

WHAT IMPACTS HAVE PAST U.S./CANADIAN DAIRY PROGRAMS HAD ON STRUCTURE, EFFICIENCY, AND TRADING RELATIONSHIPS? U.S. ANALYSIS

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The U.S. dairy industry currently is experiencing major structural changes. Milk production has shifted from the more traditional regions of the Upper Midwest and the Northeast to the South, Southwest and Northwest. Dairy farm numbers have declined steadily, while the size of individual dairy herds have increased substantially. Productivity of these dairy herds has been steadily increasing. Milk processors and marketers, both dairy cooperatives and investor-owned firms are declining in number, but are becoming larger in size and geographic scope of operation.

It is hard to ascertain whether historic structural changes are in response to major changes in U.S. dairy policy, or simply the result of changing economic conditions and new technology at the farm, processing and marketing levels. We believe that policy shifts have at times been major factors in influencing changes in the U.S. dairy sector, but that more often the flow of causality is the reverse. That is, changing economic conditions, industry structure, technology, and productivity have tended to dictate policy decisions. U.S. dairy policy has become increasingly market oriented since 1981 and as a result, farm level milk prices and dairy product prices have been determined by market forces and not by government programs during the past eight years.

In this paper we discuss the changes in U.S. dairy policy, related farm programs, the structural changes that are occurring in the dairy industry and implications for U.S. competitiveness in international dairy trade.

U.S. DAIRY PRICE SUPPORT PROGRAM

The Agricultural Act of 1949 established the dairy price support program. USDA, through the Commodity Credit Corporation (CCC), supports the price dairy farmers receive for milk by offering to purchase unlimited quantities of butter, nonfat dry milk, and cheddar

cheese at announced prices. These purchase prices are set at levels that enable manufacturing plants to pay dairy producers, on the average, the support price for manufacturing grade milk.

1950-1972

The level of support for manufacturing grade milk was based upon a parity formula from 1950 to 1981. Parity attempted to keep the same relationship between farm level prices and farm costs as existed in the period 1910-14. The 1949 Act required a support price for manufacturing grade milk between 75 and 90 percent of parity taking into consideration supply and demand conditions. The stated goal was to maintain an adequate future supply of milk. During this period, the support price was never set at the maximum, and most often was set at the minimum.

From 1950 to 1972, with relatively low inflation, the support price did not change much from year to year. The support price increased from \$3.14 per hundredweight in 1951, average milk fat test, to \$4.93 per in 1972 (Table 1). For most of this period surpluses were more seasonal than annual. The program served a useful function of providing price stability by propping up prices in the spring. CCC stocks were sold back into the commercial market during seasons of tighter milk supplies. Exceptions were 1953-54 and 1961-65 when CCC net purchases of surplus dairy products totalled 8 to 11 billion pounds of milk (milk fat equivalent). Farm level milk prices were stable. Neither dairy producers nor manufacturing milk plants faced much price or market risk.

During this period the support price kept dairy product prices above world market levels. Commercial dairy exports were minimal. Most exports were under government assistance. Total dairy exports on a milk fat equivalent basis ranged from 350 million pounds to 600 million pounds, most years, less than .5 percent of production (Table 2). In a few years, international food assistance programs expanded exports to levels of 1 billion to 2.5 billion pounds. Dairy imports were kept in check through quotas on most dairy products with the exception of casein and lactose. Section 22 of the 1933 Agricultural Act required the Secretary of Agriculture to impose import quotas if such imports undermine the support programs. Dairy imports ranged from 400 million to 1.4 billion pounds.

During this 22 year period, the number of U.S. dairy farms having milk cows decreased from 3,648,253 to an estimated 475,000 in 1972 (Table 3). The number of milk cows on these farms decreased by 51 percent, 23.85 million head to 11.70 million head. But average milk production per cow almost doubled, going from 5,314 pounds to 10,250 pounds, for an annual average rate of increase of more than 4 percent¹. Total milk production increased just 2.8 percent, 116.6 billion pounds to 119.9 billion pounds.

¹Throughout the paper, changes in production per cow are used as a proxy for productivity gains. Better measures of productivity growth might include production per unit of feed input, production per worker, or production per dollar of investment. Data are unavailable for such measures. However, the authors believe that such indexes have moved in close correlation with production per cow.

Table 1. U.S. Federal Dairy Price Support Program

Year	Support Price \$/Cwt	CCC Purchases Billion Lbs.	Net Gov't Expenditures Million \$'s
1950-51	\$ 3.14	\$ 2.5	188.1
1955-56	3.15	5.1	284.1
1961-62	3.40	11.2	612.0
1971-72	4.93	6.6	369.9
1978-79 (April)	10.76	1.1	250.6
1979-80 (April)	12.36	8.2	1,279.8
1980-81	13.10	12.7	1,974.8
1982	13.10	14.5	2,425.7
1983	13.10	16.8	2,600.4
1988 (January)	10.60	9.6	1,657.9
1989	10.60	8.4	712.0
1990	10.10	10.4	671.0
1995	10.10	3.0	4.0

Source: USDA, ASCS reports

Table 2. U.S. Dairy Exports and Imports, 1950-95

Years	Exports, Mil. Lbs. (milkfat equivalent)	Imports, Mil. Lbs. (milkfat equivalent)
1950 - 1972	350 to 600/year	400 to 1,400/year
1973 - 1980	380 to 650/year	1,700 to 2,300/year
1981	3,343	2,300
1982 - 1991	1,580 to 5,320/year	2,400 to 2,800/year
1992 - 1995	8,500	2,500 to 2,800/year

Source: USDA, ERS reports

Table 3. U.S. Dairy Farms, Number of Milk Cows, Average Herd Size, Average Pounds of Milk Per Cow, Total Milk Production

Year	Dairy Farms	No. Cows (Million Head)	Average Herd Size	Average Milk Per Cow, Lbs.	Total Milk, Bil.Lbs.
1950	3,648,250	23.85	7	5,314	116.6
1972	475,000	11.70	25	10,250	119.9
1973	420,000	11.41	27	10,114	115.4
1981	280,000	10.90	39	12,183	132.8
1982	278,000	11.01	40	12,306	135.5
1983	n/a	11.06	n/a	12,622	139.6
1984	n/a	10.79	n/a	12,541	135.4
1985	n/a	10.98	n/a	13,024	143.0
1987	202,000	10.33	51	13,819	142.7
1995	148,690	9.50	64	16,451	155.6

Source: USDA, ERS sources with author's estimates for some farm numbers.

1973-1981

Beginning in 1973, higher inflation rates increased parity milk prices and thus the support level fairly rapidly. In just eight years the support price more than doubled. The Agriculture and Consumer Protection Act of 1973 removed parity from the price support formula for feed grains and wheat, but the strong dairy lobby managed to retain the parity concept for milk. The mid-1970s were favourable years for American farmers. Export demand propelled prices for wheat, feed grains, rice, and cotton to record highs. But greater dependence on export markets made commodity prices subject to violent swings due to economic and political events in other parts of the world. In 1975, President Ford instituted a brief grain embargo against the Soviet Union and Poland. By 1976 grain prices were declining because of substantially higher grain production and falling exports. Corn prices fell from \$3.02 a bushel in 1974 to \$2.02 a bushel in 1977. Wheat prices fell from \$4.09 a bushel to \$2.33.

In response to the price-cost squeeze caused by the mid-1970s export surge, milk producers lobbied for higher price supports, and were successful in winning a campaign pledge from Jimmy Carter in 1976 to raise them. Congress subsequently passed, and President Carter signed a measure raising the minimum support price level from 75 to 80

percent of parity, and requiring semi-annual rather than annual adjustments. Thus, milk prices rose rapidly, even as feed prices declined. The program had been transformed from a price stability program to an income enhancement program, a goal for which the program was ill-suited.

Dairy farm structure changed considerably during this period. Expanding grain markets and good grain prices in the early to mid 1970s provided alternatives to dairying. The number of farms reporting milk cows declined by a third, from an estimated 420,000 farms to 280,000 farms. The Corn Belt, in particular, lost many dairies. Then, cheaper grain but higher milk prices from the mid to late 1970s attracted unneeded and less efficient resources into dairying and spurred milk production. Dairy farmers were able to obtain credit to modernize facilities, construct new silos etc. Capital investment per cow increased dramatically. Milk surpluses developed on a scale unseen during the first 30 years of the dairy price support program.

Number of milk cows during this 8 year period declined just 4.3 percent, 11.41 million head to 10.90 million head and the average milk per cow increased from 10,114 pounds to 12,183 pounds or 20 percent. This was an average annual productivity increase of 2.5 percent. This productivity and the relative stable number of milk cows pushed total milk production up 15 percent from 115.4 billion pounds to 132.8 billion pounds. CCC purchases of surplus dairy products grew from just 1.1 billion pounds of milk equivalent in 1978-79, to 8.2 billion pounds in 1979-80 and 12.7 billion pounds for 1980-81. Net government expenditures for the dairy price support program increased from \$250.6 million in 1978-79 to \$1.975 billion in 1980-81.

With the price of dairy products support well above world prices, CCC surpluses could only be moved internationally with government subsidies. Exports were at relatively low levels most years, between 380 and 650 million pounds of milk equivalent. An exception was 1981 when increased international food assistance pushed exports to 3.1 billion pounds. In 1977, the United States exported surplus stocks of butter to New Zealand, but refused to export to the Soviet Union or any other communist party. New Zealand, in turn, moved butter into the Soviet Union. In order to get rid of burdensome and growing stocks of surplus dairy products, the government increased domestic distribution programs. Dairy imports were kept at between 1.7 billion and 2.3 billion pounds of milk equivalent.

1982-1995

Milk production continued to outstrip commercial sales, and dairy surpluses continued to grow. CCC purchases of surplus dairy products reached 14.5 billion pounds in 1982, 10.9 percent of milk marketings, and a cost of about \$2.4 billion. In response, Congress finally removed the support level from parity under the Agriculture and Food Act of 1981. Instead, the level of the support price was determined by Congress based upon the level of milk surpluses and associated government costs. The following year, Congress imposed producer assessments of \$0.50 per hundredweight, first collected in April 1983, and an additional \$0.50 implemented on September 1, 1983 that was refundable to producers who reduced

marketings by a specified amount. The support price was frozen at \$13.10 per hundredweight. Surpluses continued to expand in 1983, reaching almost 17 billion pounds of milk equivalent, 11 percent of milk marketings at a cost of \$2.6 billion. On December 1, 1983, the support price was reduced to \$12.60. Triggers based on expected CCC purchases further reduced the support to \$11.60 by July 1985.

In 1983, Congress authorized a national program for dairy product promotion, research, and nutrition education as a part of a comprehensive strategy to reduce milk surpluses by increasing consumption. The program was funded by a mandatory 15-cent per hundredweight assessment on all milk marketed. The funds are administered by a producer board appointed by the Secretary of Agriculture.

For the first time in U.S. history, a voluntary supply management program, "The Milk Diversion Program" (MDP) was implemented for 15 months from January 1, 1984, to March 31, 1985. The MDP paid dairy farmers \$10.00 per hundredweight if they voluntarily contracted to reduce their milk marketing below base marketing. The program was financed by a \$.50 per hundredweight assessment against all milk marketed. The 15 month program did reduce milk production, which fell from 139.6 billion pounds in 1983 to 135.4 billion in 1984. But once the program ended, milk production once again expanded, reaching 143.0 billion pounds in 1985. The program also created regional disputes. The largest participation occurred in the Southeast where a relatively larger portion of milk production costs are explicit variable costs, purchased feed and hired labor. As a result, the Southeast experienced major fluid milk deficits in the summer and early fall of 1984 and 1985.

The Food Security Act of 1985 authorized a voluntary dairy termination program. Producers submitted bids to cease milk production for at least 5 years by slaughter or export of all dairy cattle. Almost 14,000 bids were accepted, amounting to 12.3 million pounds of milk, equivalent to 8.7 percent of total marketings. Again, participation was greater in regions where a larger portion of milk production costs are variable costs, the South and Southeast. The Act also further reduced the support price for milk and retained producer assessments. The support price was reduced from \$13.10 per hundredweight in 1982 to \$10.60 by January 1, 1988.

A major drought occurred in 1988. The combination of voluntary supply management programs, reduced price support levels, producer assessments, and the drought, at last alleviated the burdensome milk surplus problem. CCC purchases dropped to about 9 billion pounds for 1989, most all of which was butter. Net government costs dropped to about \$700 million. The support price ratcheted down to \$10.10 on January 1, 1990, where it remained through 1995.

Under the Food, Agriculture, Conservation, and Trade Act of 1990, annual adjustments to the support price through 1995 were based on CCC purchases measured on a milk equivalent, total solids basis instead of a milkfat basis. However, the support price could not be less than \$10.10. CCC financed purchases were limited to 7 billion pounds. Purchases above this amount were to be financed through additional producer assessments. If purchases were estimated to be less than 3.5 billion pounds of milk, the Secretary of Agriculture was required to increase the support price at least \$.25 cents per hundredweight.

Since CCC purchases were between 3.5 billion pounds and 7 billion pounds each year between 1990 and 1995, the support price remained at \$10.10 and no additional assessments were imposed.

The Agricultural Reconciliation Act of 1990 implemented deficit reduction producer assessments. For 1991, the assessment on all milk marketings was 5 cents per hundredweight. For calendar years 1992-95, they increased to 11.25 cents. Refunds were made to producers not increasing marketings from the previous year. Assessments were increased each May 1 to cover refunds. Few producers seem to have intentionally restricted milk production to qualify for refunds. Indeed, the present assessments were not intended to be a supply management tool.

During the 1990s, dairy imports held between 2.3 and 2.9 billion pounds. Even at a support level of \$10.10US, product prices remained above world prices. Exports were less than 2 billion pounds of milk equivalent. In 1991, the Dairy Export Incentive Program (DEIP), which had been authorized, but little used, was activated as a tool to expand exports. DEIP sales are made by private firms, but most are foreign owned exporting firms. Upon contacting a potential buyer, the prospective exporter submitted a bid to USDA requesting a cash DEIP bonus that would allow the sale to take place. DEIP bonuses were \$10 million in (fiscal) 1991, grew to \$143 million in (fiscal) 1993 and near \$150 million in (fiscal) 1995. Exports exceeded 8.5 billion pounds milk equivalent each year since 1992. Although DEIP will need to be phased down under GATT provisions, it is authorized through December 31, 2000. DEIP has been credited with enhancing farm level milk prices, at times, as much as \$.50 per hundredweight during 1991 to 1995.

Because surpluses have been mostly butter, USDA lowered the purchase price of butter from \$1.0925 per pound January 1, 1990 to \$.65 per pound on July 7, 1993 where it remains. Conversely, the purchase price of NFDM has gone from \$.79 to \$1.034 per pound. World butter prices strengthened in late 1994 and all of 1995, surpassing U.S. domestic butter prices. For the first time butter was exported without subsidies. On the other hand, the higher purchase price for NFDM has made it less competitive internationally. However, even with the increased support price for NFDM, prices were fairly close to world prices in 1995.

The \$10.10 support price in effect since 1990, has made U.S. dairy policy very market oriented. The price of manufacturing milk has been above support since 1989. The government program no longer determines farm level milk prices. As a result, milk prices have become uncertain and highly volatile. Price risk and financial risk have now become a reality for U.S. dairy farmers, processors and marketers.

During the 1982-1995 period, the number of farms with dairy cows declined 47 percent, to 148,690. Lower and more volatile prices placed financial stress on the less efficient dairy producers, especially those with high debt loads. Smaller "family" dairy farms have felt the most pressure from declining real milk prices. Producers who did not adjust to reduced costs experienced lower net returns and many exited the dairy industry either voluntarily or un-voluntarily. Costs of production have been reduced through improved management, economies of scale, reduced input costs, and through new technology.

As the number of dairy farms declined so did the number of milk cows. The size of the U.S. dairy herd declined from 11 million in 1982 to 9.5 million head in 1995. The size of the average dairy herd increased from 40 cows to 64 cows.

This structural change was not uniform for all regions. In the Upper Midwest where the average size dairy farm is 55 cows and a large share of the dairy facilities are obsolete, dairy farm numbers declined faster than the U.S. average. New investments and expansions are just beginning in this area. But dairy expansion has been rapid in the Southwest, West and Northwest. Even the structural change to larger and more modern facilities in the Northeast has been ahead of the Upper Midwest.

Average milk per cow increased from 12,306 pounds in 1982 to 16,451 pounds in 1995 or 34 percent. This was an average annual increase in productivity of 2.5 percent. The result of this productivity increased total milk production from 135.5 billion pounds in 1982 to 155.8 billion pounds in 1995, a 15 percent increase. Commercial disappearance of dairy products during this period increased 27 percent, 121.9 billion pounds to an estimated 154.7 billion pounds, or 1.7 percent annually. The promotion program, and chiefly lower real product prices were major factors in increasing consumption. Consequently, CCC purchases of surplus dairy products have virtually disappeared for the past two years. CCC purchased about 6 billion pounds of milk during 1994 and less than 3 billion pounds during 1995, the lowest level of purchases since 1973. Government costs for the dairy price support program were insignificant in (fiscal) 1995, only about \$4 million.

1996 and beyond

The future of U.S. dairy price support program is uncertain at the time of this writing. The Omnibus Budget Reconciliation Act of 1993 extended the dairy price support provisions through 1996. The Act contained a provision that the USDA in estimating the CCC purchases for the upcoming year must deduct from this figure any increase in the most recent calendar year's dairy product imports from the average imports during 1986-90. CCC purchases were projected at less than 3.5 billion pounds for 1996. This required the Secretary to increase the support price \$.25 per hundredweight on January 1, 1996 to \$10.35, which will have little impact on market prices.

Debate continues on a new Farm Bill. Major regional differences between the Southeast, West and Northeast and the Upper Midwest exist. Federal milk marketing order provisions, discussed below, have been most contentious. Most proposals have been to reduce or eliminate the support price over time. The support on butter and NFDMM could be eliminated and allowed to seek world price levels. There definitely appears to be a consensus that the support program will be eliminated over time and that the industry must consider international markets for dairy products more seriously. Through the efforts of the National Dairy Promotion and Research Board, a Dairy Export Council has been organized to assist U.S. dairy companies.

Regardless of the outcome dairy farmers cannot expect government support for higher prices nor price stability. Thus, the pressure on dairy producers to be efficient and reduce production costs will continue. This will hasten the trend to fewer and larger dairy herds.

FEDERAL MILK MARKETING ORDERS

As early as 1910, dairy producers in some markets had banded together into cooperative associations to gain bargaining power over prices for their milk. Around 1920, cooperatives developed a classified price system in an effort to promote stability in milk markets. The Capper Volstead Act of 1922, which established the legal right for producers to market jointly with limited exemption from the antitrust laws benefited this cooperative activity. But the success of cooperatives in negotiating for and holding milk handlers to higher pay prices met with limited success.

Dairy producers and cooperatives turned to legislation for help. The Agricultural Adjustment Act of 1933 required all milk dealers in a given market to pay producers on a classified price basis, and to pool the returns to producers either on a handler or market wide basis. The Agricultural Adjustment Act of 1935 set forth more specifically the terms and provisions that could be used under the program and termed the instruments marketing orders. The Agricultural Marketing Agreement Act of 1937 provided the framework for the current system of federal milk marketing orders. The act was enabling legislation only. Federal orders based on the record of a detailed public hearing, must be approved by two-thirds of the affected producers.

It should be noted that milk dealers, called "handlers" under orders, were also in support of federal orders. Milk marketing orders equalize paying prices among competing dealers. Federal milk marketing orders are legal instruments designed to promote orderly marketing conditions by applying a uniform system of classified pricing and pooling. Handlers are regulated and are required to pay at least minimum prices to producers for the different use classes of milk. Producers receive a weighted average price based upon these minimum prices and utilization for each class.

1937-1950

Federal milk marketing orders gained acceptance. By 1950 there were 39 federal orders that priced 41 percent of all grade A milk and 25 percent of all milk. Dairy producers experienced greater price stability and less financial risk.

1950-1970

The importance of federal orders continued to increase in the 1950s and 1960s. Number of orders reached 80 by 1960 and priced 64 percent of all grade A milk and 43 percent of all milk. Substantially higher Class I prices (grade A milk for beverage purposes) than manufacturing milk prices encouraged more and more grade B producers to convert to grade A milk production and to be affiliated with a handler regulated by an order. This conversion to grade A was also hastened during the late 1950s and early 1960s by the adoption of the bulk tank at the farm. Because of the price spread between grade A and grade B milk (about \$1.45 per hundredweight in 1960), when a grade B producer decided to purchase a bulk tank, the necessary changes were made to convert to Grade A.

In the early 1960s major adjustments were made in the federal order system. A single basing point pricing system was established. Eau Claire, Wisconsin was selected as that basing point. A major purpose of federal orders is to assure consumers have an adequate supply of wholesome milk to drink, either produced locally or transported from a reserve area. Much of the Southern part of the United States experienced seasonal shortages of fluid milk. Wisconsin, a major manufacturing use state, had reserves of grade A milk which could be shipped to deficit markets. Hence, using Eau Claire, Wisconsin as the basing point for grade A milk for Class I (beverage) use, and increasing the class I price (class I differential) with distance from Eau Claire to move milk when needed, made sound economic sense.²

Second, modern transportation allowed manufactured dairy products, butter, milk powder and cheese to be marketed nationally. Up until this time individual markets used different methods for establishing minimum prices for milk used for manufacturing purposes. This resulted in different producer paying prices for grade A milk used for manufacturing purposes and placed manufacturers on unequal footing. To alleviate this problem, the Minnesota-Wisconsin Price Series (M-W) was established in 1961 as the minimum price for grade A milk under federal orders used for manufacturing, Class III use, and as the base price and mover of other minimum class prices. The M-W price was the weighted average price paid for grade B milk by butter, milk powder and cheese plants in Minnesota and Wisconsin. Thus, manufacturing and fluid prices were linked, and the entire industry responded to the same economic signs.

As modern transportation and milk packaging technology improved, milk could economically be marketed in greater geographical areas. Hence the market area of competing milk handlers expanded. This brought about mergers and geographic expansion of federal orders. By 1970, the number of orders was reduced to 62, but now 79 percent of all grade A milk and 59 percent of all milk was priced under a federal order. This merger activity led to increased incentives to produce and process milk in most economically advantageous locations.

²Our earlier comment indicated that economics dictated policy rather than vice versa. This decision only institutionalized the general pattern of fluid prices that prevailed across the country at the time.

1970-1990

Additional order consolidations occurred. By 1990, the number of federal orders were down to 42, but 77 percent of all grade A milk and 70 percent of all milk was priced under an order. The share of milk that was grade A had increased from 74 percent in 1970 to 92 percent by 1990. With substantially more milk associated with federal milk marketing orders, the average class I utilization declined from 61.5 percent in 1970 to 42.8 percent in 1990. While the relative difference between average producer blend prices for all orders and the manufacturing price³ was 41 percent in 1960 (\$4.47 vs \$3.16), 28 percent in 1970 (\$5.95 vs \$4.66) the difference was just 13 percent (\$13.78 vs \$12.21) in 1990. Most producers who were going to convert to grade A had done so.

Perhaps the most significant federal order action during this period was the 1985 increase in the class I differentials in 37 of the 44 existing federal orders. The largest increase in class differentials occurred in federal order markets distant from the Upper Midwest. For example, increases were \$.79 per hundredweight for the Southwest Plains order and \$1.03 for Southeast Florida compared to \$.14 for the Chicago Regional order and \$.08 for the Upper Midwest order. These increases were mandated by the Food Security Act of 1985, the same Act that authorized the voluntary termination program.

Because producers in the South and Southeast had shown the greatest participation in the previous voluntary milk diversion program that reduced milk production and caused shortages of grade A milk for class I needs, the South and Southeast would only support another voluntary supply management program if there were some additional incentive for producers to maintain milk production in their area. The Upper Midwest agreed to these higher differentials because the alternative was further reduction in the support price for manufacturing milk. Since the Upper Midwest is primarily a manufacturing milk use region and milk surpluses held milk used for manufacturing close to support, the Upper Midwest producers would suffer from any reduction in the support price. But this 1985 decision was the main factor in major regionalism that has drastically weakened the once strong unity among regions for federal dairy policy.

While milk surpluses continued to be a problem in the mid to late 1980s, triggering additional price support cuts, milk production expansion was occurring in the South, Southwest, West and Northwest. The Upper Midwest put part of the blame on the 1985 increases in class I differentials. The Upper Midwest claimed that the single basing point pricing of Eau Claire, Wisconsin was no longer justified because other sources of reserve grade A milk supplies existed and that the Upper Midwest was no longer the lowest cost producer of milk.

Regional shifts in milk production did intensify during the mid-1980s to 1990. From 1985 to 1990, the traditional areas of milk production lost market share: the Lake States, 28.7 percent to 26.7 percent; the Northeast, 20.0 percent to 18.3 percent. The following regions increased market share: the Southern Plains, 3.6 percent to 4.6 percent, the Mountain

³The Minnesota-Wisconsin Price

region, 5.5 percent to 6.4 percent and the Pacific region, 15.5 percent to 18.3 percent (Table 4).

Table 4. Regional Shifts in U.S. Milk Production

Region	Percent of U.S. (1985)	Percent of U.S. (1990)	Percent of U.S. (1993)
Northeast	20.0	18.3	18.6
Lake States	28.7	26.7	25.3
Corn Belt	11.8	11.5	10.9
Northern Plains	3.9	3.6	3.2
Appalachian	6.1	5.6	5.3
Southeast	3.1	3.3	3.3
Delta	1.8	1.7	1.6
Southern Plains	3.6	4.6	4.7
Mountain	5.5	6.4	7.5
Pacific	15.5	18.3	19.7

Source: USDA, ERS

1990 to present

The Secretary of Agriculture held a 43 day public hearing in the fall of 1990 to consider proposals for changing class I differentials and related issues. The Secretary's final decision based upon the hearing indicated that there was not sufficient justification for changes in class I differentials. One result has been a lawsuit filed by the Minnesota Milk Producers Association (MMPA) against the Secretary of Agriculture claiming that the Secretary had violated his responsibilities under the 1937 Act by not appropriately amending federal milk orders. The case which made its way to the U.S. Appellate Court has been remanded to the United States District Court of Minnesota. The judge's decision is yet to be heard.

As milk now moves even greater distance with modern transportation and packaging technology, additional order mergers have occurred and more have been proposed. There are now 34 federal orders that price 74 percent of all grade A milk and 70 percent of all milk. The majority of grade A milk not priced under the federal system is priced under the California state order.

Production continues to shift from the Upper Midwest and Northeast to the Southwest, West and Northwest. Milk production in these regions has outstripped the growth in class I sales. As a result, class I utilizations have declined, reducing producer blend prices. At the same time, a decline in milk production in the Upper Midwest has resulted in excess manufacturing plant capacity in the area. Competition for manufacturing milk plants for milk supplies has intensified. Competitive premiums and subsidized farm to plant milk hauling have made average producer paying prices in Wisconsin and Minnesota higher than U.S. average milk prices, and higher than producer paying prices in the rapidly expanding regions. The Upper Midwest continues to argue that the single basing point pricing is no longer justified and that class I prices should be levelled among regions. This position has carried into the debate on the new Farm Bill, which will likely further reduce the number of orders.

Another issue has been the use of the Minnesota-Wisconsin (M-W) pricing rule as the reference price for national manufacturing. Since most milk in Wisconsin and Minnesota is now grade A (88 percent in Wisconsin and 80 percent in Minnesota), it is argued that the M-W no longer represents a fair market value for milk used for manufacturing purposes and that it should be replaced. The Upper Midwest argues that most products in the region are manufactured from grade A milk, which is priced \$0.75 to \$0.90 per hundredweight higher than grade B milk. Since the M-W is used to set the minimum price for class III use, grade A milk used for cheese and butter, this puts Upper Midwest manufacturing plants in a competitive disadvantage with other regions. They further claim that milk plants in other regions can use revenue from higher class I prices under the orders to subsidize the lower paying prices for grade A milk used for class III purposes.

A public hearing was held in June 1992 to consider proposals for replacing the M-W. The Secretary's final decision was to amend the procedure for determining the M-W. A temporary replacement to the M-W was implemented effective May, 1995, the Basic Formula Price (BFP), which updates paying prices based on product price changes from the prior month.

California's pricing provisions in its state order has resulted in a lower price than the M-W being paid for grade A milk used to make NFDM. This made it difficult for dairy cooperatives making nonfat dry milk to profitably compete with California powder producers. Based on federal order hearings the Secretary issued a final decision to amend federal orders by establishing a class III-A price. Skim milk used to make NFDM would no longer be priced at the M-W (now BFP) price, but rather a value established by a product price formula. This became effective in December 1993. The result has been a lower price for grade A milk used for NFDM than that used for cheese. Producers in the Northwest, a major producer of NFDM, have as a result, experienced lower producer blend prices. Class III-A pricing has also resulted using more powder in making cheese in a seemingly inefficient intermediate step.

FEED GRAIN POLICIES

The Agricultural Adjustment Act of 1933 provided payments to farmers who agreed to reduce their production of surplus feed grains. Non-recourse loans based on parity prices were implemented with the Agricultural Adjustment Act of 1938. The Agricultural Act of 1961 offered non-recourse loans and acreage diversion payments to producers who agreed to participate. The Agriculture and Consumer Protection Act of 1973 substituted target prices and deficiency payments for support prices based on parity, but the programs were ineffective for much of the decade because of high grain prices.

Table 5. Number of U.S. Dairy Cooperatives and Their Share Of Farm Milk, 1950 to 1994

Years	No. of Dairy Co-ops	Co-op's Share of Farm Milk
1950 - 51	2,072	53%
1960 - 61	1,609	61%
1969 - 70	971	73%
1974 - 75	631	75%
1985 - 86	394	78%
1990 - 91	264	82%
1994	247	83%

Source: USDA/Rural Economic and Community Development/Cooperative Service

In the early 1980s high CCC loan rates drove U.S. grain and feed prices well above world levels, probably slowing down structural adjustments and productivity gains in the dairy industry. But in the late 1980s, the course was reversed by the 1985 Farm Bill. Corn loan rates, and thus market prices, were dropped sharply, with income support provided by direct deficiency payments. Annual acreage set-aside programs also have tended to raise grain and feed prices, but these "ARP"s have seldom been applied in the 1990s, and when used have been small. Of course, dairy producers who grow grain are also eligible to participate. Attractiveness of feed grain policies contributed to the decline of dairying in the Corn Belt.

The impact of these feed grain policies on the dairy industry has been to keep feed grain prices and feed costs higher than what they would have been without support prices and production controls. However, dairy producers having grain acreage did participate in the

feed grain program. The deficiency payment received was additional revenue that benefited these participating dairy producers.

DAIRY COOPERATIVES

As previously indicated producers in the early 1900s organized dairy cooperatives to enhance their bargaining power. In 1950 about 53 percent of producer milk was marketed by a cooperative (Table 5). This percentage is now about 82 percent. About 84 percent of all milk marketed under federal milk marketing orders is marketed by a cooperative. Since federal orders allow for bloc voting by cooperatives, cooperatives are the key to the approval and amendment of federal orders.

Dairy cooperatives have attempted to add value to producer-member's milk through further processing. Currently, cooperatives have the following market shares of dairy products: butter, 65 percent; dry milk products, 81 percent; cheese, 43 percent; and fluid milk, 13 percent. It is anticipated that these market shares are likely to increase.

The number of dairy cooperatives totalled 2,072 in 1950, declined through mergers to 1,609 in 1960. Merger activity intensified in the 1960s as a means to grow geographically and to increase market power. By 1970 the number of dairy cooperatives decreased to 971. Merger and consolidation activity slowed in the 1970s and 1980s as antitrust action was imposed against the major regional dairy cooperatives. But the need to reduce costs, be more efficient, and obtain more market clout has once again initiated mergers, acquisitions and consolidations as well as various forms of strategic alliances with other dairy cooperatives and investor owned firms. The number of dairy cooperatives declined to 247 in 1994.

The question is, as the U.S. dairy industry deregulates, will dairy cooperatives play a greater or lesser role in milk pricing and marketing? Will dairy producers turn to cooperatives to provide the price enhancement and stability now provided by federal milk orders? Has or will the cooperative structure change to enable them to be effective in this role? There are differences of opinions in these regards. It definitely appears that dairy cooperatives will become more active in dairy exports.

SUMMARY

The evolution of U.S. dairy policy and related government programs has in some cases retarded, but in most instances encouraged structural shifts to fewer, larger dairy farms capturing available scale economies. Dairy programs have fostered technical efficiency and economic efficiency, although they most surely have created distortions. At times the programs, both the dairy price support program and federal milk marketing orders, have been slow to change in response to new economic conditions. But changes, once adopted have generally been those that have fostered improved performance in the industry.

Real declines in the support price since 1981 have resulted in a broad sense a free functioning market economy in the manufacturing dairy sector. Although some CCC purchases have occurred, they have been mostly butter. Market prices have been \$1.00 to \$3.00 per hundredweight above support since 1991. The current support price represents below break-even prices for the average U.S. dairyman. The program costs little, \$4 million estimated for 1995. The question is whether to simply let the support program wither away or just end it. Clearly U.S. dairy policy will continue to be highly market oriented. Dairy producers will continue to respond by striving to adopt technologies and management changes that will reduce the costs per hundredweight of milk. This action will make the U.S. dairy industry more competitive internationally.

Federal milk marketing orders are under threat of major changes or if not, the possibility of total elimination. The Northeast and Southeast may be the regions most negatively impacted if federal orders are eliminated. Short run, producer prices could decline the greatest in these areas and accelerate the trend to fewer and larger dairies. Dairy cooperatives will attempt to provide for dairy producers market protection now offered with federal orders. Cooperatives will also attempt to add value to producer-member milk via processing, packaging and marketing. Cooperatives will pursue more aggressively international markets. These activities will hasten additional mergers, consolidations, acquisitions among cooperatives and the formation of various strategic alliances with other dairy cooperatives and investor owned firms.