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Milk Check Money

What determines the price farmers receive for Grade A milk?

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The price that dairy farmers in the United States receive for their milk is the result of an involved sequence of events. Changes in government policies and regulations, consumer preferences, production technology, and other market forces all affect the milk check. The U.S. dairy industry is driven primarily by domestic economic forces and policies. International markets have relatively little influence, though this may change under future multilateral trade agreements. The following discussion will help dairy farmers and other people interested in the U.S. milk market to better evaluate the impact that changes in government policies and economic conditions might have on the price of Grade A milk in the United States.

American dairy farmers have been buffeted by political, economic, and regulatory changes in recent years, including changes in consumer behavior, milk production technology, the federal dairy price support program, and federal milk market orders. The Federal Agriculture Improvement and Reform Act of 1996, better known as the 1996 Farm Bill, required major changes in federal milk market orders. This legislation also stipulated an end to the 50-year-old price support program in the year 1999, but subsequent legislation extended the termination date twice, most recently through 2001. So how can farmers anticipate and prepare for the impact of policy changes and economic events? The following discussion looks at the forces affecting the dairy industry and milk prices and the sequence of events that ends with the milk check in the dairy farmer's mailbox. This information provides farmers and others involved with the dairy industry a basis for evaluating policy issues and options and for making more informed business decisions.

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A global perspective

More than 90 percent of world production of milk is consumed in the countries where it is produced. The United States produces more milk than any other country, although it ranks second to the combined production of the countries of the European Union. The EU is also the world's leading exporter, but these exports are heavily subsidized and represent surpluses created by generous government programs. New Zealand, a low-cost producer, is the second largest exporter of dairy products in the world.

U.S. domestic prices are higher than world prices, which are kept artificially low by European Union subsidies, so U.S. exports are limited to high-value products or products exported with assistance from U.S. government subsidies. For many years, the U.S. dairy industry was protected from cheaper imports by quotas. Under the Uruguay Round agreement in the General

Agreement on Tariffs and Trade (GATT), these quotas were converted to tariff-rate quotas, but the effect is the same in that imports are restricted. U.S. imports are equivalent to approximately 2 to 3 percent of total U.S. production, and exports are equivalent to 1 to 2 percent (Table 1). For comparison, world production in 1998 was approximately 850 billion pounds, and U.S. production in 1999 was 162.7 billion pounds.

Table 1. U.S. milk supplies and utilization, 1999

Item	Amount	Percent
	billions of pounds (milk equivalent basis)	%
Supply		
U.S. production	162.7	94.9
Beginning stocks	5.3	3.1
Imports	<u>4.7</u>	<u>2.7</u>
Total supply ^a	171.4	100.0
Utilization		
Farm use	1.3	0.8
Exports ^b	3.0	1.8
Government use	0.3	0.2
Stocks	6.1	3.6
U.S. commercial use	<u>160.7</u>	<u>93.8</u>
Total utilization ^a	171.4	100.0

a. Totals may not equal the sum of individual items because of rounding.

b. Calculated by the author from export data. Individual items do not add to totals because of rounding.

Source: *Dairy Market News*, Agricultural Marketing Service (AMS), U.S. Department of Agriculture (USDA), Vol. 67, Reports 12 & 13.

Agriculture was largely omitted from discussions on trade liberalization during the four decades from the end of World War II until the 1980s, when a number of different rounds of trade negotiations were started. The North American Free Trade Agreement (NAFTA), which went into effect on January 1, 1994, has not had a major impact on the U.S. dairy industry. Restrictions remain in place on trade in dairy products between Canada and the United States. Restrictions between Mexico and the United States are being phased out gradually over 15 years. U.S. dairy exports to Mexico dropped during that country's financial crisis in late 1994 and 1995, but have recovered slowly, making a small but positive impact on U.S. farm prices.

Market access and export subsidies were important aspects of the Uruguay Round agreement that went into effect on July 1, 1995. Reductions in global trade barriers and trade-distorting policies such as quotas, import tariffs, agricultural subsidies, and subsidized exports have been phased in

over a six-year period. Foreign dairy products now have increased access to the U.S. market. Conversely, U.S. dairy products have increased access to markets in other countries. However, U.S. prices remain above world prices and U.S. export subsidies are being reduced, so U.S. companies find it difficult to take advantage of this opportunity.

Under the terms of the GATT agreement, market access by foreign dairy imports increased to 3 percent of U.S. consumption at the time the agreement went into effect, and additional access up to a maximum of 5 percent was granted over the following six years. Import quotas have been used to control dairy imports since 1947. On July 1, 1995, these quotas were converted to tariff-rate quotas. A specified volume of dairy imports must be allowed into the United States at a low (or no) tariff, but additional imports are subject to prohibitively high tariffs. Over the six-year implementation period, the quantities subject to the low tariff have increased, and the high tariff on additional imports has been reduced somewhat. Other GATT member countries also were required to allow imports equal to at least 5 percent of their domestic consumption by the end of the six-year period.

All GATT members were required to reduce agricultural export subsidies over the six-year period—by 21 percent in terms of the volume of subsidized exports and by 36 percent in terms of the value of exports. These reductions were calculated based on subsidized exports during 1986 through 1990.

These changes likely have hurt rather than helped U.S. dairy farmers, but the impact has been relatively small. Domestic factors are more important to the U.S. dairy economy than international concerns and will continue to dominate for several more years.

The U.S. market for dairy products

The customer is boss—rich or poor, educated or ignorant, foolish or faddish. Let us examine changes in dairy product consumption by Americans, since these issues affect the size and location of the U.S. dairy industry and its supporting services.

Commercial use of dairy products, or *commercial disappearance*, has increased by an average rate of 2 percent annually over the last 19 years (Table 2), slightly faster than the 1.1 percent annual increase in the population during the same period. However, the slow increase in overall consumption masks a significant change in the product mix. Total fluid milk sales have changed little over the past 19 years, but whole milk consumption has dropped from 80 percent of total fluid sales to less than half of total sales as consumers have switched to low-fat and skim milk. Butter sales have grown slowly, in part because of health concerns and in part because butter prices were significantly higher than margarine prices during the 1980s and early 1990s. Ice-cream sales have grown slowly, too.

The only items showing a rapid rate of sales growth are yogurt and cheese. However, yogurt accounts for less than 1 percent of total consumption. Cheese, on the other hand, accounts for approximately 36 percent of consumption now, on a raw-milk-equivalent basis. Cheese sales have shown strong and steady growth—doubling over the 19-year period. Mozzarella has posted

the most growth and now rivals American cheese in total production. Pizza, cheeseburgers, and other foods prepared or eaten away from home explain most of the increase. Still, when viewed from this perspective, we can see the growth in total dairy product sales has a rather narrow base.

Table 2. Commercial disappearance of selected dairy products, United States, 1980–99

Item	1980	1999	Average annual change
	(millions of pounds)		(percent)
Fluid milk	53,006	55,675	+ 0.3
Ice cream	830	937	+ 0.7
Butter	895	1,201	+ 1.8
Cheese, natural	3,984	8,262	+ 5.7
Total disappearance, all products ^a	119,049	164,948	+ 2.0

^a Milk equivalent, milk-fat basis.

Sources: *Dairy Yearbook, 1995*. Economic Research Service, USDA; and *Dairy Market News*, Agricultural Marketing Service, USDA, Vol. 67, Report 9.

Several factors play a role in dairy product sales. Based on information compiled from 1980 through 1999 (Table 3), these include:

- Population growth at 1.1 percent per year means more mouths to feed.
- Dairy product prices have tended to increase more slowly than the overall rate of inflation and the prices of other food items. This helps dairy product sales because prices are lower both in real terms and relative to competing products.
- New, substitute products represent a continuing challenge to traditional dairy products.
- The economy has had its ups and downs, with high inflation and low growth in the 1980s and a record period of economic growth with low inflation during the 1990s. Overall during the 19-year period, consumer purchasing power has grown, as measured by an annual average increase of 3.1 percent in real (inflation-adjusted) disposable income.

Higher incomes allow people to eat more expensive foods, including livestock products. Also, as incomes rise, consumers spend an increasing share of their food dollar on convenience foods and food eaten away from home. This trend has contributed to the increased consumption of cheese and some other dairy products.

- A variety of other influences also affect consumer decisions. These include health and dietary concerns (real or imagined), which have led consumers to switch from high-fat to lower-fat products and from animal fats to vegetable oils. Changing demographics include more single-parent and two-wage-earner families and a corresponding reduction in traditional methods of food preparation and eating; changes in the age distribution; and changes in the racial mix. Producer-funded generic advertising and promotion have had a measurable impact on consumer behavior.

In summary, there has been slow growth in total demand for dairy products in spite of several favorable factors. This slow growth reflects the combined effects of little or no growth in sales of most dairy products and significant sales growth in only one product category—cheese. Continued slow overall growth seems to be the best the industry can hope for.

Table 3. Economic factors affecting U.S. dairy product demand, 1980–99

Item	1980	1999	Average annual change
Population (millions)	225.6	271.7	+ 1.1 %
Disposable income per person (1992 \$)	\$14,648	\$23,309	+3.1 %
Consumer Price Index (CPI)—All items (1982–84 = 100)	82.4	166.6	+ 5.4 %
CPI—All food (1982–84 = 100)	86.8	167.0	+ 4.9 %
CPI—Dairy products (1982–84 = 100)	90.9	159.6	+ 4.0 %

Sources: *Agricultural Outlook*, Economic Research Service, USDA; and *CPI—Detailed Report*, Bureau of Labor Statistics, U.S. Department of Labor.

Milk production in the United States

The U.S. dairy industry is a dynamic one, with a long history of increased productivity. However, the 2.6 percent-per-year-per-cow increase in milk production (Table 4) has exceeded the rate of growth in sales. The resulting pressure on milk prices has forced a reduction in both the number of cows and the number of dairy farms.

Table 4. U.S. milk production, 1980–99

Item	1980	1999	Average annual change
Total milk production (billions of pounds)	128.4	162.7	+ 1.4 %
Milk per cow (pounds)	11,891	17,771	+ 2.6 %
Cows (thousands)	10,799	9,156	– 0.8 %

Source: *Milk Production*, Economic Research Service, USDA.

While total U.S. production has been increasing slowly, marked regional shifts in market share have occurred, characterized by gains in the West and loss of market share elsewhere (Table 5). The decline in the number of farms has been even greater than the decrease in cow numbers. Based on data collected by the American Farm Bureau Federation, dairy farm numbers fell by one-third from 1992 to 1999.

Table 5. U.S. milk production, by region, 1980–99

Region	1980	1999
	—Percent of U.S. total—	
Northeast	20	18
Lake States	29	23
Corn Belt	12	9
Northern Plains	4	3
Appalachian	7	4
Southeast	4	3
Delta	2	1
Southern Plains	4	4
Mountain	5	11
Pacific	12	23

Sources: *Dairy Situation and Outlook*, and *Dairy Yearbook, 1995*, Economic Research Service, USDA.

Farm-level production costs and returns vary year by year because of changes in milk prices, feed and other costs, and efficiency gains (Table 6). In general, productivity gains have resulted in costs and returns that have not kept pace with inflation. However, in any given year there are wide differences in costs and returns among the various regions of the country, as well as differences in cost structure (Table 7). Although the definitions of the individual regions are not strictly comparable for Tables 5 and 7, it is reasonable to conclude that differences in profitability have driven the production shifts shown in Table 5.

Table 6. Farm costs and returns of producing milk, United States, 1980 and 1998

Item	1980	1998
	(\$ / 100 lb)	
Gross returns		
Milk	12.95	15.51
Cull cows	<u>1.38</u>	<u>1.38</u>
Total returns ^a	14.33	16.89
Cash expenses		
Variable	7.30	11.54
Fixed	<u>2.11</u>	<u>1.93</u>
Total cash expenses ^a	9.41	13.47
Gross returns less cash expenses	4.92	3.42
Overhead costs and charges for owned inputs	3.28	3.80
Total economic costs^a (Total cash expenses plus Overhead costs)	12.69	17.25
Residual returns to management and risk^a (Total returns less Total economic costs)	1.64	-0.36

^a Totals may not equal the sum of individual items because of rounding.

Source: *Milk Costs and Returns*, Economic Research Service, USDA, September, 1999.

Table 7. Farm costs and returns of producing milk, by region, 1998

Region	Gross returns	Cash expense	Net cash	Total economic costs	Returns to management and risk
			(\$ / 100 lb)		
Northeast	16.79	14.80	1.99	19.31	-2.52
Corn Belt	16.90	13.90	3.00	18.98	-2.08
Upper Midwest	17.10	14.07	3.03	18.40	-1.30
Southeast	19.06	15.09	3.97	18.83	0.23
Southern Plains	16.90	12.80	4.10	15.84	1.06
Pacific	16.24	10.85	5.39	12.56	3.68

Source: *Milk Costs and Returns*, Economic Research Service, USDA, September, 1999.

Federal government involvement

Government involvement in Grade A milk production, pricing, and marketing in the United States takes three forms: public health, the federal dairy price support program, and federal milk market orders.

Public health. Government regulations specify that only Grade A milk may be used for the production of fluid (beverage) milk products to ensure a safe and high-quality milk supply. Grade A dairy facilities must be constructed according to government specifications, then routinely inspected to ensure the facility is maintained and operated according to specified standards. Finally, milk samples are taken regularly and must meet certain quality standards if that milk is to be sold as Grade A milk.

The dairy price support program. Historically, the federal price support program has had a significant effect on milk prices across the nation. This program began in 1949 to “assure an adequate supply of wholesome milk at reasonable prices.” Between 1949 and 1988, the support program raised farm milk prices and helped to stabilize them. The program also created periodic surpluses that the government bought at taxpayer expense.

Large and costly surpluses occurred in the early 1980s, which, in combination with efforts to control the large federal deficit, led to changes in the support program. The support price was cut, and a “buyout” program offered dairy farmers cash payments to slaughter or export their herds in 1986–87. The 1996 Farm Bill specified that the support program would end on December 31, 1999, but this deadline was extended until December 31, 2001, by subsequent legislation. The

future of the price support program is uncertain, and an understanding of the way it operates is needed to evaluate the consequences of changes in farm policy.

The support price for milk is set according to rules established by Congress, usually in the Farm Bills that have been passed every four or five years. These rules have changed from time to time, but the basic operation of the program has not.

The support price is announced in U.S. dollars per 100 pounds of manufacturing-grade milk. Because raw milk is highly perishable, it is not feasible for the government to intervene directly in raw milk markets. Therefore, the farm-level support price is converted into support prices for storable dairy products—cheese, butter, and nonfat dried milk. The Commodity Credit Corporation (CCC), an agency of the U.S. Department of Agriculture (USDA), offers to buy these products at the announced support prices and must buy everything it is offered.

USDA has discretion over the prices for the different components of raw milk—butterfat and nonfat solids—as long as the combination achieves the mandated support price. In recent years, USDA has reduced the support price for butter in order to stimulate sales and has offset this reduction by increasing the price of nonfat solids.

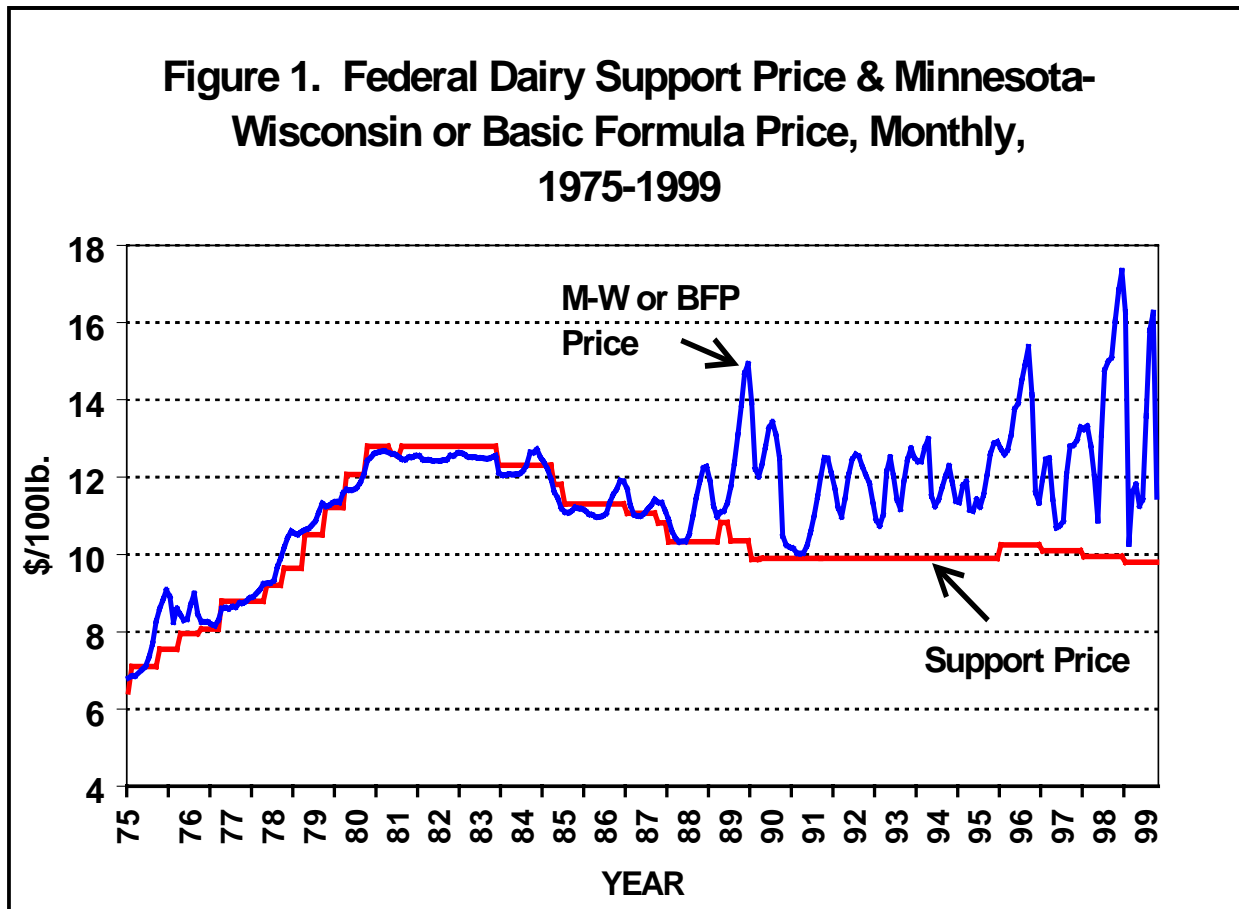
If more milk is produced than consumers are willing to buy at prevailing prices, the dairy processors can sell products meeting certain quality specifications to the CCC. The idea is that CCC is always a buyer of last resort, and, therefore, processors should always be able to pay dairy farmers a price that is at or above the support price. There are no limits on the quantities of eligible products that CCC will purchase in times of surplus.

Most of the manufacturing-grade milk is produced in Wisconsin and Minnesota. For many years, the monthly average price paid to farmers in these states, the Minnesota-Wisconsin (M-W) price, was used as a reference point for milk prices nationally because it responded to the balance between supply and demand. This price also changed month-to-month in response to seasonal changes in milk production and commercial sales. However, over time, the quantity of manufacturing-grade milk declined, and the M-W price became less reliable. In the mid 1990s this benchmark price was replaced by a formula based in part on wholesale dairy prices, the so-called “Basic Formula Price” or BFP.

The relationship between the support price and the M-W and BFP prices from 1975 to 1999 is shown in Figure 1. There was rapid inflation in the mid to late 1970s. At that time, the support price was indexed to a parity formula that was heavily influenced by the rate of inflation. Largely as a result of these price changes, there was a large milk surplus in the early 1980s. From the mid 1970s through the 1980s, the two prices were similar, as they have been over most of the life of the support program.

From 1982 to 1989, a combination of events discouraged milk production while sales continued to increase. The high cost of government purchases at a time when Congress was trying to control the federal budget deficit resulted in a series of reductions in the support price. Lower prices, the federal Dairy Herd Buyout Program in 1986–87, a drought in 1988, and unfavorable weather in the northern dairy states in 1989 all affected milk supplies and helped bring production in line with commercial sales. By the end of the 1980s the support price was

considerably below the cost of producing milk, as measured by the annual cost-of-production figures published by USDA.

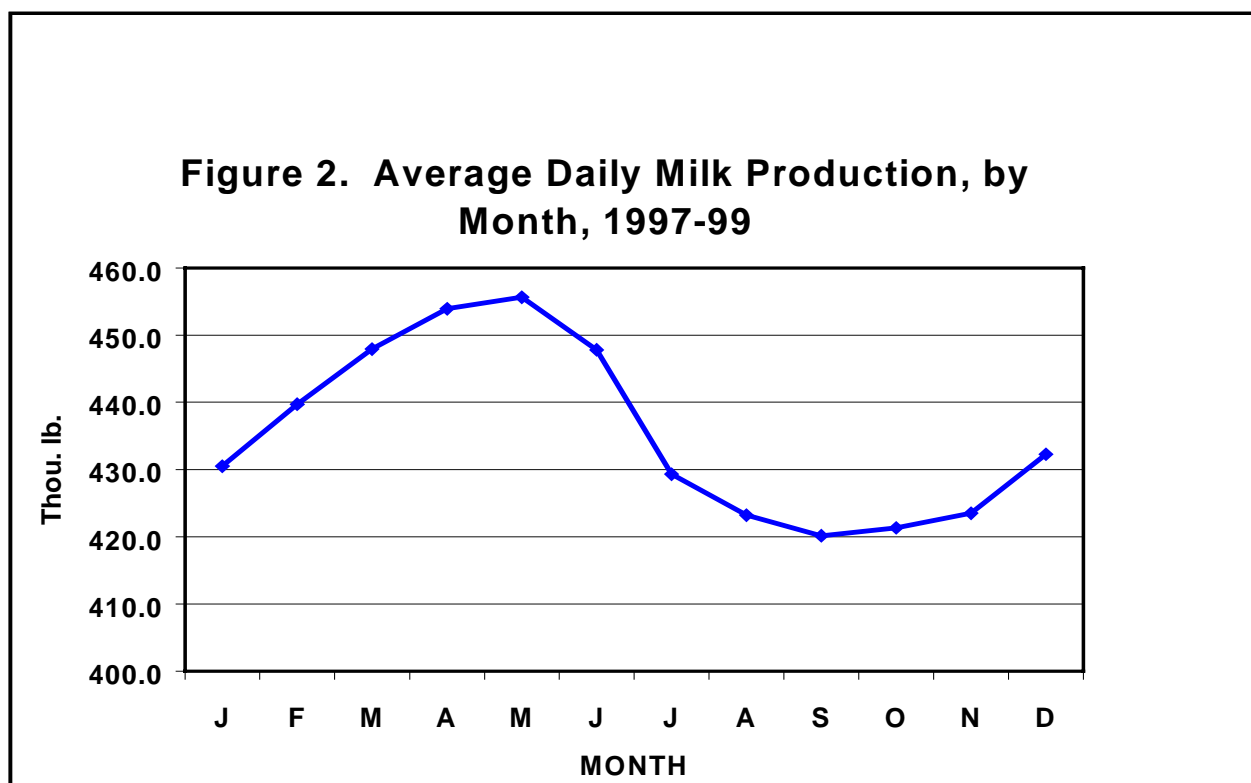


Changes in the dairy quota program in the European Community temporarily helped reduce the volume of subsidized dairy products in world markets in the late 1980s, allowing prices to rise and permitting sporadic U.S. exports. U.S. milk powder exports also were boosted by increased funding for Dairy Export Incentive Program subsidies. These exports occurred at the same time that domestic sales of dairy products were increasing.

From 1989 through 1999, milk production and commercial sales were in close balance. Except for occasional brief periods during some spring months when production was at a seasonal peak, market forces set prices instead of the price support program. CCC made only small purchases, compared to the levels seen in the 1980s. Market prices were above the support price, in general. However, as the national surplus of the early 1980s vanished, milk prices became increasingly volatile, as shown in Figure 1.

The farm milk prices that were generated by market forces during 1989–99 were considerably

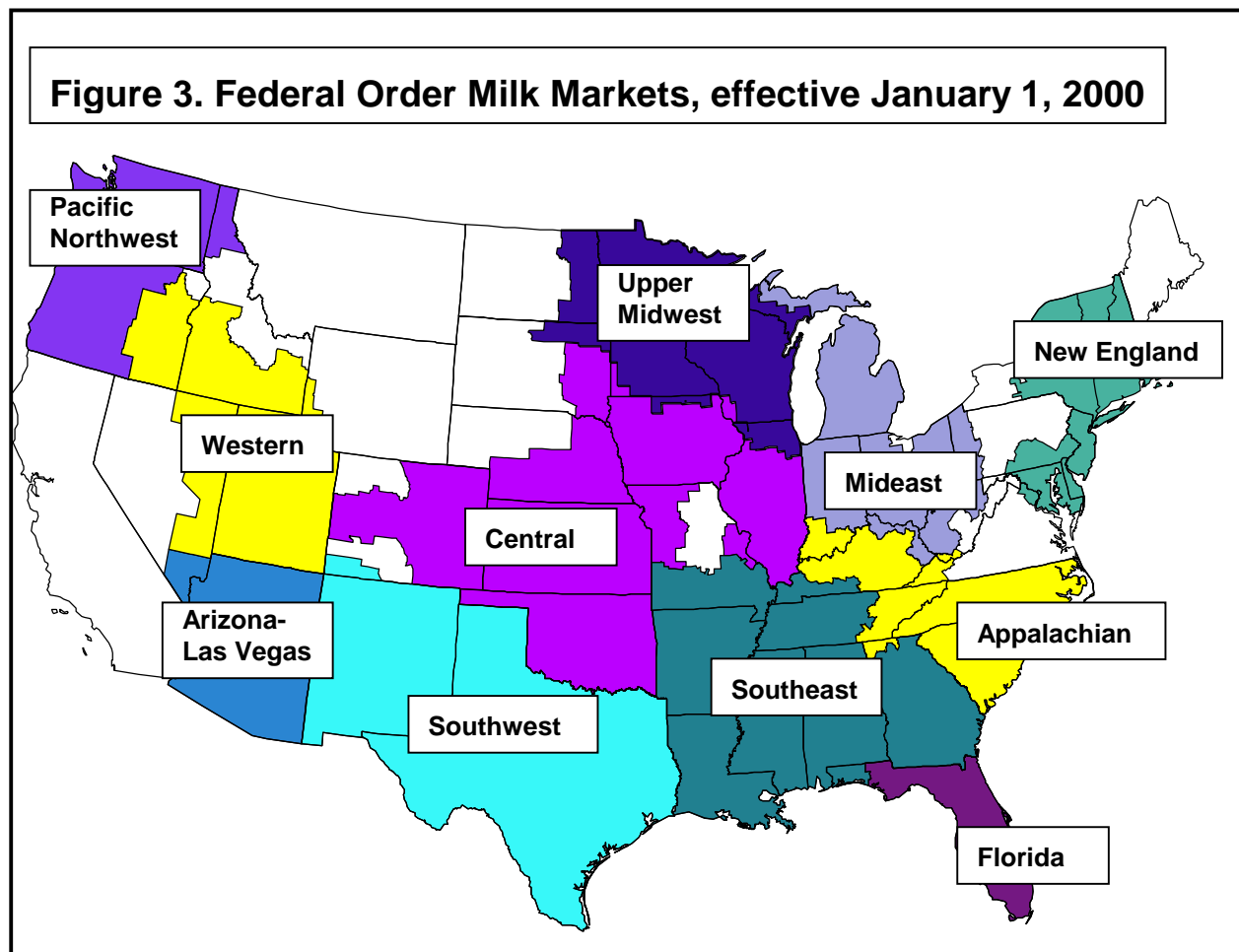
higher than the federal support price, on average, but there were large fluctuations. Farm milk prices are very sensitive to changes in production or sales, and small changes have a disproportionately large impact on farm prices. Milk production has a pronounced seasonal pattern (Figure 2), and there is no corresponding pattern to sales. This seasonality has created a price rollercoaster with large month-to-month changes. In times past, the price support program helped stabilize prices by removing spring surpluses and, as production declined and prices increased later in the calendar year, products could be re-sold into the commercial markets, dampening price increases. The elimination of the dairy price support program would mean increased price volatility and would remove a safety net that has protected farmers from the extremely low prices that would otherwise occur when milk production expands rapidly or sales slump.



Federal milk market orders. The Agricultural Marketing Agreement Act of 1937 established procedures for farmers to petition for, and vote on, the creation of marketing orders for agricultural products. The intent of this act was to provide a mechanism for solving problems of “disorderly marketing.” Producers are required to demonstrate, through testimony at public hearings, that a problem exists and that a market order will help solve it. Once established, a federal marketing order for a given agricultural product regulates the marketing of that product in a specified geographic area.

Federal milk market orders (FMMOs) are administered by the USDA. Effective January 1, 2000, there were 11 FMMOs (Figure 3), and these orders regulated approximately three-quarters of the

Grade A milk produced in the United States. California is the major exception and is regulated under a state order that fulfills comparable functions. Only Grade A milk may be used for fluid (beverage) milk products, and well over 90 percent of the milk produced in the United States is Grade A. However, in 1999 approximately one-third of Grade A milk was sold in fluid form, and the rest was used in manufactured products.



Federal milk market orders perform three major functions:

- They classify Grade A milk according to how it is used—in fluid or manufacturing products. Fluid products are Class I use, and “soft” products such as ice cream and cottage cheese are Class II. Milk used in cheese production is Class III, and milk used to produce butter and dry milk powder is Class IV. Milk used in each of these four classes has a different federal order price.
- FMMOs set minimum prices, with a higher price for fluid use (Class I) and lower prices for manufacturing uses (Classes II, III, and IV). Prices change monthly, and FMMO staff members audit milk processors to ensure that producers are paid these prices.

- FMMOs require that the proceeds from the sale of milk in a given federal milk market area be pooled and that all the producers supplying that market receive the average or blend of the minimum prices established for each class of milk. This blend price reflects both the minimum prices in effect and the utilization of the milk in the various classes.

There is a national market for dairy products such as butter, cheese, and nonfat dried milk because these products are storable and relatively cheap to transport. In any particular month, there is not much variation in the wholesale prices of these products in different parts of the country, and, therefore, the price that processors can afford to pay for milk to manufacture these products is similar around the country. The FMMOs recognize this economic reality in the mechanisms that set minimum Class II, III, and IV prices in the different order markets.

The arguments made in support of the higher Class I price are as follows: There are additional costs associated with the production of Grade A milk. Fluid milk is normally processed and distributed in local or regional markets because it is bulky, perishable, and expensive to transport. Also, there are specific costs associated with serving fluid markets. Originally, the FMMOs set a monthly minimum Class I price in each market based on the M-W price plus a “differential” calculated by figuring in the distance from Wisconsin and the cost of transportation. So, for example, Florida had the highest differential because it is farthest from Wisconsin. The logic was that Wisconsin, which had the largest supplies and a low Class I utilization, was the place to get additional milk when local supplies were short. However, the FMMO Class I prices generated by this formula were greater than the costs of production in many areas of the country, and this encouraged local production that was not needed to meet local Class I needs.

These Class I differentials were not adjusted from the early 1960s until the passage of the 1985 Farm Bill, even though transportation costs had increased significantly. In 1985, Congress increased the Class I differentials, but they remained considerably below actual transportation costs. After much political wrangling, the 1996 Farm Bill reforms made relatively minor changes to the Class I differentials in the various parts of the country.

From May, 1995, until December, 1999, the M-W price was replaced as the base price for setting FMMO class prices. The volume of manufacturing-grade milk had been declining for many years as producers in the two states either converted to Grade A or stopped producing milk altogether. The replacement, the BFP, was a rather complex formula based on wholesale prices for butter, cheese, and milk powder, weighted according to importance. The relationship between the M-W and BFP prices remained very close, however.

Figure 1 illustrates the linkage between the federal order program and the price supports. During times of surplus the price support program established a floor under wholesale prices. Wholesale prices, in turn, affected the farm price for manufacturing milk and were reflected in the M-W price. Therefore, in times of surplus, the farm price for manufacturing-grade milk was supported indirectly by the price support program, as can be seen by the close relationship between the support price and the M-W price from 1975 through the late 1980s. The M-W price, in turn, formed the basis for federal order prices. The BFP was also affected by the support program in times of surplus because it incorporated both the farm price for manufacturing-grade milk and wholesale prices for dairy products. However, wholesale prices were above support prices during the period the BFP was used to set federal order prices.

On January 1, 2000, an entirely new FMMO price-setting mechanism was implemented. This new approach established the value of milk based on the wholesale price of cheese, butter, and nonfat dry milk. The value of the different milk components used in each FMMO class is derived from wholesale prices using product yield formulas and so-called “make allowances” that reflect the estimated manufacturing cost of converting raw milk into these specific dairy products. Producers are paid based on the quantity and value of the components in the milk they sell. Under these new procedures, Class II milk receives a small differential (premium) relative to milk used in Classes III and IV. The new Class I (fluid) differentials are added to a base price that reflects the value of skim milk used in either Class III or IV, whichever is higher.

The pooling provisions of FMMOs require all milk handlers—farmer cooperatives and dairy processors—who are regulated under a particular order to share or pool the value of the raw milk used in the different classes. An average price is computed, based on the total Class I, II, and III sales for that federal order market, based on the minimum prices in that order. All producers regulated under that federal order must be paid this average or so-called “blend” price per 100 pounds. Pooling does not affect what each processor pays for milk; it is a way of paying producers based on sales in the total market instead of the sales performance of an individual milk processor.

Federal orders regulate the individual milk processing firms based on where their fluid products are sold. If a processor sells in more than one FMMO area, that processor is regulated under the FMMO area with the largest volume of sales. Producers, in turn, are regulated under the same federal order as the processor who buys their milk. Therefore, neighbors may receive different prices for their milk because they sell to different processors, who are regulated under different federal orders.

The strong relationship between the value of milk used in manufactured dairy products (as reflected in the M-W price and the BFP) and the actual price paid to producers of Grade A milk is illustrated in Figure 4, which shows the price relationship in the old Carolina federal order that covered North and South Carolina in the late 1990s.

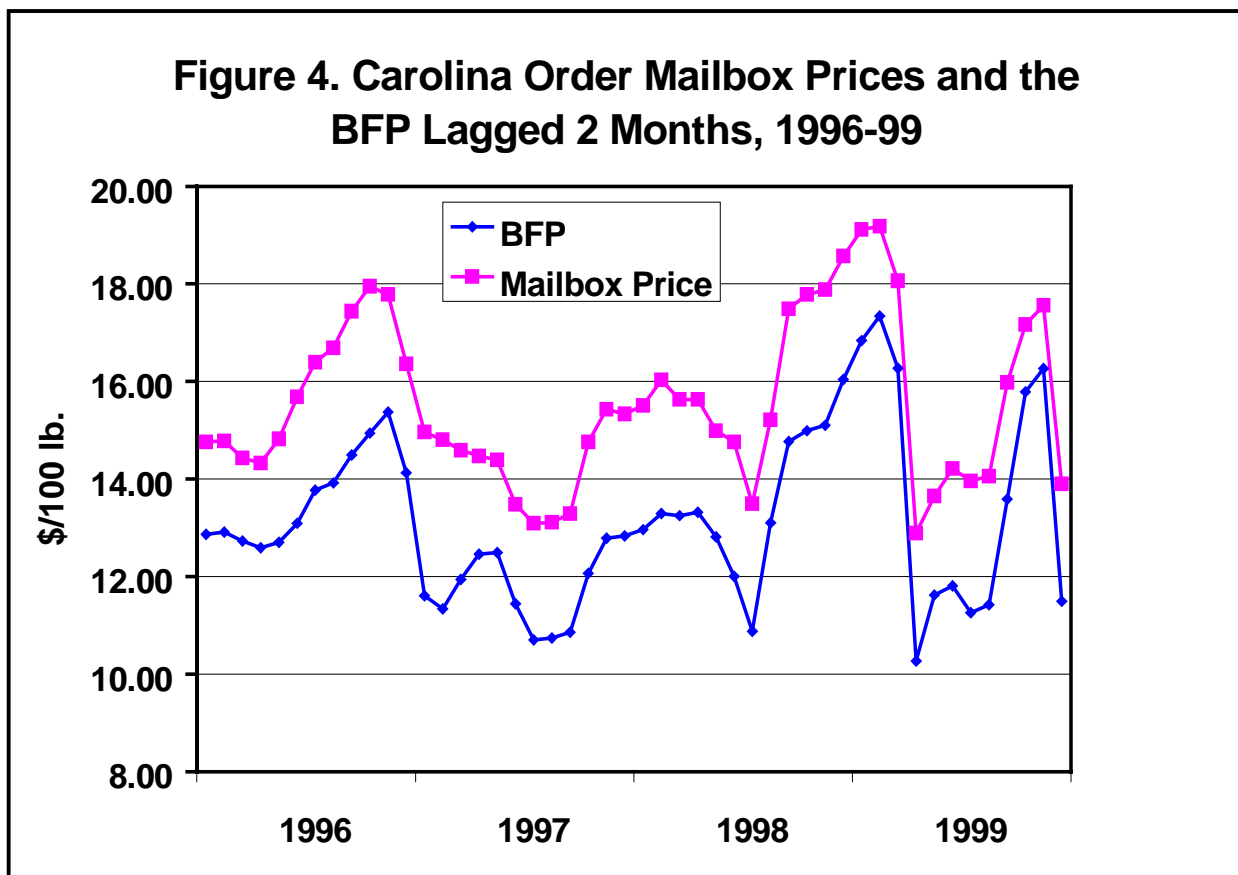
Over-order premiums

An over-order premium is the difference between the price a processor pays for milk and the minimum federal order price. Over-order premiums are fairly common in FMMOs and have been as high as \$2 per 100 pounds. The usual justification given is that the minimum federal order Class I price is too low to support adequate levels of local milk production but that, even with the over-order premium, local milk is still cheaper than milk imported from other parts of the country. These premiums are obtained through negotiations between processors and producer associations. These associations are usually large dairy farmer cooperatives or pricing federations, which are cooperatives made up of several producer organizations in order to bargain more effectively for higher prices. Pricing federations usually exist and operate regionally.

Over-order premiums, by definition, are not regulated by FMMOs, are not audited by FMMO staff, and are not part of the pool. Many factors affect the size of an over-order premium, including the availability of milk in a market area, the availability and cost of bringing in milk

from sources outside the normal market supply area, and the size and strength of the producer pricing federation.

To be effective, a pricing federation must control most of the milk in a large geographic area; 90 percent is a frequently cited target. However, the effectiveness of pricing federations is limited because of distrust between producer groups, pressure from individual processors on particular groups of producers, incentives for some producer groups to cheat on the negotiated prices, and lack of reliable information on prices paid in individual transactions. In spite of these weaknesses, the pricing federation concept is one of a very few practical means for producers to influence the price they receive for their milk other than through the political process.



State regulation

The white areas shown in Figure 3 (Federal Order Milk Markets) are the portions of the country not included in federal order markets. California, the number one dairy state, is the largest state-regulated milk market. In a survey conducted in the 1980s, 26 states had state milk marketing laws and regulations, but the vast majority of producers in these states also were regulated under federal orders. In 14 of the 26 states, laws and regulations covered trade practices but not milk

prices. Twelve states had authority to establish minimum producer prices, 5 had authority to establish minimum retail prices, and 20 had authority to limit sales below cost. Eight states required price filing with a state agency.

State orders differ from federal orders in some respects, but the producer prices they establish are governed by the economic reality that milk and dairy products move across state lines and prices in neighboring markets are linked by transportation costs. Therefore, the impact of the support price, the federal order system, and over-order premiums is felt even by producers who are not directly regulated under FMMOs.

Dairy compacts

A new type of regulatory agency appeared on the dairy scene during the 1990s—the interstate compact. In response to low federal order prices and declining milk production and farm numbers, six New England states created the North East Dairy Compact. These states are Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont. Interstate compacts are not new, but this was the first dairy-related compact. Any interstate compact must be created first by having enabling legislation passed at the state level and then by obtaining authorization from the U.S. Congress. Congress approved the North East Compact in 1996, but this congressional legislation included a sunset provision tied to the date that federal order reforms were implemented (ultimately, January 1, 2000). This expiration date was extended until September 30, 2001, by legislation passed in November, 1999.

Because the North East Compact is a federally sanctioned agency, it has authority to set Class I prices in the six-state area, subject to certain safeguards. The compact law is administered by a commission with representation from producers, processors, and consumers. Compact prices are minimum prices that have the force of law, and the commission has the authority to audit milk handlers to ensure producers receive the mandated prices. The compact commission first used its price-setting powers in July, 1997, and has both raised and stabilized farm milk prices. This stimulated interest in establishing compacts in other parts of the country. Fourteen southern states passed enabling legislation to form a compact during the late 1990s, but, as of December, 2000, Congress had not passed the necessary legislation authorizing it. The 14 states are Virginia, West Virginia, North Carolina, South Carolina, Kentucky, Tennessee, Georgia, Alabama, Mississippi, Louisiana, Arkansas, Missouri, Kansas, and Oklahoma.

Cooperatives

Most dairy farmers belong to cooperatives—some small and some very large. Cooperatives are allowed to re-blend the money they receive from the sale of their members' milk and pay it to their members in any manner they choose, subject only to the co-op's bylaws. Also, all co-ops have operating expenses, and the members must pay these from the money they receive from the sale of milk. Co-op members provide working capital through "capital retains" programs—part of the farmers' income is withheld and used to supply the co-ops with working capital. Members are denied the use of this money until it revolves out of the working capital fund after a period of years.

These operating expenses and deductions vary, depending on the type of co-op, the activities in which it engages, and the efficiency with which it operates. For example, some co-ops are involved in milk processing while others simply try to bargain for a better price or find better paying markets; some co-ops are more active in political lobbying than others; some provide field services and sell dairy supplies and insurance. All of these activities have a cost; some generate benefits for the co-op members, and some generate benefits for members and non-members alike. Co-op members often receive a lower price than producers who do not belong to co-ops, but this is not a fair comparison unless the other benefits are considered, such as annual patronage dividends, field service, cost of supplies, and market security.

Other factors

Other factors also affect the price producers receive. The proportion of Grade A milk used in Class I products fluctuates throughout the year because production and sales follow different seasonal patterns. Changes in the proportion of Class I milk, with its higher price, affect the blend price received by farmers. Class I utilization rates tend to be higher when milk supplies are tighter and prices higher; conversely, rates drop when supplies are abundant. These occurrences contribute to the seasonal fluctuations in farm prices shown in Figure 4.

Several factors affect the price one farmer may receive compared to that paid to a neighbor. The farm value depends on the specific composition of the milk, for example, the butterfat content. The butterfat and nonfat solids in milk are affected by choice of breed, ration formulation, and other factors. Milk-hauling charges, quality premiums and deductions, and volume premiums and deductions vary among milk buyers and affect the net prices paid to producers. These payments and deductions tend to be fairly stable, however, and do not contribute to the month-to-month variation in the prices farmers see in their milk checks.

Summary

The United States is largely self-sufficient in milk production. Domestic prices are higher than prevailing world prices, which are artificially low because of subsidized exports from the European Union. In the past, imports into the United States were controlled by quotas, but these were replaced by high tariffs under the GATT Uruguay Round. Therefore, the U.S. dairy industry has been and, at least for the foreseeable future, will continue to be affected primarily by domestic economic forces and policies.

Domestic consumption of dairy products increased slowly between 1980 and 1999, approximately 2 percent per year on average. Milk production per cow has increased more rapidly than sales, 2.6 percent per year, and these production increases have put downward pressure on farm prices. Cow numbers have declined as a result of this price pressure and other factors.

Farm milk prices were established primarily by the federal price support program before 1989, but “market forces” took over during 1989–99. There was a reasonably close balance between production and sales during this period, which, when combined with seasonal factors, caused extreme month-to-month price volatility.

Before 1989, the federal dairy price support program was an important factor in setting milk prices across the nation in times of surplus because it set a floor price for manufacturing-grade milk. However, its importance has declined because the government has reduced the support price to levels that are considerably below the cost of production. The support program is scheduled to be terminated at the end of 2001, but at the time of writing, efforts are under way to extend the deadline.

The Federal Milk Market Order system regulates the marketing of most of the Grade A milk produced in the United States. Federal orders used the manufacturing milk price as the base point for setting minimum farm prices until December, 1999. Under order reform implemented in January, 2000, minimum prices now are based on wholesale prices for dairy products. The farm value of raw milk is derived from these prices by using specific product yield formulas and manufacturing costs (make allowances). During most of the 1990s, wholesale dairy prices were influenced by market forces, but the support price had a sporadic impact, largely in times of seasonal surplus.

Federal order Class I differentials are related in part to the distance from Wisconsin to a particular producer location in a given federal order and are largest in the Southeast. However, in many markets these minimum prices are considered to be too low to support the desired volumes of local milk. During the last 20 years the larger co-ops and, more recently, producer pricing federations have successfully negotiated over-order premiums on Class I milk. The size of this premium varies, depending on the availability of milk and the strength of the pricing federation.

The combination of national supply and demand conditions, the price support program, and the federal order system affects prices even in areas that are not under federal regulations because prices cannot stray too far out of line with those in neighboring markets.

All of these factors—market forces, the support price, federal orders, over-order premiums, season—affect all processors and producers in a similar way. However, they do not explain why two neighbors receive a different mailbox price for their milk. These differences can occur for a number of reasons, singly or in combination:

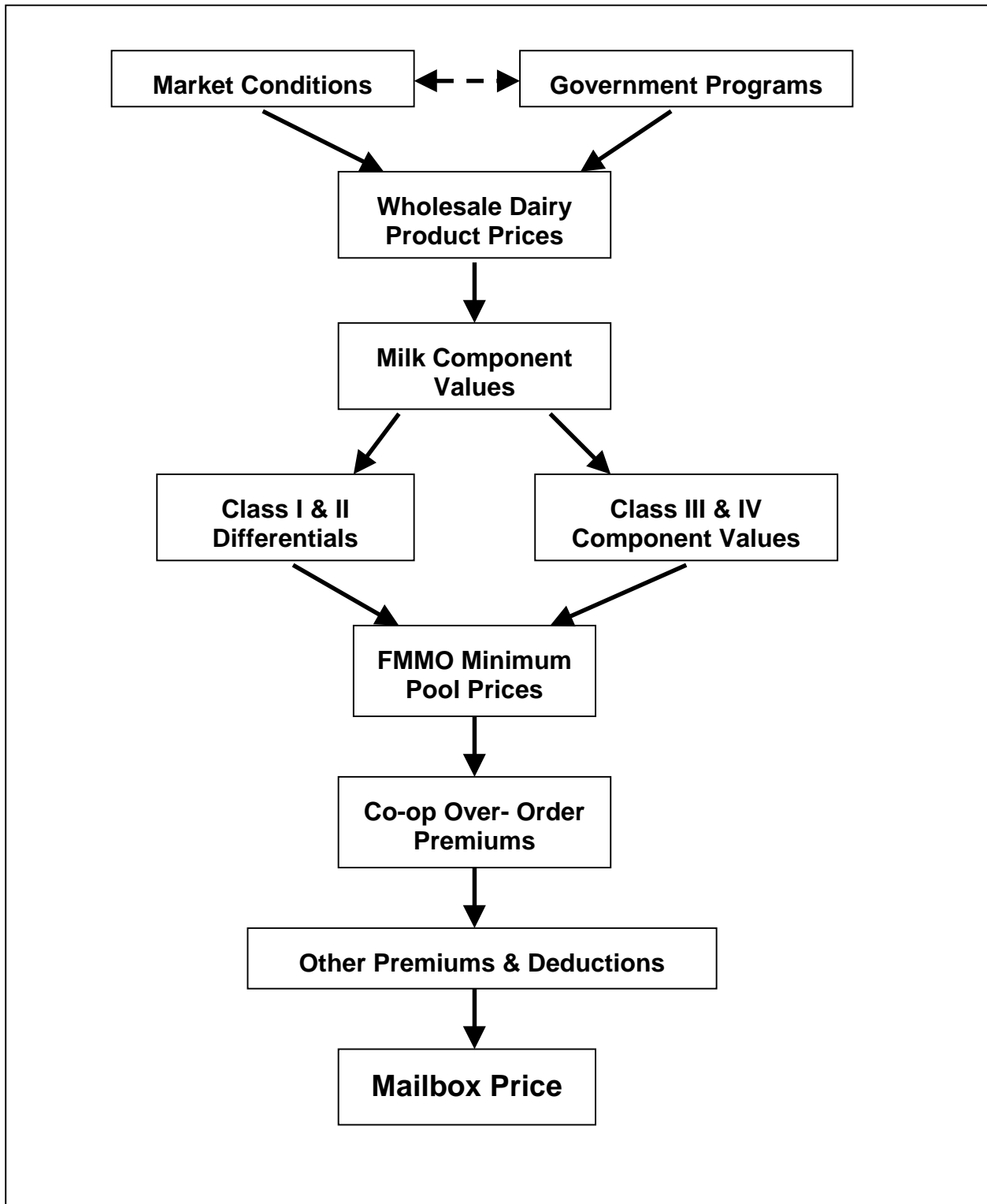
- The milk was sold in different markets with different prices and a different Class I utilization. For example, one farmer might sell his milk under a federal order and the other might sell to a plant regulated by a state agency.
- One producer might be a co-op member and the other might not, or producers might belong to different co-ops, which sold their members' milk in different markets or which had different operating costs.
- There were differences in milk components such as butterfat test, hauling charges, quality and volume premiums, etc.

The chain of events leading to a producer's mailbox check is depicted in Figure 5.

One final and very important point: Many university studies of dairy farm financial records show a large variation in financial performance among dairy farms. Most of this variation in performance is caused by things other than differences in the price received for milk. The most

important factor is the level of management ability of the farmer. The price of milk alone does not explain why one dairy farm fails and another, perhaps a neighboring farm, survives and prospers.

Figure 5. The sequence of events that determines the price individual dairy farmers receive for milk



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