not the

10/ Harris, op. cit., pp. 67-68, 71-76.

higher price of c'''. The Class I price (b''') could not exceed the Class I price in a second central population center by more than the transportation cost from that center. Otherwise some milk would be transported from the supply area for the second center.

Current Federal order pricing policy sets minimum Class I milk price differentials at about 90 cents in Eau Claire, Wisconsin, plus 15 cents per 100 miles from Eau Claire. Payments over and above the Federal order minimum prices yield prevailing prices at about $1.20 in Eau Claire, Wisconsin, plus 18 cents per 100 miles from Eau Claire. 11/ The pricing policy of setting Class I prices according to distance from Eau Claire, Wisconsin, largely ignores Grade A supply and demand conditions at individual population centers.

The low Class I utilization rate of 30 percent in the Chicago regional and Upper Midwest market orders 12/ suggests that many farmers well outside the needed supply area have converted to Grade A milk production. 13/ This, combined with excess Grade A milk in most parts of the United States (see appendix table 1) suggests that Class I prices are higher than needed to provide market security and stability for farmers in what would be the fringe of the needed supply zone (zones A and B in fig. 1).

A major conclusion from the above description of milk pricing and the differentiation of supply zones is that the conversion to Grade A milk and the potential loss of the Grade B milk market is not inevitable but is a matter of policy choice. It clearly implies that the Grade B milk market in Minnesota and Wisconsin could be maintained if the Class I price under Federal milk marketing orders were reduced by the amount of the price discrimination component of the differential.

An important conclusion is that the discrimination component of the Class I differential in any specific market (which is limited by possible alternative supplies of fluid milk) tends to encourage the production of Grade A milk beyond the needs of the fluid market. Because the present policy of setting minimum Class I milk prices under Federal orders largely ignores supply and demand of Grade A milk within each market, the Class I prices can be set high enough in many markets to encourage Grade A milk production beyond market needs.

Each fluid market is unique with respect to the appropriate Class I differential based on supply and demand of Grade A milk and the maximum upper limit price. Specificially considering the intermarket (geographic) price alinement which probably would involve a number of surplus basing points and not just a single basing point in Eau Claire, Wisconsin, is not essential to the question of the disappearance of the Grade B milk market. The major consideration is whether the differentials in many markets, regardless of their specific levels or how they are set, encourage surplus Grade A milk. Therefore, the intermarket Class I price alinement under Federal orders is not developed further in this paper.

11/ Except from August 1974 to January 1975, when over-order payments averaged about $1, over-order payments have averaged about 35 to 44 cents per hundredweight. (Source: Capper-Volstead Committee, The Question of Undue Price Enhancement by Cooperatives, U.S. Department of Agriculture, December 1976.) These payments have remained quite stable as Class I prices have moved up since the early 1970s. Therefore, the premiums would be expected to remain about the same should the Federal order minimum prices be changed. As noted earlier, these payments include some charges for services to fluid milk processors.

12/ Agricultural Statistics, 1977, U.S. Department of Agriculture, p. 379.

13/ Dairy farmers in Eau Claire, Wisconsin, are in a situation similar to those producers located in zones C and D (fig. 1). With lower Class I price differentials, these producers would be producing for the manufacturing market, and no incentive to produce Grade A milk would be needed.

FACTORS INDIRECTLY ENCOURAGING CONVERSION

The upgrading of Grade B dairy farms has reduced cost differences between Grade A and Grade B milk production, although Grade A inspections remain an inconvenience. This declining difference in cost increases the likelihood that a farmer would convert all the way to Grade A milk production to obtain a higher Grade A price. 14/ For example, a price difference of 25 cents per hundred pounds may not be enough incentive in itself for a farmer shipping Grade B milk in cans to convert to Grade A production. However, it may be more than enough incentive for the farmer to go all the way to Grade A milk production if, for other reasons, he is required to incur many of the costs to go Grade A. Several other "reasons" which have tended to reduce the difference in cost of producing Grade A and B milk are:

1. Upgraded manufacturing milk sanitary standards have required many Grade B dairy farmers to install bulk tanks, milk houses, and other facilities. Most of the added expenses involved are also required to produce Grade A milk. Therefore, it may take relatively little additional investment for a farmer in this situation to go all the way to Grade A.

2. Farmers expanding their herds to achieve greater efficiency and higher incomes often invest in most of the equipment and facilities needed for Grade A production.

3. Many plants have exerted economic pressure on their farmers to shift to bulk tank handling of their milk. Overlapping bulk and can pickup routes and the associated dual receiving facilities are less efficient than a straight bulk system. Once bulk tank handling has been adopted, it would take much less additional investment to convert all the way to Grade A milk production.

CONCLUSIONS

An analysis of the influence of classified pricing and pooling of milk on the trend to one grade of milk suggests that the Grade B milk market need not disappear, but that it is still a matter of policy choice.

The observed difference in fluid milk prices delivered FOB to central city fluid milk plants and delivered FOB to manufacturing plants in the rural areas has cost justified components and a price discrimination component. The major cost justified components of Class I differentials are:

1. The transportation cost into the central city (bb' in fig. 1).

2. The additional price incentive required to produce Grade A rather than Grade B milk (b'b" in fig. 1).

3. The cost associated with balancing the Grade A milk supply and fluid demand. This is a cost that must be recovered by the balancing plants and is not reflected in the farm value of milk. Therefore, this

14/ Most Grade A dairy farmers receive more for their milk than do Grade B dairy farmers. Over the past decade, the above classified pricing policies in Federal and State milk marketing orders have resulted in Grade A dairy farmers receiving, on a national average basis, about $1.37 more per hundredweight for their milk than Grade B dairy farmers receive for their milk. The difference varies among States, but, on a State average basis, Grade A farmers have received at least 40 cents more per hundredweight for their milk than Grade B farmers.

component of the Class I differential is reflected by b"b"' in figure 1. It does not accrue to any dairy farmers regardless of location.

The theoretical concepts discussed in this report illustrate that the conversion from Grade B to Grade A milk production above fluid market needs would result from Class I differentials being set above cost justified levels. This conversion would be expected as long as there was a price discrimination component in existing Class I differentials. Reducing or eliminating this price discrimination component would likely reverse the trend to one grade of milk without threatening market security or fluid milk price stability.

The exact size of the price discrimination component of Class I differentials is not estimated in this report. It would, however, vary from one market order to another. A gradual reduction in the Class I differentials until the conversion to Grade A milk stopped would be one possible policy approach. Other factors discussed above have indirectly influenced this trend, but farmers would not be expected to convert to Grade A production without the existing price incentive from classified pricing.

Lowering Class I differentials would tend to reduce the returns to Grade A dairy farmers and reduce or eliminate the economic incentive (higher price) for many Grade B dairy farmers to convert to Grade A. 15/ These farmers, primarily located in the rural areas beyond the needed fluid milk supply area, would continue to comply with any higher Grade B milk standards imposed on them, shift to bulk milk handling, and expand their herds, but would be expected to continue to produce Grade B milk for the manufacturing market.

Lower Class I differentials would generally reduce fluid milk prices to consumers relative to manufactured dairy products. The impact on consumer prices for manufactured products depends upon whether the manufacturing milk price is at the Government price support floor or at a market clearing level above the support floor. If the manufacturing milk price (Grade B) is at the support floor, lowering the Class I differentials would reduce Government purchases under the price support program and leave the consumer prices for manufactured dairy products unchanged. If the manufacturing milk price is above the price support floor, lowering the Class I differentials would tend to increase fluid consumption, decrease the supply of manufacturing milk, and increase the manufacturing milk price and, therefore, consumer prices for manufactured dairy products.

Lower Class I differentials would likely reduce total cash receipts from all milk sales. Returns to Grade A dairy farmers would decline. Returns to Grade B dairy farmers would remain either unchanged or increase: unchanged if the manufacturing milk price were at the support price and increase if the manufacturing milk price were at a market clearing level above the support price.

The dairy industry is unlikely to support a policy change that would result in lower producer returns. However, the lower industry returns due to reducing Class I differentials could be offset by raising the support price for manufacturing milk. This policy alternative could benefit both Grade A and B farmers and maintain a viable Grade B milk market.

15/ For a more detailed report on the impact of lowering Class I differentials see: Fallert, Richard F. and Boyd M. Buxton, Economic Impact of Alternative Federal Milk Marketing Order Class I Price Structures, AER-401, Economics, Statistics, and Cooperatives Service, U.S. Department of Agriculture, May 1978.

One question would be whether, through market power, farmer cooperatives would or could step in and maintain the present Class I differentials. This paper assumes that in the long run they could not. If they could, then they probably would presently be taking more advantage of the potential gains from further price discrimination.

Some might argue that conversion to one grade of milk is good and that consumers will benefit from manufactured products produced from Grade A milk. However, it should be noted that conversion to Grade A milk to upgrade manufacturing milk quality was not an objective of classified pricing in the original legislation.

A major implication of this report is that a policy to lower Class I differentials in Federal orders by about the amount of the present price discrimination component could maintain a viable Grade B manufacturing milk market in Minnesota and Wisconsin and thereby maintain the M-W price as a viable mover for all class prices. This policy could be followed without creating "disorderly marketing" characterized by market insecurity and Class I price instability. The disappearance of the Grade B milk market should be a matter of discussion rather than assumed to be inevitable and allowed to happen by default.

Appendix table 1--Estimates of Grade A surplus milk in the 16 largest Federal order milk markets and in Federal order system, computed using a 25-percent Class I sales and a seasonal reserve 1/

Market	Percent of milk in excess of Class I needs and required reserves				
	1955	1960	1965	1970	1975
	Percent				
New York-New Jersey	26.7	24.4	26.1	22.3	30.7
Chicago regional	19.8	28.8	26.9	35.5	46.4
Middle Atlantic	-.3	3.4	-6.7	14.9	15.8
Southern Michigan	2.2	7.9	19.6	15.3	19.6
Texas	-12.9	.6	5.2	-3.0	1.5
Boston regional	12.2	13.5	13.5	16.3	20.5
Eastern Ohio-Western Pennsylvania	3.3	5.3	5.6	6.5	13.3
Ohio Valley	5.3	10.9	4.6	5.2	13.5
Minneapolis-St. Paul	-1.7	3.8	2.5	31.5	40.4
St. Louis-Ozarks	-16.5	-5.5	-2.1	6.8	7.8
Indiana	2/ ---	2/ ---	-6.4	4.9	9.9
Puget Sound	11.4	26.6	36.6	32.5	41.0
Connecticut	2/ ---	-6.2	-6.2	-3.2	6.3
Georgia	2/ ---	2/ ---	2/ ---	-8.4	-16.4
Oregon-Washington	2/ ---	2/ ---	2/ ---	14.0	19.4
Lou-Lex-Evans	2.3	-5.9	-1.5	6.0	5.3
Weighted average for 16 largest markets	14.9	16.8	17.1	17.6	23.2
All Federal order markets 3/	13.2	12.8	13.4	16.9	20.4
All Federal order markets except Chicago and Minneapolis-St. Paul	10.9	10.7	11.3	13.4	14.7

1/ Surplus computed using the formula:

$$\frac{[PR - (1.25D+SR)] \times 100}{PR}$$

Where:

PR = producers Grade A deliveries

1.25D = Class I use (D) plus 25 percent reserve

SR = seasonal reserve (difference between daily average production in lowest month and for the year)

Data obtained from Federal Milk Order Market Statistics, AMS, USDA, selected issues.

2/ Dashes indicate that no order was in effect for market.

3/ Computed from data for markets in which there was no substantial change in size of market area during year.

Source: W. D. Dobson and Boyd M. Buxton, Analysis of the Effects of Federal Milk Orders on the Economic Performance of U.S. Milk Markets, Research Bulletin R-2897, Department of Agricultural Economics, University of Wisconsin, pp. 9-10, 1977.

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